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

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

# Artistic Expression through Augmented Reality

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| **Institution** | Școala Primară EuroEd |
| **Disciplina STEAM** | Art |
| **IDD Student Context** | Primary students with Autism Spectrum Disorder (ASD) Level 1 and Attention Deficit Hyperactivity Disorder (ADHD) |
| **Resource used** | Quiver Vision App (Augmented Reality Coloring) |

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

1. Introduction:
   Introduce students to the concept of Augmented Reality (AR) and demonstrate how the Quiver Vision app brings their coloring sheets to life.
   Explain the relationship between creativity and technology in modern art.
2. Demonstration:
   Show a completed example of an AR-enhanced coloring sheet, emphasizing the visual transformation process.
   Highlight how different colors and patterns impact the augmented result.
3. Guided Practice:
   Distribute AR-compatible coloring sheets to the students.
   Guide them in choosing colors and designs, encouraging creativity while considering sensory preferences (e.g., avoiding overstimulating patterns for sensitive students).
4. Independent Practice:
   Allow students to complete their coloring sheets independently.
   Use the Quiver Vision app to view their creations in AR, providing feedback and encouragement.
5. Reflection and Discussion:
   Facilitate a group discussion where students share their AR creations and the emotions, they felt seeing their work come to life.
   Connect this activity to real-world applications, like digital design or animation, to inspire future exploration.

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

1. Introduction: Explain the Quiver Vision app's features and its application in creating engaging learning experiences.
2. Classify the IDD into Taxonomy: Use the Taxonomy framework to identify sensory sensitivities and cognitive challenges associated with Down Syndrome and Intellectual Disability.
3. Create the Profile for the Students: Develop profiles detailing individual interests in colors, sensory thresholds, and learning objectives.
4. Search for Similar Activities: Identify related AR activities like "Virtual Object Exploration" or "AR in Nature."
5. Define the Activity in the User Model: Document the activity, associating it with the students' educational plans for creativity and sensory engagement.
6. Demonstration: Showcase multiple AR-enhanced coloring examples, emphasizing variety and innovation.
7. Guided Practice: Assist students in exploring creative combinations while offering sensory-friendly support.
8. Independent Practice: Encourage students to customize and augment their creations.
   Reflection and Discussion: Discuss how AR transforms their perception of art and creativity.

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| Extra resources | Tablets or smartphones with the Quiver Vision app installed.<br>Visual aids explaining the AR process. |

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| | Worksheets for creative exploration. |
| Similar activities | Digital Drawing with AR Filters.<br>Virtual 3D Object Creation.<br>Exploring Nature with AR Apps. |



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# Robotics-Based Computational Thinking

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| **Institution** | Școala Primară EuroEd |
| **Disciplina STEAM** | Technology |
| **IDD Student Context** | Primary students with Autism Spectrum Disorder (ASD) Level 1 and Attention Deficit Hyperactivity Disorder (ADHD) |
| **Resource used** | Code & Go Robot Mouse |

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

1. Introduction:
   Introduce the Code & Go Robot Mouse to the students, explaining its functions and purpose.
   Discuss the basics of programming and how sequences of commands can control the robot's movements.
2. Demonstration:
   Show a simple example of programming the robot to move through a predefined path.
   Highlight the importance of order and logic in creating effective command sequences.
3. Guided Practice:
   Provide students with a set of commands and guide them in programming the robot to navigate a simple maze.
   Offer support and feedback as they work through the task, encouraging problem-solving and critical thinking.
4. Independent Practice:
   Challenge students to design their own mazes and program the robot to navigate them successfully.
   Encourage collaboration among students to foster social interaction and communication skills.
5. Reflection and Discussion:
   Facilitate a discussion on the strategies used, challenges faced, and solutions discovered during the activity.
   Connect the experience to real-world applications of programming and robotics.

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

1. Introduction:
   Introduce the Code & Go Robot Mouse, emphasizing its role in developing computational thinking.
   Discuss the relevance of programming skills in everyday life and future careers.
2. Classify the IDD into the Taxonomy:
   Based on the student's characteristics, classify their IDD (e.g., ASD Level 1, ADHD) using the Taxonomy framework.
   Identify key features such as social communication difficulties, sensory sensitivities, or repetitive behaviors.
   Match these features with predefined categories in the Taxonomy to ensure consistency.
3. Create the Profile for the Students:
   Use the User Model interface to create a detailed profile for the student.
   Include their IDD level, specific features, difficulties, and educational goals.
   Ensure that the profile is accurate and comprehensive to tailor interventions effectively.
4. Look for Activities with Similar Learning Objectives:
   Search the resource repository for activities that align with the student's educational objectives (e.g., improving computational thinking, enhancing collaboration).
   Example: For a student needing sensory-friendly tasks, find activities like "Programming with Beebot" or "Code & Go Maze Exploration."

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| 5. Define the Activity in the User Model and Associate it with the IDD Student Plan:<br>Document the chosen activity in the User Model, specifying the learning objectives, required resources, and expected outcomes.<br>Link the activity to the student’s profile, ensuring it fits their plan and provides measurable progress toward their goals.<br>6. Demonstration:<br>Showcase a complex example of programming the robot, incorporating loops and conditionals.<br>Explain how these advanced concepts can optimize the robot's performance.<br>7. Guided Practice:<br>Provide students with scenarios requiring the use of loops and conditionals in their programming.<br>Support students in understanding and applying these concepts effectively.<br>8. Independent Practice:<br>Encourage students to create intricate mazes and develop efficient programs using advanced programming constructs.<br>Promote peer review and collaborative debugging to enhance learning outcomes.<br>9. Reflection and Discussion:<br>Lead a discussion on the importance of computational thinking and its impact on problem-solving abilities.<br>Encourage students to share their experiences and insights gained from the activity. | |
| Extra resources | Mobile robot<br>Incorporate sensory aids, visual guides, or interactive software like Scratch to enhance engagement.<br>Visual aids illustrating programming concepts.<br>Worksheets for planning and testing command sequences. |
| Similar activities | Explore the maze<br>Programming with Beebot.<br>Designing a Path for the Robot. |



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