Makey- Makey Games

Scenario 5 – 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

Healthy Choice Challenge is a game that helps students aged 8–13 with Autism Spectrum Disorder (ASD) tell the difference between healthy and unhealthy foods. The screen shows two foods side by side with the question “Which food is healthy?”. The student chooses by touching a card connected to a Makey Makey board, and a friendly character, Abby, gives immediate spoken feedback.

The game has five food pairs. After each answer, the student touches the “Next” card to move on to the next pair. The game is built in Scratch, a free visual block-coding platform, and uses Makey Makey to turn the cards into touch buttons.

1.2 Goal of the Game

The goal is to help students recognise and distinguish between healthy and unhealthy food choices. Using Makey Makey and Scratch, students compare two foods at a time and decide which one is the healthier option, with immediate feedback.

1.3 How the Game Is Played

The student holds or touches the ground (Earth) cable. For each pair, the healthy food card is connected to Up (↑) and the unhealthy food card to Down (↓):

Card touched	**Makey Makey input**	**What happens**
Healthy food	Up arrow (↑)	Abby says “Yes, that’s correct!” and the matching sound plays
Unhealthy food	Down arrow (↓)	Abby says “No, try again” and the matching sound plays
Next	Space	The next food pair appears

The five food pairs are:

Pair	**Healthy food**	**Unhealthy food**
1	Carrot	French fries

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Pair	Healthy food	Unhealthy food
2	Apple	Donut
3	Milk	Soft drink
4	Nuts	Chocolate bar
5	Strawberries	Candy

1.4 Why This Game Works for Students with ASD

- Only two choices at a time keep the task clear and easy to follow.
- The same question appears for every pair, which makes the game predictable.
- Immediate spoken and visual feedback helps students learn from each choice.
- A gentle “try again” message avoids a strong sense of failure.
- Students control when to move on by touching the “Next” card, so they can go at their own pace.

1.5 Learning Outcomes

- Students develop a basic understanding of the difference between healthy and unhealthy food choices.
- Students strengthen food recognition and categorisation skills by comparing different food pairs.
- Students develop decision-making skills by identifying the healthier option between two foods.
- Students develop cause-and-effect understanding, as each choice triggers immediate feedback in Scratch.
- Students receive clear visual and audio feedback, helping them recognise correct choices and learn through repetition.

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.

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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/1365061220/

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, one for each food pair. Each backdrop shows the question “Which food is healthy?” with the two foods side by side.
3. Add a friendly character sprite (the ready-made project uses the Abby sprite) and place it between the two foods.
4. In the Sounds tab of the character, record two short spoken messages: “That’s correct” and “No, try again”.

2.3 Start with the First Pair

Select the Stage and add these scripts:

- “when green flag clicked” → “switch backdrop to [first pair]”
- “when [space] key pressed” → “next backdrop”

2.4 Give Feedback on the Student’s Choice

Select the character sprite and add these two scripts:

- **Healthy choice:** “when [up arrow] key pressed” → “say [Yes, that’s correct!]” → “play sound [That’s correct] until done”
- **Unhealthy choice:** “when [down arrow] key pressed” → “say [No, try again]” → “play sound [no try again] until done”

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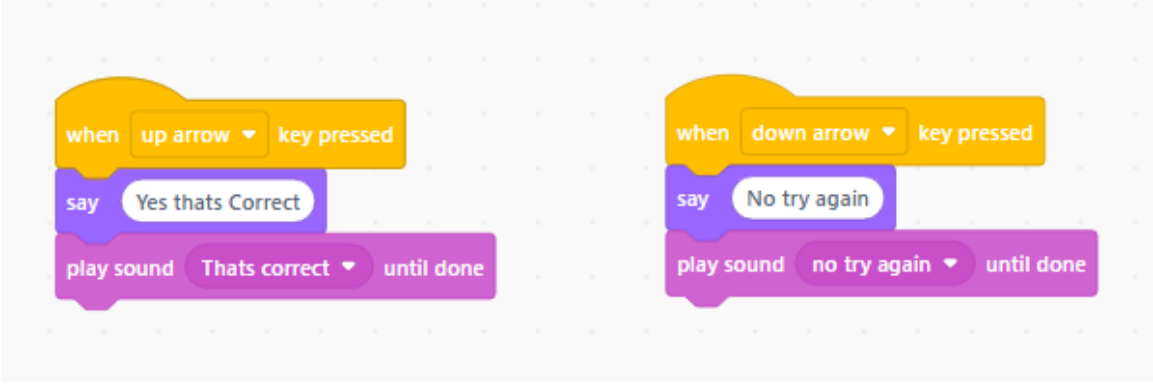
Because the healthy food card is always connected to Up (↑), the same two scripts work for every food pair.

