Makey- Makey Games

Scenario 1 – Easy

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

Healthy Plate Builder is a simple, hands-on game that introduces students aged 8–13 with Autism Spectrum Disorder (ASD) to the basics of healthy eating. Students touch printed food cards that are connected to a Makey Makey board. Each touch triggers a short message on the screen, together with a sound, about one food group: vegetables, rice, chicken or fruit.

The game is built in Scratch, a free visual block-coding platform, and uses Makey Makey to turn the food cards into touch buttons. No keyboard or mouse skills are needed to play.

1.2 Goal of the Game

The goal is to help students understand the basics of healthy eating and recognise the nutritional value of different food groups. Using Makey Makey and Scratch, students explore vegetables, rice, chicken and fruit through simple physical interaction and clear visual information.

1.3 How the Game Is Played

The student holds or touches the ground (Earth) cable and then touches one of the food cards:

Card touched	**Makey Makey input**	**What appears on screen**
Plate / introduction card	Space	A short introduction to healthy eating and why we should eat a variety of foods
Vegetables	Up arrow (↑)	Vegetables give us vitamins and minerals
Rice	Down arrow (↓)	Rice gives us carbohydrates for energy
Chicken	Right arrow (→)	Chicken gives us protein for strength

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Fruit	Left arrow (←)	Fruit gives us vitamins and fibre

The student begins by touching the card connected to Space, which shows a short introduction to healthy eating. They can then explore the four food cards in any order and revisit them as often as needed. Each choice shows the food on the plate, a short message in a thought bubble, and plays a soft sound.

1.4 Why This Game Works for Students with ASD

- Hands-on interaction: students physically touch the food cards and receive immediate visual and audio feedback.
- A limited number of choices (five cards) keeps the activity clear and predictable.
- Large visuals and short, simple messages make the information easy to follow.
- Students can explore at their own pace and repeat any card as often as they like.
- Sounds and visuals can be adjusted to each student's sensory preferences and comfort level.

1.5 Learning Outcomes

- Students develop a basic understanding of healthy eating and balanced food choices.
- Students learn about the nutritional value of vegetables, rice, chicken and fruit.
- Students strengthen food recognition by connecting physical food cards with information shown on the screen.
- Students experience immediate visual and sound feedback, supporting interactive learning.
- The game encourages hands-on exploration and independent learning.
- Students are introduced to basic cause and effect, as each card triggers specific information in Scratch.

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/1362327692

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

1. Create a new project on scratch.mit.edu and delete the default cat sprite.
2. Add a backdrop showing an empty plate and the text “Choose your meal – Press Space for info”.
3. Add one sprite for each food: vegetables, rice, chicken and fruit. Position each sprite on the plate.
4. Add one sprite for the introduction (for example, the plate with vegetables).
5. For each sprite, open the Sounds tab and record or upload a short, calm sound or spoken message (for example, a sound called “Vegetables”).

2.3 Hide the Foods at the Start

Select each food sprite and add this script, so the plate is empty when the game starts:

when green flag clicked

hide

2.4 Show the Food When Its Card Is Touched

Select the Vegetables sprite and add the following blocks, in this order:

1. Events: “when [up arrow] key pressed”
2. Variables: “set [Veggies] to 1” (first create the variable with “Make a Variable”)
3. Looks: “show”
4. Sound: “start sound [Vegetables]”
5. Looks: “think [Well done, you chose the vegetables! …] for 11 seconds”

Repeat the same script for the other food sprites, changing the key, variable, sound and message:

Sprite	**Key**	**Example message**
Vegetables	up arrow	Well done, you chose the vegetables! Vegetables give your body vitamins and minerals.
Rice	down arrow	Well done, you chose the rice! Rice is full of carbohydrates, which give your body the energy it needs for playing and learning.
Chicken	right arrow	Well done, you chose the chicken! Chicken gives your body protein to help you grow strong.

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Fruit	left arrow	Well done, you chose the fruit! Fruit gives your body vitamins and fibre.

