
LEGO Robots for Classroom Experiments

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Abstract

LEGO Mindstorms NXT Kit with programmable NXT Brick and variety of sensors is an interesting tool for programming and projecting various robots in many different subjects - science, technology and math. Students can put their knowledge into practice by building smart robots, collecting data and presenting their results. They are challenged to solve problems and make up their own new ideas. Behind programmable LEGO there is the classical constructionist idea - children learn best by doing things, especially if they are engaged in common project. Lego programming environment is designed to create icon-based programs that instruct NXT sensors and motors.

Since year 2000 programmable LEGO kits have been distributed to many schools in Slovakia. Each year new teachers can attend courses to learn how to use LEGO kits in the classroom. Working with LEGO helps to develop communication and relationships between students in the classroom as well as between students and the teacher.

Activities with robot in detail

Participants of the workshop will work in several 3-people groups. Each group shall complete their own robot developed for special purpose. Tasks will differ among the groups therefore robots should be completed by adding different sensors. After constructing the robot the group will program the robot by instructing it with a short program that will accomplish the given task.

Examples of simple tasks for robots:

1. Go forward. If there is a noise, change the direction of movement.
2. Go forward. If there is an obstacle, change the direction.
3. Go forward. If you bump into the wall, move back.

Follow the black line. If you find the light area, stop.

Keywords

LEGO, robot, programming, sensor, NXT