Diversity in STEM Teaching

SCIENCE ON STAGE TURKU 2024

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Inclusive robotics through PBL-case-based learning

The project helps to develop technical skills through design and programming for children with special educational needs. It includes game tasks from simple to complex. The children work with 4 cases related to each other to create a robot bug. The cases include describing bugs and inventing stories about them, creating a bug robot from improvised materials, using Scratch components to program and control the robot, as well as creating a bug robot on the Arduino platform with writing a program in C++. Children actively participate in creativity in a team of peers.
All this makes a significant contribution to the social and physical rehabilitation of children.

1 BUGS:

How do they live? What do they eat? How do they fly?

Biology, Knowledge of the World, Natural Science

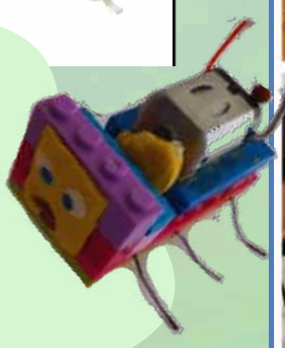
Video “Insects. Bugs.”

2 VIBRO BUG

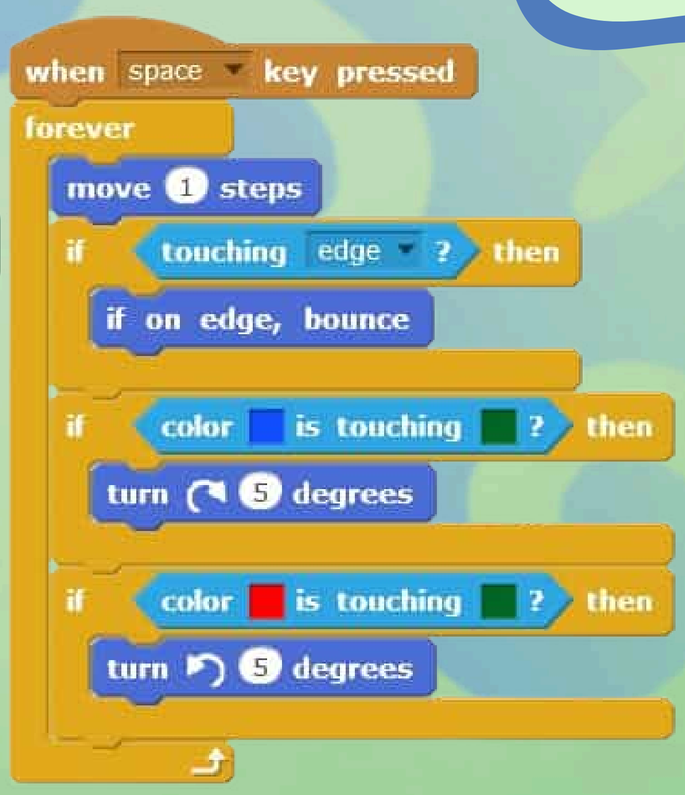
The simplest vibro bug
Required tools:
1)Mini phone or joystick motor
2)Battery
3)Paper clips
4)Thermo glue or double sided tape
5)Rigid foam

Physics, mechanics

Creating a vibro bug



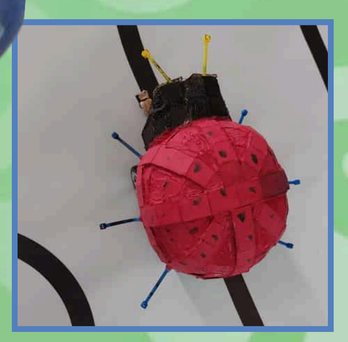
3 SCRATCH BUG

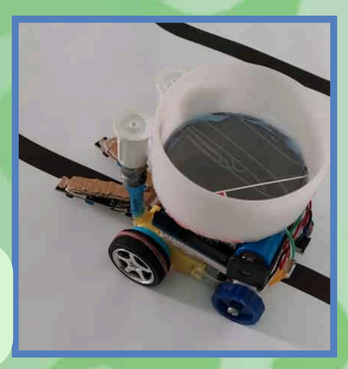


Robotics... without robots. Algorithmization and programming

4 ARDUINO BUG

Bug movement along a line





Logic. Engineering thinking. Programming.

The introduction of inclusive robotics is aimed at developing creative and technical skills.Children expand and deepen their knowledge in various subject areas.