2.5 Test and Save

- Click the green flag. The first food pair should appear.
- Press Up and Down on the keyboard. Check that the right message and sound appear.
- Press Space. Check that the next food pair appears.
- 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
- Printed food cards for each pair (carrot, French fries, apple, donut, milk, soft drink, nuts, chocolate bar, strawberries and candy)
- One “Next” card
- Something conductive for each card, for example aluminium foil on the back of the card

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 cards.

3. Connect the other alligator clips to the following Makey Makey inputs and attach the other end of each clip to the matching card, using aluminium foil or another conductive connector:

Makey Makey input	**Card**
Space	Next food pair
Up arrow (↑)	Healthy food of the current pair
Down arrow (↓)	Unhealthy food of the current pair

For each new pair, move the two clips to the new cards: the healthy food on Up (↑) and the unhealthy food on Down (↓). Place the cards on the same sides as they appear on the screen.

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. Read the question “Which food is healthy?” together with the student.

3. Ask the student to hold the ground cable with one hand and touch the food they think is healthy.

4. Listen to Abby’s feedback. If the answer was wrong, let the student try again.

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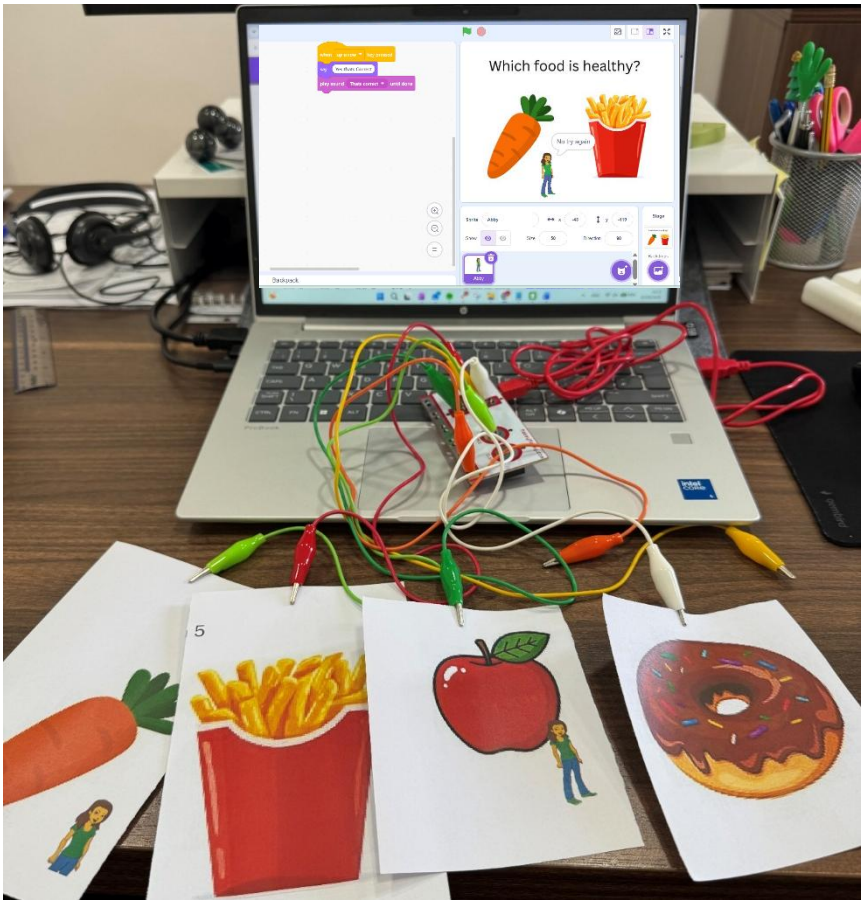
5. Change the two food cards, then ask the student to touch the “Next” card to see the next pair. Continue until all five pairs are completed.

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.
- Show the student how to hold the ground cable and touch a card before they play on their own.
- Prepare the cards for all five pairs in order before the session, so changing them is quick.
- After each pair, talk briefly about why the healthy food is the better choice.



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