Makey- Makey Games

Scenario 2 – High

AiM| Autism in Motion

Encouraging well-being and healthy habits among children with autism through professional training and the integration of emerging technologies (2024-2026)

KA220-SCH -CDAB7AB2

Developed by Emphasys

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Grant agreement	2024-1-PL01-KA220-SCH-000248166
Programme	Erasmus+ Program
Type of action	KA220- SCH
Granting Authority	National Agency
Project acronym	AiM (AUTISM IN MOTION)
Project title	Encouraging well-being and healthy habits among children with autism through professional training and the integration of emerging technologies (2024-2026)
Project starting date	01/11/2024
Project end date	31/10/2026
Project duration	24 months

Key Information	
Deliverable description	AiM MAKEY MAKEY GAMES COLLECTION
Deliverable type	Educational Resource
Date of publication (month number/date)	June 2026
Principal Author (name/entity)	A & A Emphasys Interactive Solutions Ltd
Partners Contributing (name/entity)	POLITECHNIKA LODZKA (TUL); Directorate of Primary Education of Western Thessaloniki (DPEWT); Associação Portuguesa para as Perturbações do Desenvolvimento e Autismo de Coimbra (APPDA Coimbra); NATSIONALNA ASOTSIATSIA NA RESURSNITE UCHITELI (NARU); HPO MEDIA MANAGEMENT LTD

Acknowledgements and Disclaimer

This report has been researched and produced by the AiM Consortium, under the collective editorial direction and contribution of all project partners.

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1. About the Game

1.1 Game Overview

Water Hero is a game that helps students aged 8–13 with Autism Spectrum Disorder (ASD) build the healthy habit of drinking water. A small seed in a flower pot appears on the screen, and a friendly character says “Drink Water!”. Each time the student drinks water, they touch a water card connected to a Makey Makey board, and the plant grows to its next stage.

When the plant is fully grown, the character says “Congratulations!! You are now hydrated!” and party music plays. The game is built in Scratch, a free visual block-coding platform, and uses Makey Makey to turn the water card into a touch button. No keyboard or mouse skills are needed to play.

1.2 Goal of the Game

The goal is to help students understand the importance of regular hydration and to encourage the healthy habit of drinking water. Using Makey Makey and Scratch, students track their hydration by helping a plant grow each time they drink water.

1.3 How the Game Is Played

The student holds or touches the ground (Earth) cable. After drinking water, the student touches the water card (connected to Space):

Step	Student action	What appears on screen
Start	The adult clicks the green flag	A seed in a pot and the message “Drink Water!”
1–3	Drinks water and touches the water card	The plant grows to the next stage and a short positive sound plays
4	Drinks water and touches the water card	The plant is fully grown, the message “Congratulations!! You are now hydrated!” appears and party music plays

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1.4 Why This Game Works for Students with ASD

- One card and one repeated action make the game very easy to understand and predictable.
- The growing plant gives a clear, concrete picture of progress.
- Every touch gives immediate visual and sound feedback, reinforcing cause and effect.
- The final celebration provides a motivating reward for reaching the goal.
- The game links a real-life action (drinking water) with the screen, supporting daily routines.

1.5 Learning Outcomes

- Students understand the importance of regular hydration as part of a healthy daily routine.
- Students become more aware of their water intake by visually tracking their progress.
- Students develop cause-and-effect understanding, as each touch of the water card helps the plant grow.
- Students receive immediate visual and sound feedback as the plant moves through its growth stages.
- Students strengthen healthy routines and self-management skills by repeating the drink-and-touch action.
- The fully grown plant, congratulations message and party music motivate students to reach their hydration goal.

1.6 About Makey Makey and Scratch

Makey Makey is a simple invention kit that connects to a computer by USB and turns everyday objects – such as fruit, cards or aluminium foil – into keyboard keys. When a student touches a connected object while also touching the ground cable, Makey Makey sends a key press (for example, the Space key or an arrow key) to the computer.

Scratch is a free, block-based coding platform. Instead of typing code, you drag and drop coloured blocks to build a program. Together, Makey Makey and Scratch offer schools and parents an easy way to introduce STEM-based projects into classrooms and homes, even without a technical background.

