Makey- Makey Games

Scenario 2 – Low

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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1. About the Game

1.1 Game Overview

Hydration Master is a simple, hands-on game that helps students aged 8–13 with Autism Spectrum Disorder (ASD) build the healthy habit of drinking water regularly. An empty water bottle appears on the screen. Each time the student drinks a glass of water, they touch one large button connected to a Makey Makey board, and the bottle on the screen fills up a little more.

After four glasses of water, the bottle is full and a celebration screen appears with the message "Congratulations, you drank your water" and music. The game is built in Scratch, a free visual block-coding platform, and uses Makey Makey to turn the button into a touch key. No keyboard or mouse skills are needed to play.

1.2 Goal of the Game

The goal is to raise awareness of the importance of daily hydration and to encourage students to develop the healthy habit of drinking water regularly. Using Makey Makey and Scratch, students track their water intake through one simple physical action and a clear, visually rewarding progress display.

1.3 How the Game Is Played

The student holds or touches the ground (Earth) cable. After drinking a glass of water, the student touches the hydration button (connected to Space):

Step	**Student action**	**What appears on screen**
Start	The adult clicks the green flag	An empty water bottle and the message "Each time you drink water, press the button"
1st glass	Drinks water and touches the button	The bottle fills to 25% and a short positive sound plays
2nd glass	Drinks water and touches the button	The bottle fills to 50% and the sound plays again

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3rd glass	Drinks water and touches the button	The bottle fills to 75% and the sound plays again
4th glass	Drinks water and touches the button	The bottle is full (100%), a celebration screen appears with the message “Congratulations, you drank your water”, and celebration music plays

The student repeats the same action each time they drink water. A small score counter in the corner of the screen also shows how many glasses have been counted.

1.4 Why This Game Works for Students with ASD

- One large button and one repeated action make the game very easy to understand and predictable.
- The bottle filling step by step gives a clear, concrete picture of progress towards the goal.
- Every touch gives immediate visual and sound feedback, which reinforces cause and effect.
- The celebration screen and music provide a motivating reward when the goal is reached.
- Large targets and high-contrast visuals keep the activity simple and calm.
- 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 daily water intake by visually tracking their progress.
- Students receive immediate visual feedback as the bottle fills from empty to 100%.
- The game encourages healthy routines and self-management skills through repeated interaction.
- Students strengthen their understanding of cause and effect, as each button press produces a visible change on the screen.
- Positive feedback and the final celebration 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.

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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.

2. Creating the Code in Scratch

2.1 Open the Project

The ready-made game is available here: https://scratch.mit.edu/projects/1315949928/

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 Backdrop and Sprites

4. Create a new project on scratch.mit.edu and delete the default cat sprite.

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5. Add a start backdrop with a calm background and the text “Each time you drink water, press the button”.

6. Add a second backdrop for the reward, with party decorations and the text “Congratulations, you drank your water”.

7. Add one water bottle sprite with five costumes, in this order: empty, 25% full, 50% full, 75% full and 100% full.

8. In the Sounds tab of the bottle sprite, add a short positive sound effect (played after each glass) and a longer piece of celebration music (played at the end).

9. In the Variables category, click “Make a Variable” and create a variable called “score”, for all sprites.

Note: in the ready-made project, the start backdrop is called “Pick a food to discover its vitamins! (1)”, the reward backdrop is called “Backdrop 2”, and the bottle costumes are numbered 8 (empty) to 12 (full). You can rename them to make the code easier to read.

2.3 Reset the Game at the Start

Select the water bottle sprite and add this script, so the game always starts with an empty bottle:

Events: “when green flag clicked”

Looks: “switch backdrop to [start backdrop]”

Looks: “switch costume to [empty bottle]”

Variables: “set [score] to 0”

2.4 Fill the Bottle When the Button Is Pressed

In the same sprite, add a second script that runs each time the button (Space) is pressed:

1. Events: “when [space] key pressed”

2. Variables: “change [score] by 1”

3. Control: “if <(score) = 4> then … else …”

4. Inside “if” (the bottle is full): “switch costume to [full bottle]”, then “switch backdrop to [reward backdrop]”, then “play sound [celebration music] until done”.

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5. Inside “else” (the bottle is not full yet): “next costume”, then “start sound [positive sound effect]”.

This is how the score and the bottle change with each press

Button presses	**Score**	**Bottle on screen**	**Sound**
0 (start)	0	Empty	–
1	1	25% full	Positive sound effect
2	2	50% full	Positive sound effect
3	3	75% full	Positive sound effect
4	4	100% full + reward backdrop	Celebration music

To change the goal (for example, six glasses instead of four), add more bottle costumes and change the number in the “if <(score) = 4>” block.

2.5 Test and Save

1. Click the green flag. The empty bottle and the start message should appear, and the score should be 0.

2. Press Space on the keyboard four times. Check that the bottle fills step by step and that the reward screen and music appear on the fourth press.

3. If the score counter distracts the student, untick the box next to “score” in the Variables category to hide it from the screen.