2.5 Add the Introduction

Select the introduction sprite and add a script that starts with “when [space] key pressed”, followed by “show”, a sound, and a “think” block with the introduction message, for example:

“To give your body everything it needs, choose foods from all food groups: chicken for protein, rice for energy, vegetables for vitamins and minerals, and fruit for vitamins and fibre. This way, you will have strength, energy, and good health every day!”

[Screenshot 3 – Introduction sprite script, at full page width.]

2.6 Test and Save

1. Click the green flag. The plate should be empty.
2. Press Space and each arrow key on the keyboard. Check that the right food, sound and message appear.
3. Adjust the “think … for … seconds” time so the student has enough time to read each message.
4. Save the project (File > Save now) and click “Share” so the link can be opened by others.

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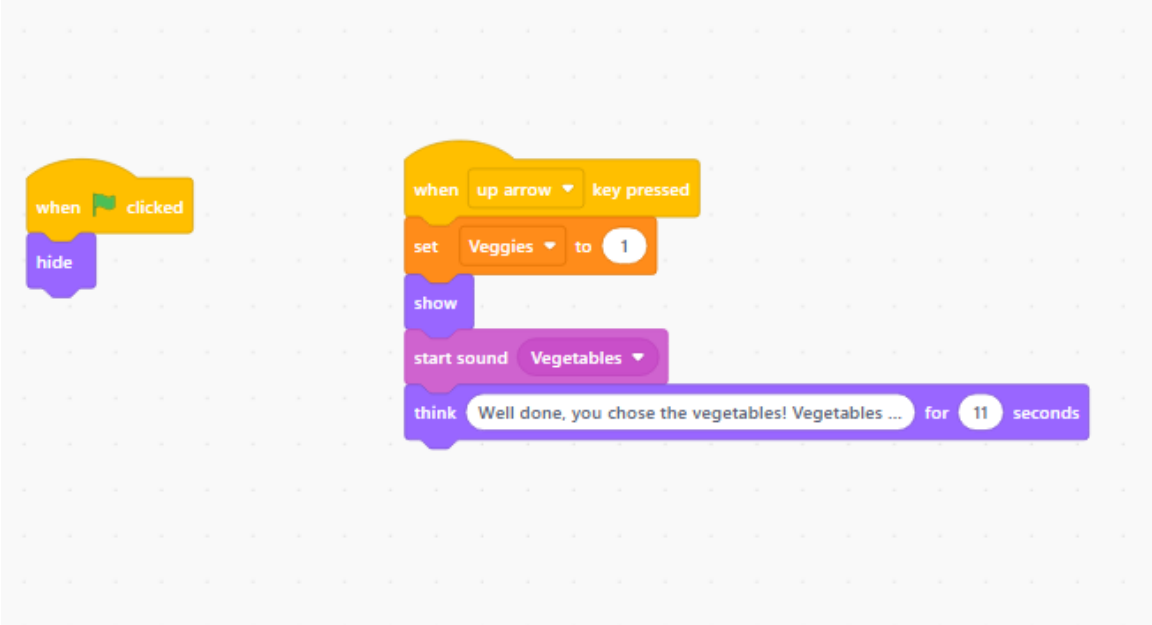

