

EARLY Teaching Scenario - Get to know the Sphero Bolt by block programming

Topic: Sphero Bolt –Get to know the Sphero Bolt by block programming

Learning outcome:

Learn how to:

- advance with the Sphero Edu app
- aim the robot (calibrate)
- program the robot with blocks
- plan and implement a track
- understand the angles, with help from the protractor
- understand the relationship between speed, time and distance
- use as few blocks as possible

Curriculum

Finnish curriculum

Programming is a part of mathematics and crafts and at the same time forms part of the ICT-competence, which is one of the seven key competence in the Finnish curriculum. Illustrated here next in the picture.

Applying the 7 key competences



Target group: beginners to intermediate level, pupils in primary school

Age of students / School level: from 10 years- (3rd grade)

Number of pupils: maximum of 20

Duration (estimated time/number of lessons): 3 x 45 minutes

Prerequisites (necessary materials and online resources):

- Ipads/tablets/mobile phones with the Sphero Edu app downloaded
- Spheros
- paper and coloring pencils
- floor space
- cones or other marking tools
- exact starting point
- tape

Introduction to the scenario (*incl. possible applications, alternatives, and risks*):

- it is preferable working in pairs or in groups no more than four pupils
- it is also preferable that the pupils work in the same pairs or groups throughout the whole scenario
- the Sphero robot is durable but don't drive it down the stairs or in high speed towards a wall

Before the program begins (preparatory work for teacher):

- charge the Ipads and Sphero before the lesson
- divide the pupils carefully into groups
- book the space needed in advance
- divide the room into sections, as many as the number of groups
- collect all the necessary equipment needed

The main part of the scenario (three lessons):

Lesson one

- Preparations: prepare a simple track for each group or pair.
 - This lesson is also possible to implement in narrow spaces, using chairs or table-legs as obstacles.
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1. Grab an Ipad and open the Sphero Edu app, use the guest account, and connect a Sphero.
 2. Add a new project, name it, and choose the block function.
 3. Let the pupils program the Sphero around the simple track that is prepared. Focus on the movement blocks first. Use the protractor which is included in the charging box.
 4. Let the pupils make some small changes to the track. Program again.
 5. Evaluate the lesson

Examples:

- What did you learn today?
- What was challenging?
- What do you want to learn next?

Lesson two

Preparations:

- For this lesson, you need more space, for example the gym for physical education.
- Divide the space into sections and give each group or pair a space of their own.

1. Let the pupils draw their own track on paper. Plan to include colors and sounds in the programming.
2. Build the track and program it, show it to the teacher. **It is important for the teacher to emphasize that the robot always needs to start from the exact same spot.**
3. If there is time left of the lesson: let the groups or pairs switch tracks and program each others tracks.
4. Evaluate the lesson

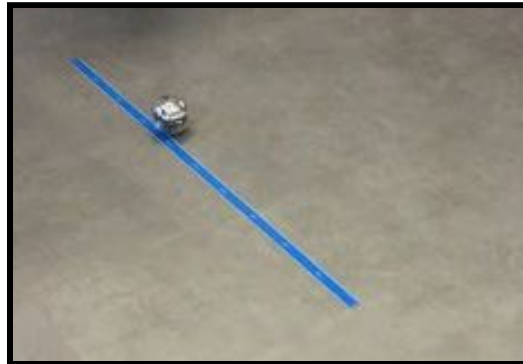
Examples:

- What did you learn today?
- What was challenging?
- What would you do in a different way?
- What do you want to learn next?

Lesson three

Suggestions for the lessons coming next:

- A. Drive one meter in different ways by changing speed and time in the movement block. Use the measuring tape which is included in the charging box.



- B. Give the pupils a task to 1. plan a maze 2. enlarge it and tape it on the floor. Use block programming to solve the maze.



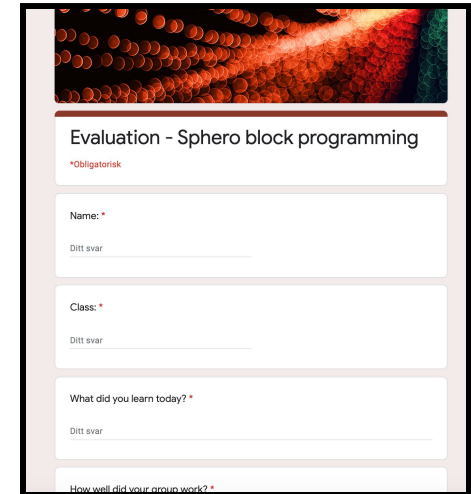
[Evaluating example with an evaluation form.](#)

Summary (knowledge, skills, understanding):

1. Students will know:
 - The most important things about how the Sphero Bolt is used with blocks

2. Students will be able to:
 - explore the Sphero Edu app
 - move the Sphero in different ways (drive and draw)
 - collaborate with other pupils
 - evaluate their work

3. Students will understand:
 - at which different speeds the robot can move
 - how the Sphero reacts on commands from the app
 - how big the drawing space is compared to the reality



The image shows a screenshot of a digital evaluation form. At the top, there is a decorative header with a bokeh light effect in shades of orange and red. Below the header, the title 'Evaluation - Sphero block programming' is displayed in a dark font. Underneath the title, the word '*Obligatorisk' is written in a smaller, red font. The form consists of several input fields, each with a label and a 'Ditt svar' (Your answer) prompt. The first field is labeled 'Name: *'. The second field is labeled 'Class: *'. The third field is labeled 'What did you learn today? *'. The fourth field is labeled 'How well did your group work? *'. The form is presented in a clean, modern style with a light gray background and rounded corners.