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

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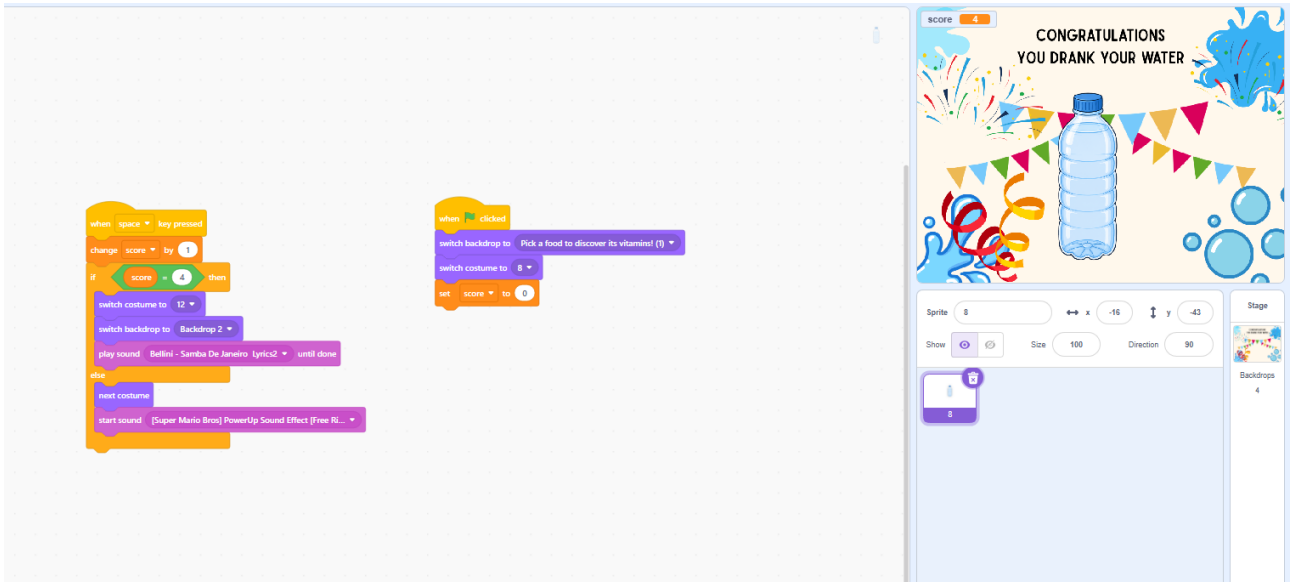

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3. Setting Up the Game Using Makey Makey

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 large conductive button, for example an aluminium foil pad, a playdough button or a printed water bottle card with 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 button.

3. Connect a second alligator clip to the Space input and attach the other end to the hydration button:

Makey Makey input	**Connected to**
Space	Hydration button (foil pad, playdough or water bottle 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 empty bottle and read the message together: “Each time you drink water, press the button.”
3. After the student drinks a glass of water, ask them to hold the ground cable and touch the hydration button.
4. Repeat each time the student drinks water, until the bottle is full and the celebration screen appears.

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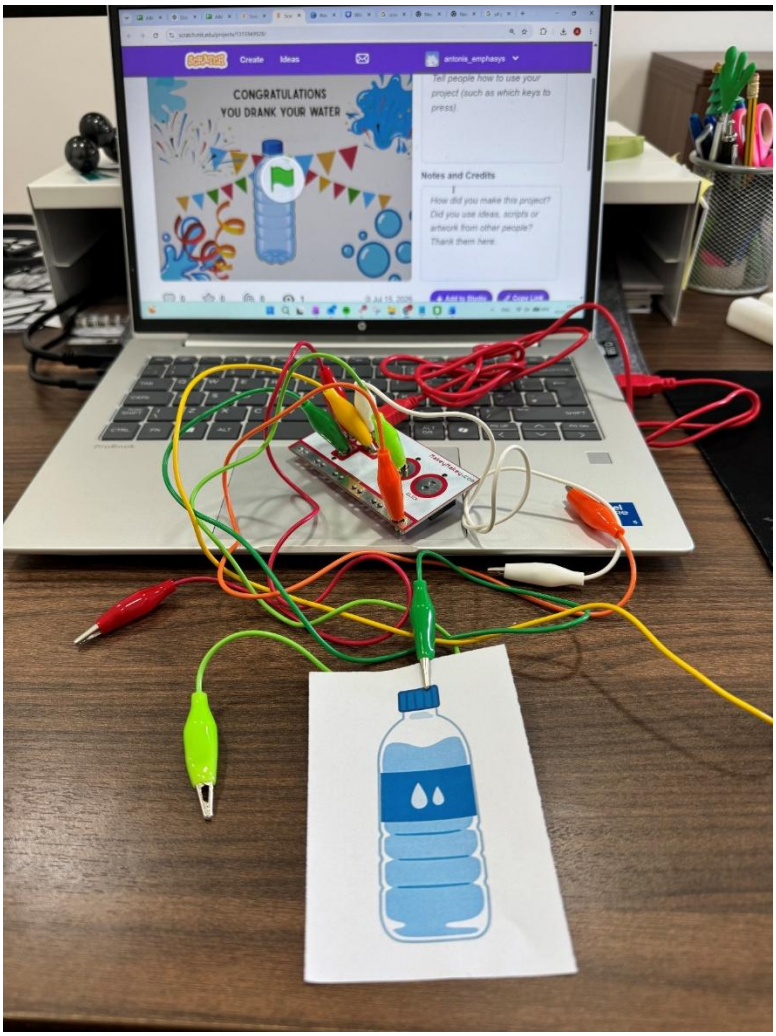
5. Click the green flag to start again with an empty bottle for the next session or day.

3.4 Tips for a Smooth Session

- Test the button 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 celebration music is louder than the other sounds.
- Show the student how to hold the ground cable and touch the button before they play on their own.
- Spread the four glasses across the school day, for example linked to breaks, so the game becomes part of the daily routine.
- Praise the student each time the bottle fills, to reinforce the healthy habit.