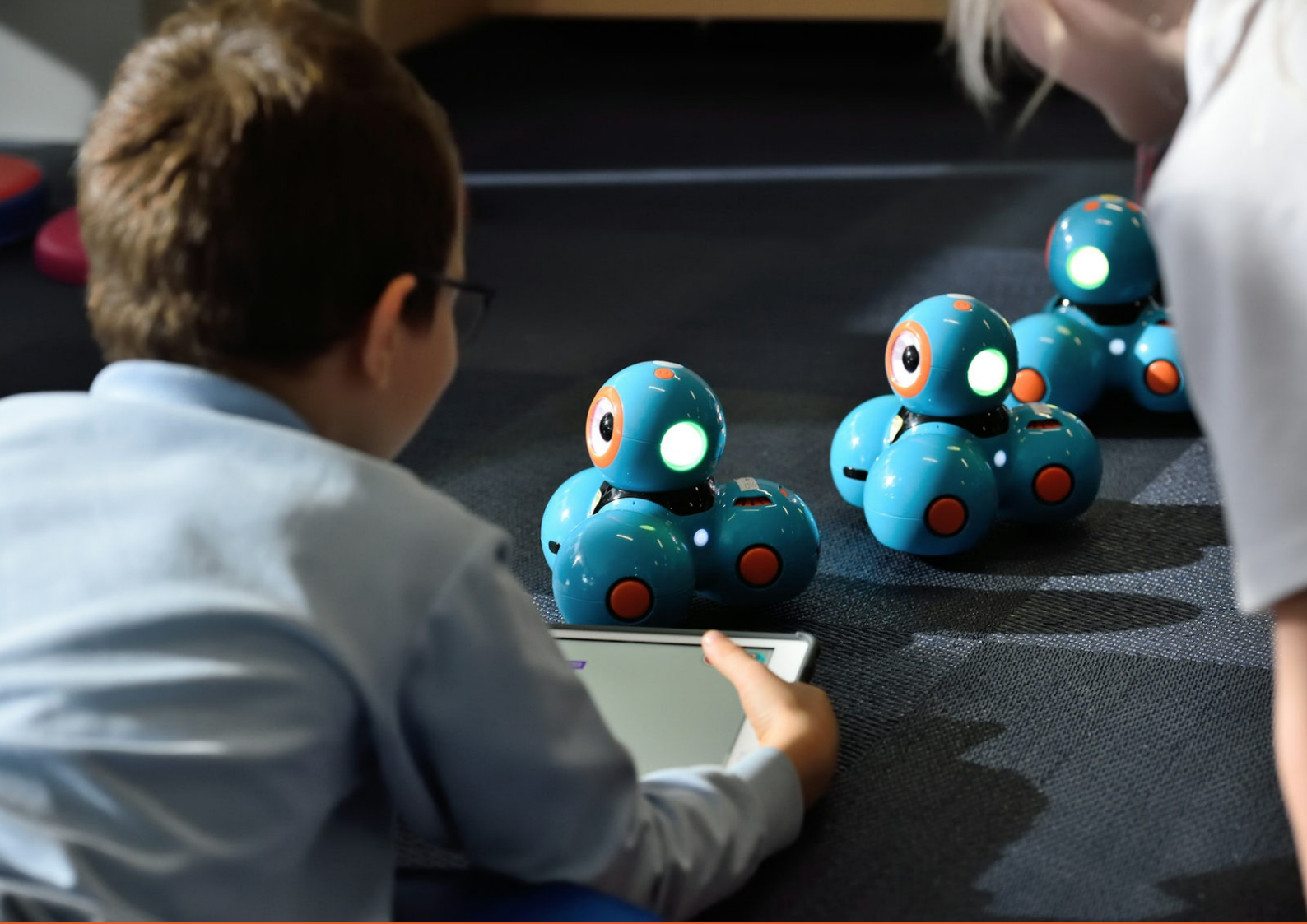




EduTrend Contents

EDUTECH · LEARNING TO PROGRAM ROBOTS · PRIMARY

Blocks That Repeat and Decide

Use loops and if blocks to make a robot patrol and react

Ages 8–11

Level: Developing

50 minutes

Pairs · up to 30

Activity 02

Inside: activity at a glance · step-by-step session plan · facilitator notes · 3 pupil worksheets · assessment checklist

