



FOR TEACHERS · ROBOTICS

Three lessons with Marty the Robot

Three 45-minute activities with Marty the Robot: algorithms through dance, loops in a maze, and a robot that sorts recyclables by colour. Each has aims, steps, questions and a version without the robot.

Ages: 6–12

Duration: 3 × 45 min

Groups: teams of 3–4

Software: Marty app / MartyBlocks

■ Before the first lesson

- ☐ Robot fully charged; tablet or laptop with the Marty app installed and Bluetooth on.
- ☐ A clear floor space of at least 2 × 2 m, without thick carpet.
- ☐ Team roles, swapped for each activity: **programmer**, **tester**, **reporter** (notes what worked and what didn't), **engineer** (looks after the robot).

About the interface

Marty is programmed with Scratch-style blocks (MartyBlocks) and, for older pupils, in Python. Exact block names may vary with the app version and language; below we describe them by what they do.

■ Activity 1 — Marty's dance (algorithms and sequences)

Aim: pupils understand that an algorithm is an ordered list of steps and that order matters.

- 1 **5 min — unplugged.** One pupil is the "robot"; the others give short commands: "one step forward", "raise your hand". What happens when a command is unclear?
- 2 **15 min — first sequence.** The team programs a 6-move dance: walk forward, turn, kick, eye movement, walk back, dance.
- 3 **15 min — debugging.** Swap two blocks. What changes? Find a bug planted by the teacher.
- 4 **10 min — show.** Each team performs its dance and explains one block.

■ Activity 2 — The maze (loops)

Aim: pupils use a loop instead of repeating the same block many times.

- 1 **Build the maze** on the floor with tape: a route with 2–3 turns.
- 2 **Plan on paper:** how many steps to the first turn? Which way does it turn?
- 3 **Program with simple blocks**, then rewrite using "repeat N times". Count how many blocks you saved.
- 4 **Challenge:** who reaches the end with the fewest blocks?

■ Activity 3 — Marty the recycler (conditions and sensors)

Aim: pupils use an "if... then" condition and a sensor. Needs the colour sensor fitted to the foot.

- 1 **Set-up:** coloured cards — yellow (plastic and metal), blue (paper), green (glass).
- 2 **Program:** Marty steps onto a card and reads the colour. *If* it's yellow, walk left; *if* it's blue, walk right; *otherwise* dance.
- 3 **Test:** shuffle the cards. Does it sort correctly every time? What affects the sensor (light, distance)?
- 4 **Discussion:** this is how robots in real sorting plants "see" — except they use cameras and artificial intelligence.

No robot? The unplugged version

All three activities also work with a pupil playing Marty and cards with arrows as blocks. The concepts — sequence, loop, condition — stay the same.

■ Reflection questions

- What did the robot do differently from what you wanted? Why?
- Where did you use a loop? A condition?
- What would a robot need to know to sort the litter in the school yard by itself?

Marty the Robot is a Robotical product. These activities were designed for the robotics workshops of Asociația Grupul Verde.



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