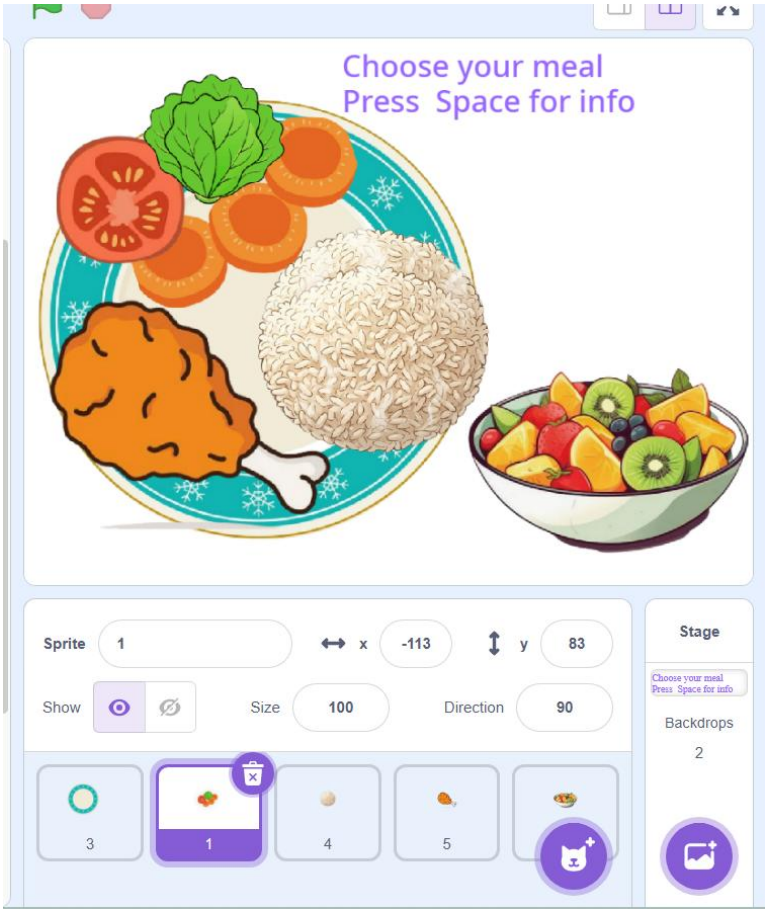

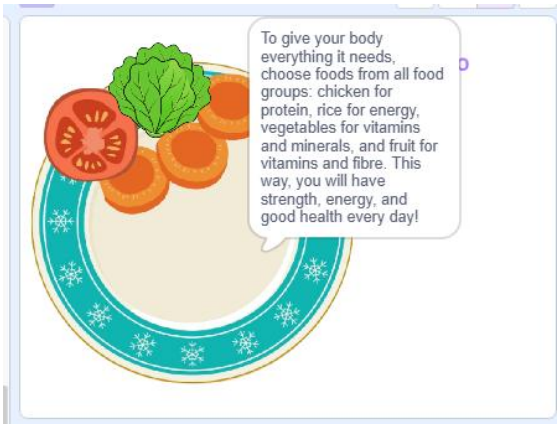

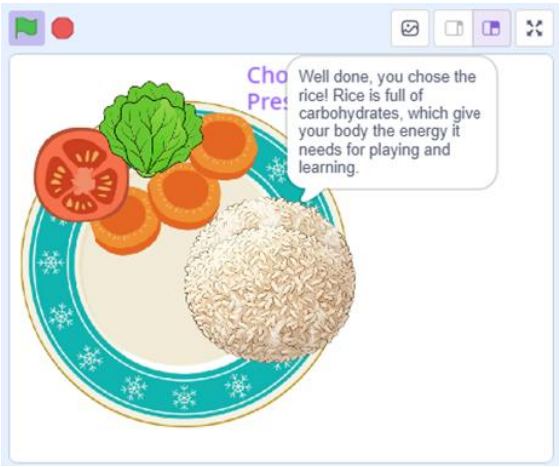

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3. Setting Up the Game Using Makey Makey

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
- Five printed cards: introduction (plate), vegetables, rice, chicken and fruit
- Something conductive for each card, for example aluminium foil on the back of the card or a thick pencil (graphite) area

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 food 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:

Makey Makey input	**Card**
Space	Introduction to healthy eating (plate)
Up arrow (↑)	Vegetables
Down arrow (↓)	Rice
Right arrow (→)	Chicken
Left arrow (←)	Fruit

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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. Ask the student to hold the ground cable with one hand.

3. Invite the student to touch the introduction card (Space) first.

4. Let the student explore the four food cards in any order. Each touch shows the food on the plate with a short message and a sound.

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.

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- Show the student how to hold the ground cable and touch a card before they play on their own.
- Allow students to repeat cards as often as they like – repetition supports learning.

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