ACTIVITY 02 · AT A GLANCE

Blocks That Repeat and Decide

Using a block-based editor such as MakeCode or the LEGO Education SPIKE app, pairs make a robot drive back and forth in a forever loop. They then add an if block so the robot stops or changes direction when a button is pressed or a sensor is triggered. They test after each change and explain what each block does.

Learning outcomes

By the end of the session pupils can:

- use a loop to repeat actions;
- use an if block to make a decision;
- test after each change;
- explain what blocks do.

KEY WORDS

block · loop · forever · if · condition
· event

CURRICULUM LINKS

Maths: logic. English: explaining.
Science: sensors.

1**SENSE**

What can it detect?

2**THINK**

What should it
decide?

3**ACT**

What should it do?

4**TEST**

Run it

5**DEBUG**

Find and fix

6**IMPROVE**

Make it better

Materials (per pair)

- Robot kit or micro:bit buggy
- Device with a block-based editor
- Worksheets 1, 2 and 3

Before the session

- Check devices and connections.
- Prepare a starter program.
- Mark patrol zones.
- Print worksheets.

SAFETY

Run robots only in the patrol zone. Keep fingers
away from wheels.

ACTIVITY 02 · SESSION PLAN

Step by step

Test after every small change so pupils know which block caused a problem.

Time	What happens	Say or ask
0–8 min Hook	Show a patrolling robot.	<i>"How does it keep going?"</i>
8–22 min Loop	Program a patrol.	<i>"What repeats?"</i>
22–38 min Decide	Add an if block.	<i>"What is the condition?"</i>
38–45 min Debug	Fix problems.	<i>"Which block caused it?"</i>
45–50 min Explain	Explain the program.	<i>"What does each block do?"</i>

CHALLENGE CARD (print or copy onto the board)

Program a robot to patrol using a loop and react to a button or sensor with an if block, testing after each change.

ACTIVITY 02 · FACILITATOR NOTES

The programming know-how in brief

Block-based editors let pupils drag commands together without worrying about spelling or syntax. A forever loop repeats actions; an if block checks a condition and runs code only when it is true.

Testing after each small change makes debugging easier, because if something breaks, the last change is the likely cause.

Common ideas to listen for

- “The if block checks once.” Inside a loop it checks again and again.
- “More blocks is better.” Clear, short programs are easier to fix.
- “The robot ignored me.” Check the condition.

Adapting the activity

Support

Provide the loop and add only the if block.

Stretch

Add an else block with a different action.

WORKSHEET 1

Blocks used

Name: _____

Class: _____ Date: _____

What does each do?

Blocks used

Block	What it does
1	
2	
3	
4	

WORKSHEET 2

Tests

Test after each change.

Tests

Change	What happened	Fixed?
1		
2		
3		
4		

WORKSHEET 3

Explain

Explain your program.

How my robot patrols and reacts

FOR THE TEACHER

Assessment checklist

Use during the session. One sheet covers up to eight pupils; copy as needed.

Pupil	Uses loops	Uses conditions	Tests incrementally

Suggested codes: W = working towards · E = expected · G = greater depth

ABOUT THIS ACTIVITY

Blocks That Repeat and Decide is a sample activity from the EduTrend Contents Edutech Learning to Program Robots programme (primary, level: developing). Every activity in the programme follows the same format: a practical challenge, a clear session plan, facilitator notes and ready-to-print worksheets, so that teachers, club leaders and parents can run it without extra preparation.

Full 15-, 20- and 32-week programmes are available from EduStore at edutrend.org.

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