

ACTIVITY 01 · AT A GLANCE

Robot Route

In pairs, one pupil writes instructions (forward, turn left, turn right) to guide a partner from start to finish on a floor grid. The partner follows them exactly, without guessing. When the route goes wrong, the pair finds the faulty step and fixes it. The class then compares routes for length and clarity.

Learning outcomes

By the end of the session pupils can:

- write a sequence of instructions;
- follow an algorithm exactly;
- find and fix a bug;
- compare algorithms.

KEY WORDS

algorithm · sequence · instruction ·
bug · debug · efficient

CURRICULUM LINKS

Maths: position, direction and turns. English: clear instructions. PE: moving on a grid.

1**EXPLORE**

How does it work?

2**DECOMPOSE**

Break the problem
down

3**DESIGN**

Plan the steps

4**BUILD**

Make or program it

5**DEBUG**

Find and fix errors

6**REFLECT**

Is it the right tool?

Materials (per pair)

- Floor grid (chalk or tape, 5×5)
- Start and finish cards
- Arrow cards
- Worksheets 1, 2 and 3

Before the session

- Mark grids on the floor or playground.
- Place obstacles on some squares.
- Print arrow cards.
- Print worksheets.

SAFETY

Walk, do not run, on the grid. Keep the grid area clear of bags and chairs.

ACTIVITY 01 · SESSION PLAN

Step by step

Insist that “robots” follow instructions literally; that is what makes bugs visible.

Time	What happens	Say or ask
0–5 min Hook	Teacher acts as a literal robot.	<i>“Why did I walk into the wall?”</i>
5–15 min Write	Pairs write a route.	<i>“Is every step clear?”</i>
15–25 min Test	Robots follow exactly.	<i>“Where did it go wrong?”</i>
25–35 min Debug	Fix faulty steps and retest.	<i>“Which step was the bug?”</i>
35–40 min Compare	Shortest and clearest routes.	<i>“Which algorithm is best?”</i>

CHALLENGE CARD (print or copy onto the board)

Write an algorithm that guides a robot partner from start to finish around obstacles, test it and debug it until it works first time.

ACTIVITY 01 · FACILITATOR NOTES

The computing know-how in brief

An algorithm is a precise sequence of steps to solve a problem. Computers follow instructions exactly, so any missing or wrong step causes an error, called a bug.

Debugging means finding and fixing bugs by testing step by step. Different algorithms can reach the same goal; some are shorter or clearer than others.

Common ideas to listen for

- “The robot knows what I mean.” It follows only what is written.
- “A bug means I failed.” Debugging is normal work.
- “There is only one right answer.” Many algorithms can work.

Adapting the activity

Support

Use arrow cards instead of writing.

Stretch

Use repeat blocks, such as “forward ×3”.

WORKSHEET 1

My algorithm

Name: _____

Class: _____ Date: _____

Write each step.

My algorithm

Step	Instruction
1	
2	
3	
4	
5	
6	
7	
8	

WORKSHEET 2

Debugging

Record bugs and fixes.

Debugging

Step	What went wrong	Fix
1		
2		
3		

WORKSHEET 3

Compare routes

Which algorithm was best and why?

Our comparison

FOR THE TEACHER

Assessment checklist

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

Pupil	Writes clear steps	Finds and fixes bugs	Compares algorithms

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

ABOUT THIS ACTIVITY

Robot Route is a sample activity from the EduTrend Contents Edutech Technology programme (primary, level: foundation). 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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