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The Mobile Model of the Solar System with Photon and SkriBot robots – Project description

The project involves making a mobile model of the Solar System with Photon robots and SkryBot, reproduced on a scale ensuring the location of all the planets on the small space - e.g. a gym. The planets of the solar system were printed in a school 3D printer, painted and then mounted on the Photon robots. Most of the books and other commonly available materials show the planets in scale, but only in relation to each other, without maintaining their relative distance from each other.

Showing this on a physical model, at the appropriate scale, will have an impact on imagination and made us think.



The presentation of each planet as a moving Photon robot on the chosen orbit, equipped with a model of a given planet, will have educational function for primary and secondary school students.



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The Mobile Model of the Solar System with Photon and SkriBot robots – STEAM in the project

The idea evolved as the project developed. By maintaining flexibility, we were able not only to implement all the activities we had started, but also to develop and enrich the project with content and ideas resulting from the initiative of both teachers and students themselves. It is the element of the project that is considered to be the most important and the most valuable.

The activities that we managed to carry out can be divided into two main groups, i.e. the activities of class 3A students and the activities of a selected five-person group of 8th class students. According to the rule that children learn best through playing and experience, the STEAM work method was used, that combines these two aspects. The combination of both groups in this project resulted in the following effects.

Examples of what children did during the classes

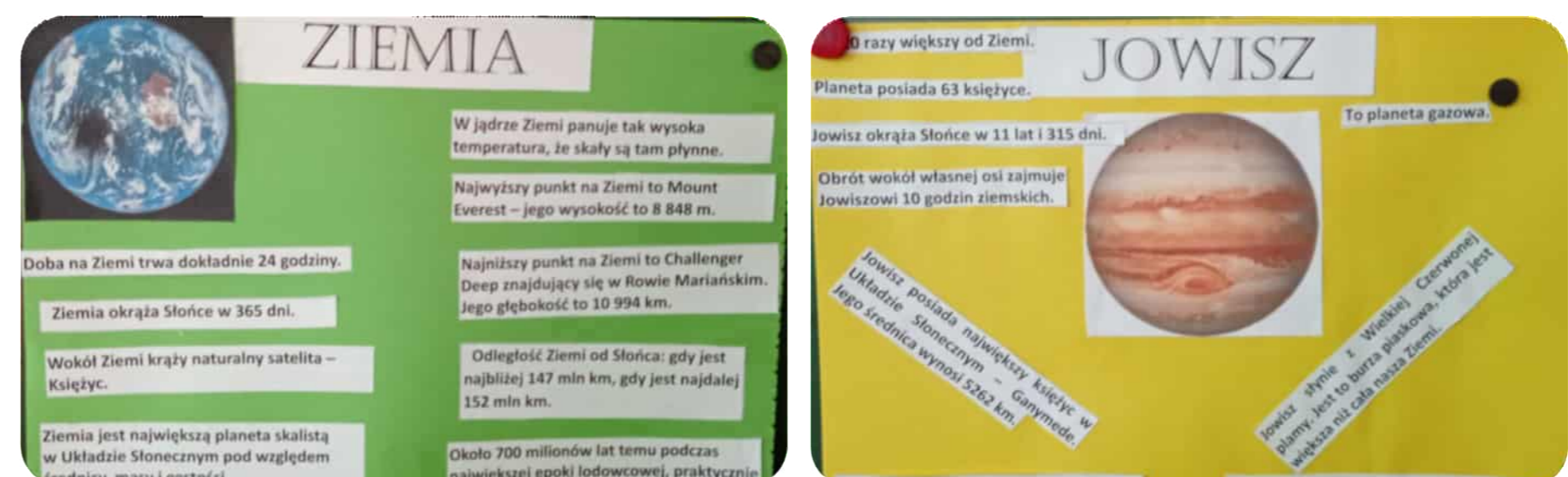
Masks for the Photon robots



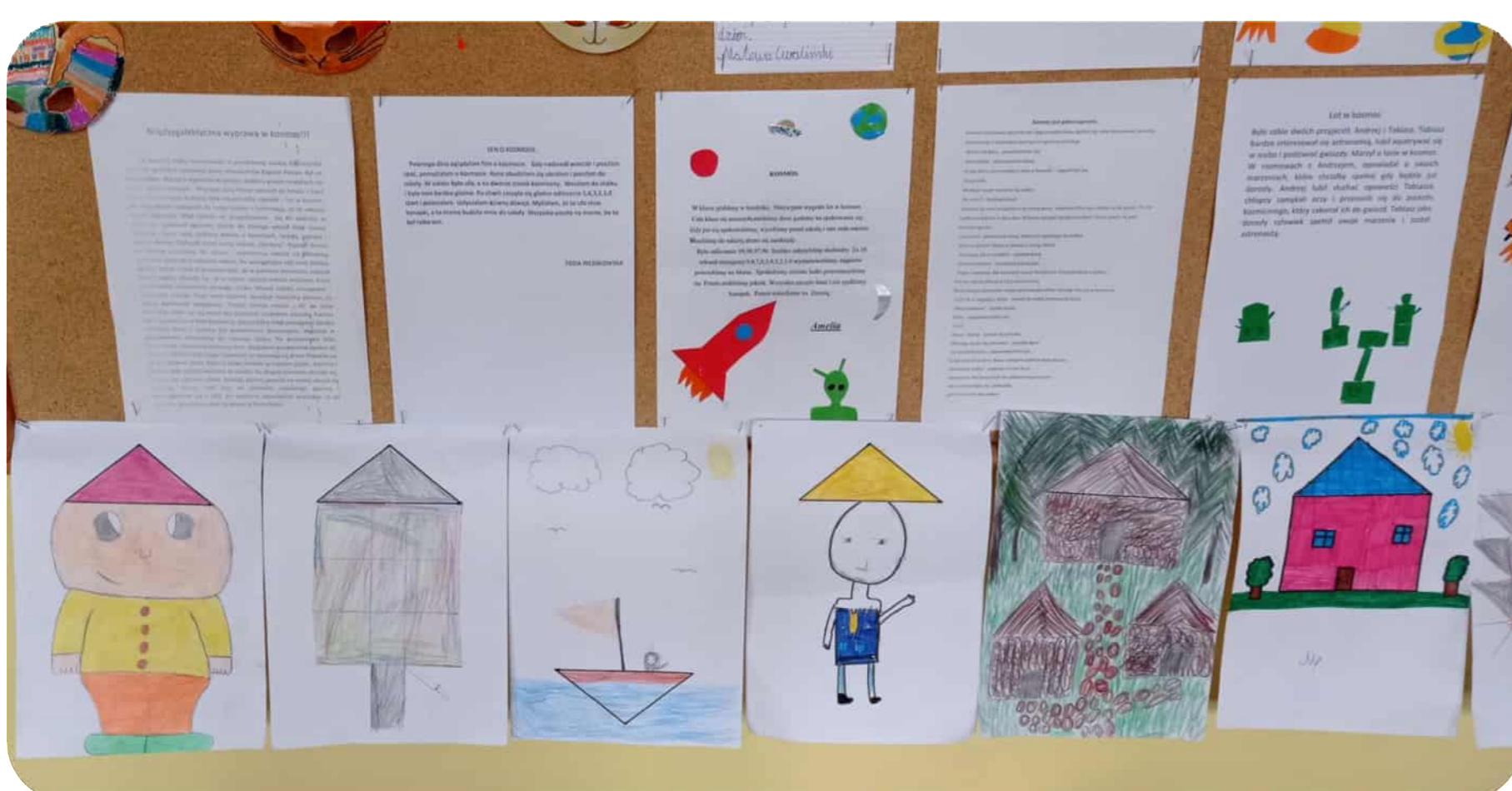
LapBooks



Posters



The story „The cosmic adventure”



