



Year 1: Computational Thinking with Cubetto
Unit 1: Lesson 7: Cubetto Goes Bowling

- 6 Cubettos and 6 Boards
- 6 City Maps
- 6 Sets of Blocks (with 19 blocks in each)

Cross-curricular area:
Maths

NC Objectives

To debug a simple algorithm

Preparation Needed

- Check batteries.
- Create algorithms for children to debug (make Cubetto knock down two adjacent pins on the map).
- Create and copy score sheet.
- Label 'pins' numbers 1- 4.

Key Vocabulary

Bowling pins
Score
Algorithm
Debug

Challenge

Use the random block in an algorithm for a friend to debug.

Outcomes

- I can solve addition problems
- I can debug an algorithm

Teacher-led introduction

1. Sit in a circle with Cubetto, Board and map in the middle.
2. Ask: When did you last go bowling? Can you explain in one sentence how to bowl?
3. Show the **bowling pins** and ask pupils to read the numbers on them.
4. Explain that Cubetto is going bowling with friends but needs the children's help: the computer is broken so Cubetto has to work out the **score** in his head!
5. Place the four pins in the middle and explain that to work out his score, Cubetto needs to add up the numbers on the pins he knocks over.
6. Ask: If Cubetto has a score of five, which of the bowling pins will he need to knock over? Take suggestions and discuss.
7. Place the pins to make five (e.g. three and two) on the map next to each other and place Cubetto on your starting point.
8. Show the prepared **algorithm** and ask: Where do you predict this will take Cubetto? Will he knock down the pins to score five? Discuss.
9. Run the algorithm and watch together as he misses one/more pins. Introduce term **debug** to work out what's wrong and fix the problem.
10. Ask pupils to talk in pairs about what they think the problem is and ask volunteers to try and fix it by moving/replacing blocks.

Guided activity

1. Ask: If Cubetto wants to score six, which pins can Cubetto knock over? Take suggestions and discuss as a group.
2. Place the chosen pins on the map next to each other and Cubetto nearby. Show the prepared algorithm for the children to look at.
3. Ask: Do you think this will make Cubetto score six by knocking over the pins? Encourage pupils to predict and look for bugs/problems.
4. Allow time for pupils to run algorithm, discuss predictions, then debug and test out their algorithm.
5. Repeat for score of seven.
6. Ask: What happens when you use the black block? Encourage children to run the algorithm several times to note that it's unlike the other blocks – we can't predict what it will do! Allow time for exploration.

Independent activity

1. On the bowling pins score sheet, write in two numbers that would give Cubetto a score of ten.
2. On the next set of pins, write in two numbers to make a score of twelve.
3. Which three numbers would make nine? You can use the same number more than once!
4. List all the ways that you can make ten using two numbers.

Computational Thinking

Concept
Algorithms

Approach
Debugging

Resources Provided

Resources Needed

- 'Bowling pins' (plastic bottles)
- Labels and pens
- Bowling pins template score sheet



Creative Play

Make a bowling lane for Cubetto to travel along.

Plenary and assessment

1. Ask: If Cubetto wants to score ten, which bowling pins will he need to knock over? Write up all correct combinations.
2. Ask volunteers to share how they debugged the algorithms to make Cubetto score.
3. Ask: What kind of bugs did you find in the algorithms? *Missing blocks, wrong blocks, mixed up blocks.*
4. Ask: Did anyone work out what the black block does? Model using the block and explain that **random** means we can't predict what it will make Cubetto do – it's a surprise every time!