



Recycling in Scratch: a game in 8 sessions

Pupils build, step by step, a game in which they sort waste into the right bins. They learn programming — events, loops, conditions, variables — and, along the way, how separate collection works.

Ages: 9–13

Duration: 8 sessions × 50 min

Platform: scratch.mit.edu, free

Level: beginners

What pupils build

A game in which items of waste (a bottle, a newspaper, a can, an apple core) fall from the top and the player moves them into the right bin. Every correct sort scores points; a mistake costs a life. At the end the game shows a message about what happens to recycled waste.

Bin (Romania)	What goes in
Yellow	plastic and metal: plastic bottles, cans, tins, bags
Blue	paper and cardboard: newspapers, exercise books, boxes
Green	glass: jars, bottles
Brown	biodegradable: fruit and vegetable scraps

These are the colours used in Romania. Adapt the bins to your local collection rules — this is a good first research task for pupils.

The 8-session plan

#	Topic	What pupils do	Programming concept
1	Meet Scratch	Create an account (or work offline), move a sprite, change the backdrop.	stage, sprites, "move" and "say" blocks
2	The bins	Draw 4 coloured bins and place them at the bottom of the stage.	x and y coordinates, costumes
3	The waste falls	An item starts at the top, from a random position, and falls.	"repeat until" loop, "pick random"
4	Catch and move	The player moves the item left and right with the arrow keys.	"when key pressed" events
5	Right or wrong?	When the item touches a bin, the game checks whether it's the right one.	"if... then... else", "touching colour"

#	Topic	What pupils do	Programming concept
6	Score and lives	Score goes up for correct sorting; 3 mistakes end the game.	variables, operators
7	More waste	Different items appear, faster and faster.	clones, costume lists, changing speed
8	Showcase	An end screen with a recycling fact; pupils play each other's games.	broadcast messages, sharing the project

■ Key code, explained

The falling item (session 3)

```
when green flag clicked
  go to x: (pick random -200 to 200) y: 170
  repeat until <y position < -150>
    change y by -3
  end
```

Checking the sort (session 5)

```
if <touching colour yellow?> then
  if <(costume name) = "can"> or <(costume name) = "bottle"> then
    change Score by 1
    say "Correct! The can becomes a new can." for 1 seconds
  else
    change Lives by -1
    say "Hmm... not here." for 1 seconds
```

Differentiation

- **Fast finishers:** add a level with "trap" items (a battery, which goes in no bin — it goes to a collection point).
- **Pupils who need support:** work in pairs; start from a remix of the basic project and only change the items and messages.

■ Simple assessment

- ☐ The game starts and ends correctly.
- ☐ At least 4 types of waste are sorted correctly.
- ☐ Score and lives work.
- ☐ The pupil can explain one loop and one condition in their code.
- ☐ The end screen contains a correct recycling fact.

No internet or not enough computers?

Scratch Desktop installs once and works offline. Sessions 1–2 also work "unplugged": pupils draw the stage on paper and write the algorithm's steps in words.

Scratch is a free project of the Scratch Foundation. This material is part of the Youth Code Academy curriculum of Asociația Grupul Verde.



Asociația Grupul Verde · Vrancea, Romania · office@grupulverde.ro · grupulverde.ro/en/resources

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