Models of the Solar System



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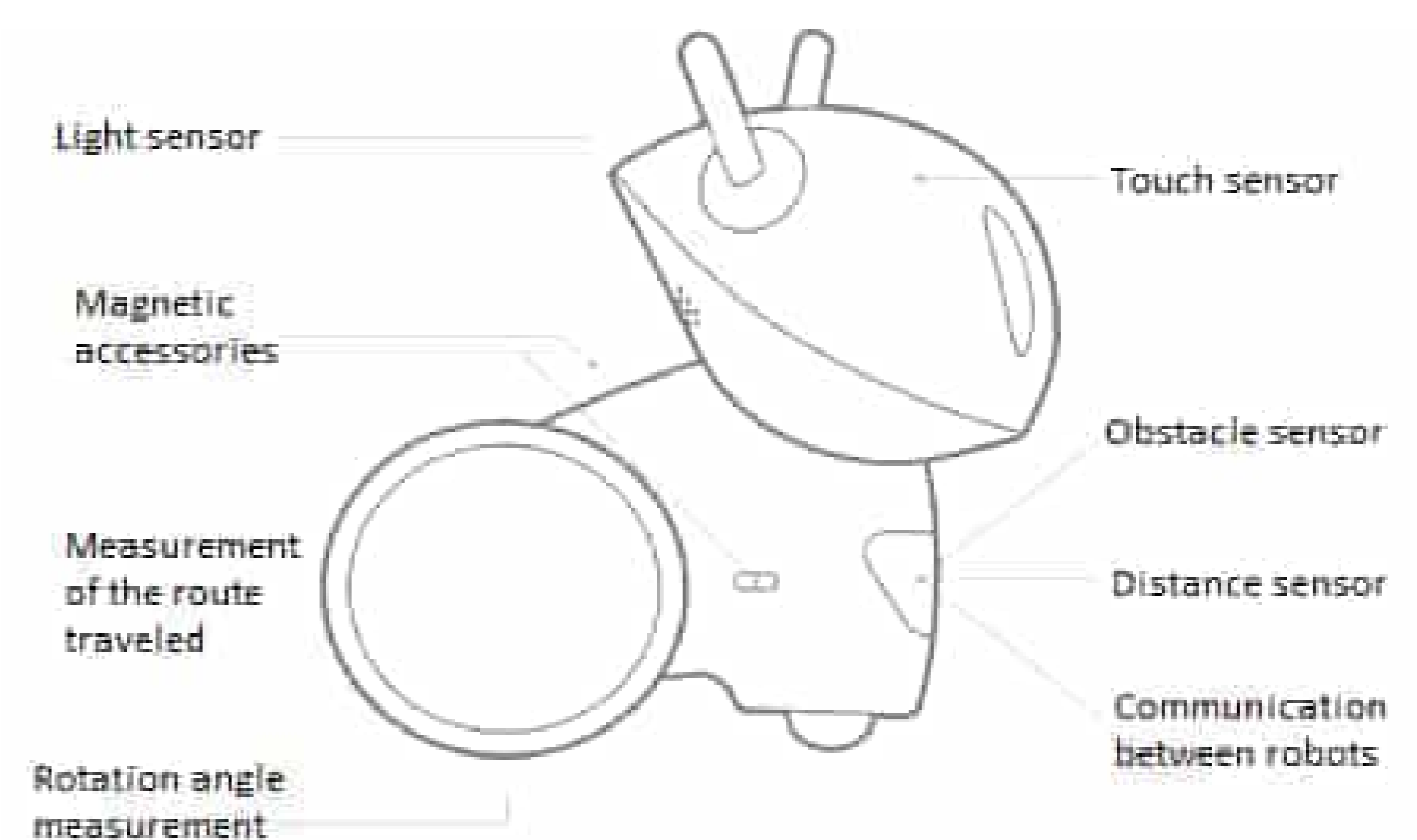
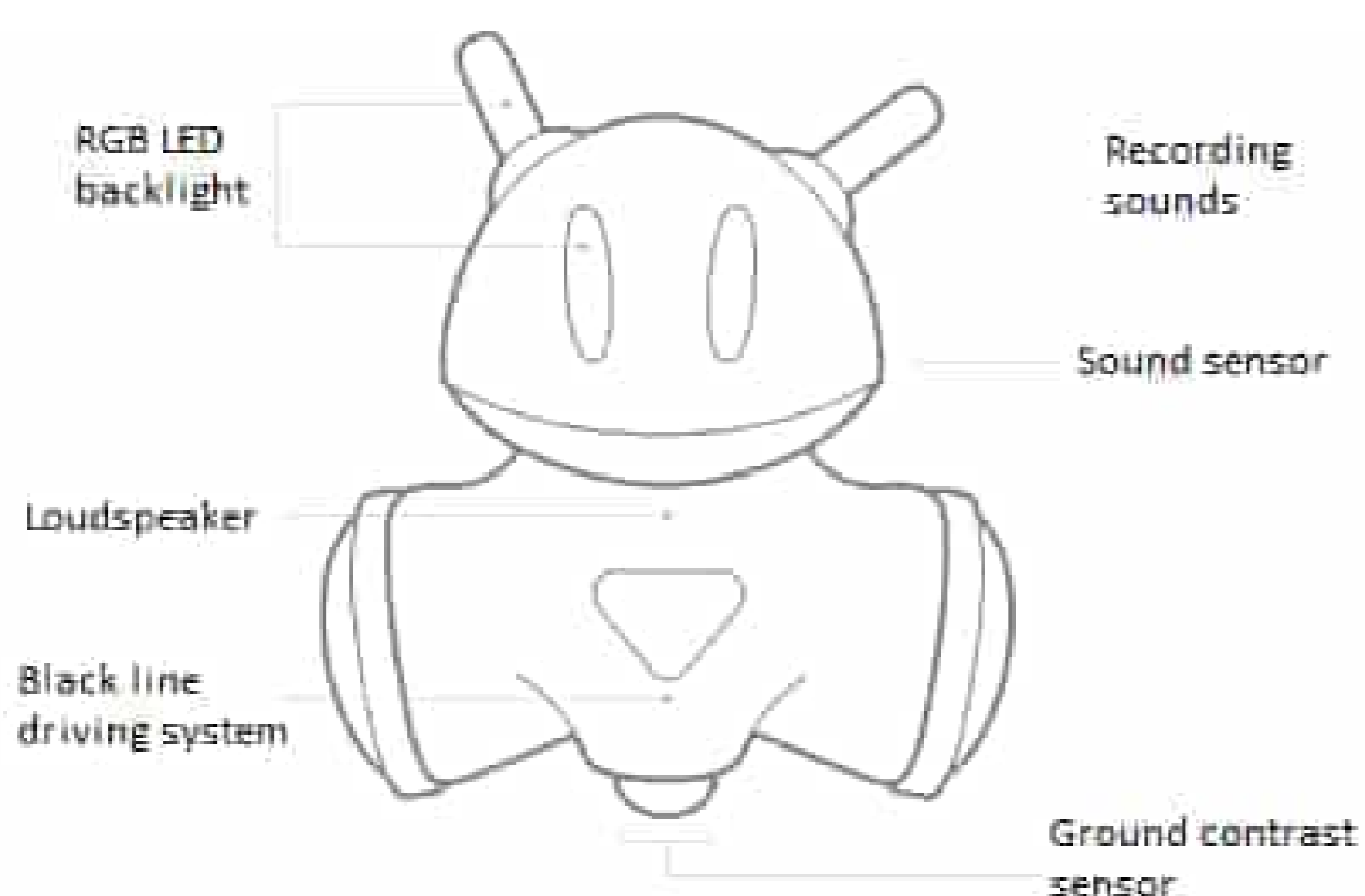
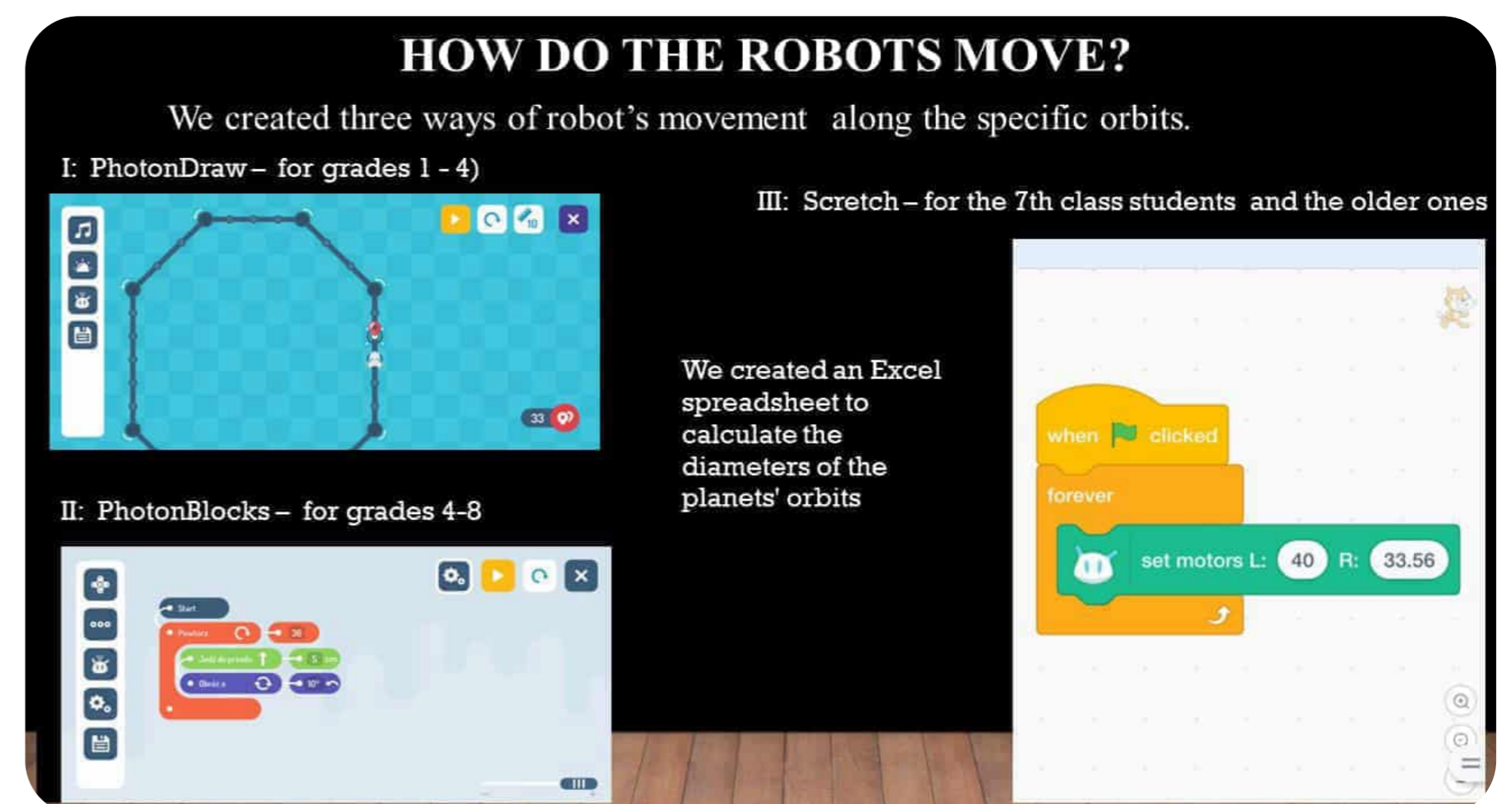
The Mobile Model of the Solar System with Photon and SkriBot robots – Photon robots

