Erasmus+

EARLY

EARLY Teaching Scenario

Topic: Mathematics and IT(programming) with Dash robot

Aim(s): Students learn how to:

- program Dash in Blockly app
- make Dash move around by using forward, backward, turn left and turn right blocks in Drive
- estimate distance, degrees and speed
- use addition
- collaborate and take both wins and defeats
- assess their own learning

Skills pupils develop during the scenario: connect to curriculum →

The National Curriculum Guide for Compulsory School, IT, states that by the end of class 7, students should be able to:

- use electronic study material in various forms in connection with work technology, work methods and other learning
- show independence in guided and collaborative work
- use different technological equipment in an advantageous and varied way
- new electronic and interactive study material in a variety of ways

The course components that are trained in the project are as follows:

- programming
- degrees/angle
- metric units
- addition
- Problem solving
- Collaboration
- to rejoice with others
- self evaluation

Target group: beginners level, pupils in primary school

Age of students: Ca 9-12 years

Number of pupils: Four pupils with each set of play, number of robots determines the number of sets

Duration (estimated time/number of lessons): 1X60 (or 2X40) minutes

Prerequisites (necessary materials and online resources):

- Four Ipads with the Blockly App
- Two Dash robots for each set of play
- Cards with numbers
- Good space on the floor
- Starting line on the floor

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

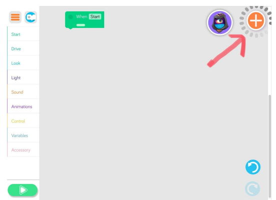
- It is ideal to work this project in pairs, two pairs together in one game
- Note that "competitors" are always below the starting line and they are not allowed to move the Dash manually after the game begins
- Have a good look at this video https://youtu.be/zMeKHvBU_Z4 with students before starting the numbers game, where things are explained fairly well.

Before the program begins (preparatory work for teacher):

- Print and plastic 20 tickets (approx. 10x15 cm) with the numbers 10-200.
- Four iPads, fully charged and with the Blockly app.

Main part of the scenario (60 min lesson):

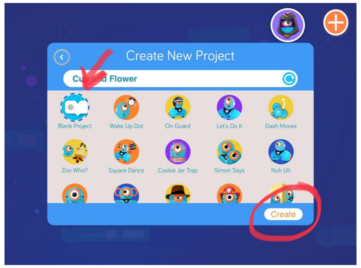
Teacher shows students the video https://youtu.be/zMeKHvBU_Z4 and explains the game to students. Then he distributes tickets with numbers 10-200 on the floor.

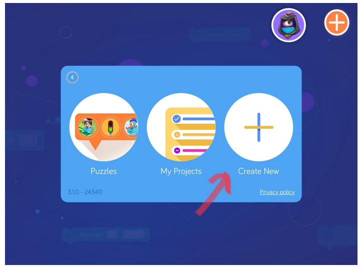


Students connect the iPad and Dash in the Blockly app by selecting the plus in the upper right corner and choosing the right Dash.

Then they line up Dash Robots with the starting line and decide which pair should begin. The couple will agree on which number on the floor will be selected first and get started.

In the Blockly app, they select “Create New”, Blank Project ”and“ Create





”.

They need to guess the correct distance (50-100cm) to the number ticket they chose and see if Dash needs to be bent and then by how many degrees. The blocks in “Drive” are used in the number game; Forward, Backward, Turn Left, and Right.

Before pressing the Start button, they need to announce loudly and clearly what number they are going to reach. If the programming is successful and Dash touches the number they intended to reach, they may keep the number card, and they collect numbers until everyone is done. If Dash does not touch the card, do not move anything, the robot is always programmed from the last stop.

Note. Players should always stay below the starting line during the game.

It often takes students a few turns to learn the game well, realize the length and degrees, but then the excitement increases as the game progresses.

At the end of the game, the numbers on the cards are added up and the team with the higher number is the winner.

When the game is over, it is good to have students evaluate the lesson. For example:

What did you learn today?

What was difficult?

What was easy?

What do you want to learn next with Dash?

Summary (knowledge, skills, understanding):

Students understand:

- How Dash is managed with block programming

Students can:

- Browse and get to know the Blockly app
- Move Dash in different ways with blocks in the Drive section of the app
- communicate/collaborate with other students
- Evaluate their work

Students learn:

- How long one meter is
- To adjust the size of the corners in degrees
- How Dash responds to commands from the app
- Working with others
- To rejoice and take victory/loss