Key features for students with ASD:

- Customisable sensory inputs: sound, visuals and touch can be adapted to the sensory preferences of students aged 8–13 with ASD.
- Visual block coding: games are created with drag-and-drop blocks, which simplifies the design process.
- Adaptable game elements: messages, sounds and images can be changed easily to suit each student's comfort level.
- Educational and recreational focus: the same approach can be used for memory games, matching games and interactive stories.

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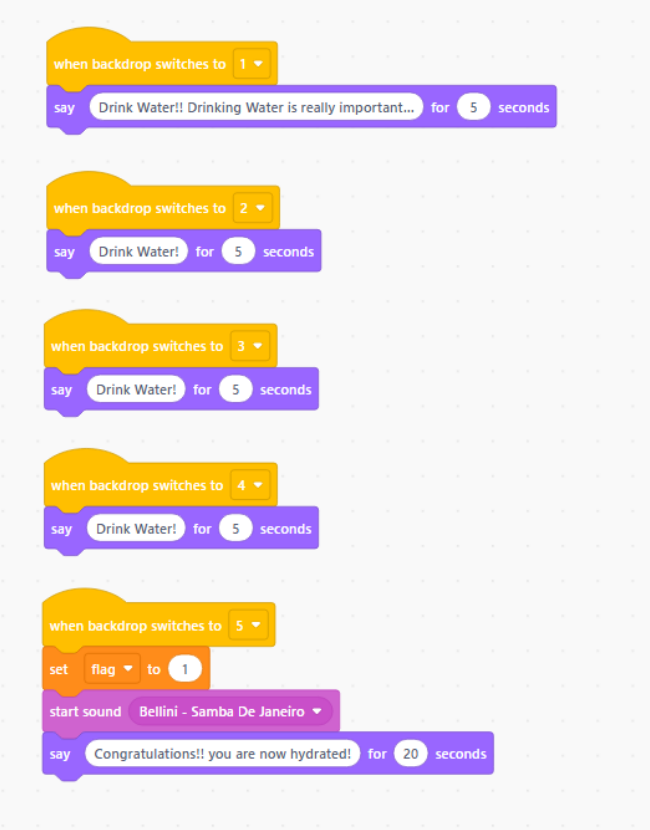

2. Creating the Code in Scratch

2.1 Open the Project

The ready-made game is available here: https://scratch.mit.edu/projects/1365031291/

1. Open the link above in a web browser (Chrome, Edge or Firefox).
2. Click “See inside” to view the code.
3. To make your own editable copy, sign in to Scratch and click “Remix”. You can then change the messages, sounds and pictures.

If you prefer to build the game from the beginning, follow the steps below.

2.2 Prepare the Backdrops, Sprite and Sounds

1. Create a new project on scratch.mit.edu and delete the default cat sprite.
2. Add five backdrops showing the plant growing, in this order: 1 = seed in the pot, 2–4 = the plant getting bigger, 5 = the fully grown plant.

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3. Add a friendly character sprite (the ready-made project uses the Mermaid sprite) and place it at the side of the stage.

4. On the Stage, add a short positive sound for each touch. On the character sprite, add a piece of party music for the end.

2.3 Start with a Seed

Select the Stage and add this script:

- **Events:** “when green flag clicked”
- **Looks:** “switch backdrop to [1]”

Select the character sprite and add: “when green flag clicked” → “say [Drink Water!]”.

2.4 Grow the Plant When the Card Is Touched

Select the Stage and add this script:

- **Events:** “when [space] key pressed”
- **Sound:** “start sound [positive sound]”
- **Looks:** “next backdrop”

Then select the character sprite and add the celebration:

- **Events:** “when backdrop switches to [5]”
- **Looks:** “say [Congratulations!! You are now hydrated!]”
- **Sound:** “play sound [party music] until done”

Tip: when the plant is fully grown, another touch would move back to the first backdrop. Click the green flag to start again, or place “next backdrop” inside “if <(backdrop [number]) < 5> then” so the plant stays fully grown.

2.5 Test and Save

- Click the green flag. The seed and the message “Drink Water!” should appear.
- Press Space on the keyboard four times. Check that the plant grows at each press and that the celebration appears on the fourth press.

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- Save the project (File > Save now) and click “Share” so the link can be opened by others.

