

Learning Design for: The Mysterious image

Mariangela De Gobbi

CONTEXT

Topic: Coding

Total learning time: 120 minutes

Number of students: 20 (8-9 years old)

Description: An introduction to programming without the use of computers. This activity is based on "Graph Paper Programming" unplugged activities by Code.org

AIMS

Begin to understand what an algorithm is and what a program is. To introduce primary children to computing learning how to write clear and exact instructions. To make children understand and practice in decomposing problems into smaller parts.

OUTCOMES

Application: 1) Children will be able to create algorithms and programs from drawing. 2) They will be able to follow a given program and make the drawing.

Comprehension: Students show to have understood the concepts of algorithm and program by answering some multiple-choice questions that ask to select the appropriate example of algorithm or program.

TEACHING-LEARNING ACTIVITIES

Discuss

5 minutes 20 students Tutor is available

The teacher begins by asking the class if anybody ever heard speaking about robotics. What is a robot? Does a robot really understand what people say? The pupils speak about their experiences and their opinions. The teacher concludes observing that a robot, in order to complete a task, need to have a precise sequence of instructions.

Read

10 minutes 20 students Tutor is available

The teacher introduce the activity and explains to the pupils that they are going to guide each other toward making drawings without letting the others see the original image; some children will pretend to be a drawing machine. The teacher suggest a video showing a drawing machine.

Practice

15 minutes 20 students Tutor is available



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The teacher shows on the Interactive whiteboard the activity: selects a simple drawing in a chart of 3x3 as an example, to begin with he fills in the graph, square by square, then asks the children to describe what he has just done. Together they find the algorithm in words. Then, all the children with the teacher translate the words of the algorithm into the code of arrows. The chart is cleaned, the image cancelled. Individually, children come to the board to run the instructions and debug the program.

Map:

Produce 10 minutes 20 students Tutor is available

The teacher choose an image but doesn't let the children to see it and write on the whiteboard the "program" to draw it. The students pretend to be a human robot and run the instructions using the arrows to represent the image selected by the teacher.

Collaborate 10 minutes 2 students Tutor is not available

Students in pairs. Each pair choose an image from the worksheet. (Four-by-Fours Activity Worksheet, see resource attached) They decide together with the partner the algorithm and then the "program" code for other pupils to draw.

Practice 10 minutes 2 students Tutor is not available

Students swap programs with another pair and draw one another's image.

Show:

Discuss 5 minutes 4 students Tutor is not available

Flash Chat: What did we learn? Find other examples of algorithms

Discuss 5 minutes 20 students Tutor is available

One student for group tells others the reflections of his group.

Make:

Produce 20 minutes 2-4 students Tutor is not available

In small groups, students try making up their own images and finding the program to draw it. They swap their program and run them.

Notes:

Thinking about inclusion: the teacher pay a special attention to form groups and pair to give each one the possibility to participate.

[View this lesson plan online.](#)

This lesson plan was created as part of the online course [How to Teach Computing: An Introduction to](#)



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