These are robots designed by students of the Białystok University of Technology. They are very durable and have a huge number of functions. They can be used in various fields. The classes with this robots will be attractive to both for children from the kindergarten and primary and secondary school students.

The robot is made of highly durable and fully enclosed polycarbonate construction. The robot consists of a body, head with protruding ears (antennae), two side wheels, and one small wheel at the front. There are several holes in the robot's housing. These are: charging port, ground contrast sensor, light sensor, and screw holes.

Materials

The robot's housing is made of one of the most durable plastics available on the market - polycarbonate (PC) – extremely resistant to damage. The robot's antennas (ears) are flexible, made of thermoplastic polyester elastomer (TPE), so they will not break if you drop the robot.



The robot has many built-in sensors to help you learn and play. These sensors are enclosed inside the housing.

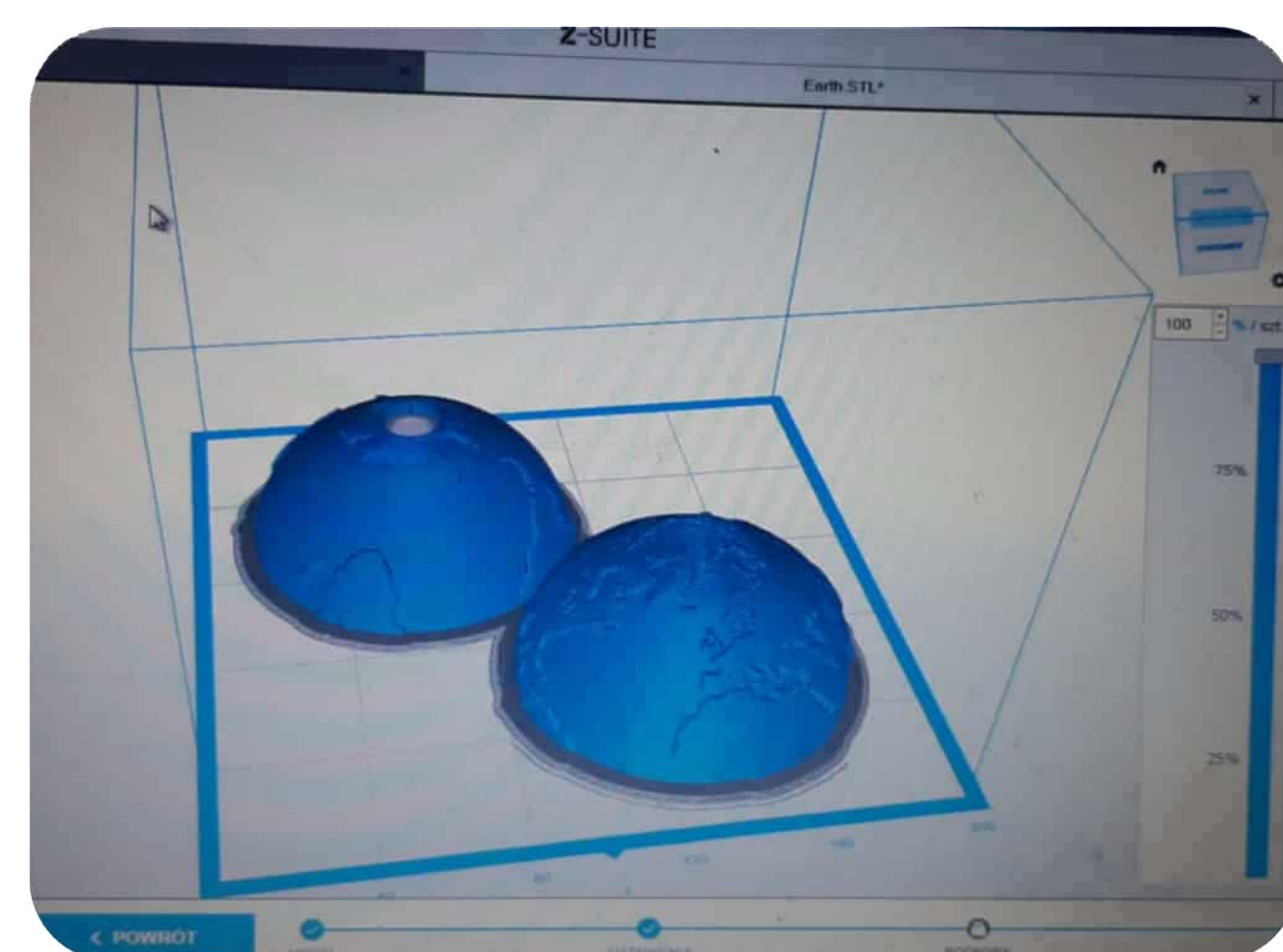
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The Mobile Model of the Solar System with Photon and SkriBot robots – How planets were formed

Very important problem was programming and printing the planets in a 3D printer. It turned out that PLA filament is not the optimal solution for printing planets. For this reason, we used ABS filament, which is easier to form and more durable during processing, e.g. grinding. It should be noted that the time to print one half of the planet, depending on its size, took from 25 to 30 hours in the Zortrax M200 Plus printer. We programmed the planets in a free 3D printing program called Z-SUITE.

We connected the individual halves of the planets printed in a 3D printer with small neodymium magnets.



The planets were painted with acrylic paints by one of my friends who is a teacher at my school.