3. Setting Up the Game Using Makey Makey

3.1 What You Need

- A Makey Makey kit (board, USB cable and alligator clips)
- A computer with internet access and the Scratch project open
- One printed water card (for example a picture of a glass of water) with aluminium foil on the back
- A glass or bottle of drinking water for the student

3.2 Connect the Makey Makey

1. Plug the Makey Makey into a USB port on the computer.
2. Connect one alligator clip to the ground (marked “Earth” on the Makey Makey). The student holds or touches this ground cable while touching the water card.
3. Connect a second alligator clip to the Space input and attach the other end to the water card:

Makey Makey input	**Connected to**
Space	Water card
Earth (ground)	Held or touched by the student

3.3 Start the Game

1. Open the Scratch project in the browser and click the green flag. Use full-screen mode to keep the screen simple.
2. Show the student the seed and read the message “Drink Water!” together.
3. After the student drinks water, ask them to hold the ground cable and touch the water card.
4. Repeat each time the student drinks water, until the plant is fully grown and the celebration appears.
5. Click the green flag to start again with a new seed for the next session or day.

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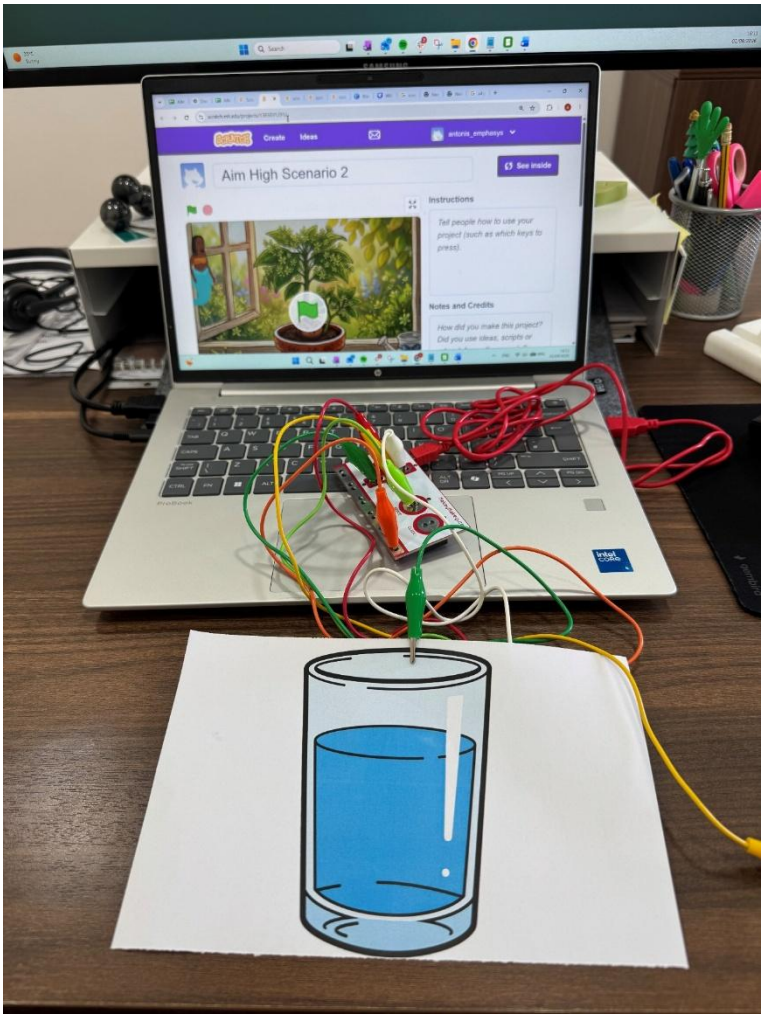
3.4 Tips for a Smooth Session

- Test every card before the student arrives, so the game works first time.
- Keep the table clear of extra objects and cables to reduce distractions.
- Set the computer volume to a comfortable level before starting – the party music is louder than the other sounds.
- Show the student how to hold the ground cable and touch a card before they play on their own.
- Spread the drinks across the school day, for example linked to breaks, so the game becomes part of the daily routine.
- Praise the student each time the plant grows, to reinforce the healthy habit.