Theme: Nature and environment
Project topic – Creative Solutions Inspired by Nature and Engineering

The goals of the project:

· to introduce students to the study of bionics which inspired them to create learning from nature;
· to notice and analyze various qualities of objects in students' environment;
· to introduce them to paper as a material which can be used in a creative process, recognizing the importance of recycling;
· to develop creativity while making furniture and objects out of paper.

The project took place during December - February: In our school during engineering lessons students got familiar with an interesting interdisciplinary area which links biology to technologies, i.e. bionics. It is found in various architectural objects since the oldest times, e.g. round columns resemble stumps of trees. While observing various older and modern objects around them and searching for examples from the world's architectural history, students learned how to recognize forms and structures which are met in the nature. It may be noticed that tall buildings are built as stream-lined and sharp-pointed as such form preserves the building from strong winds (e.g. in the example of the Burj Khalif).

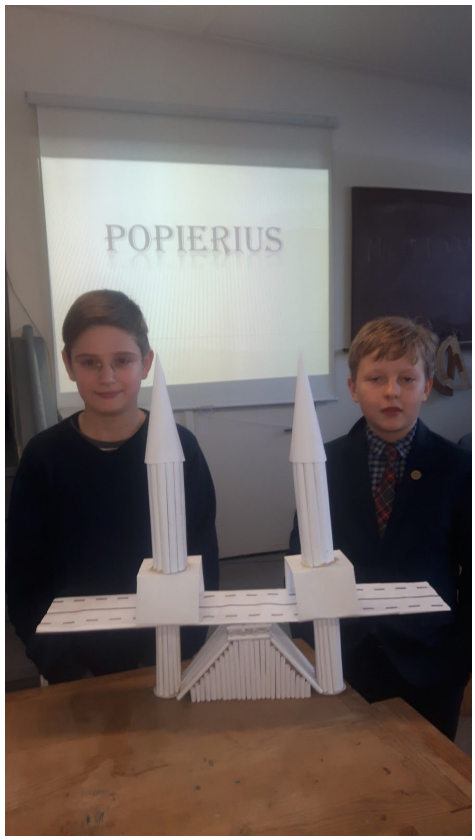
The most important aim of the project was to create learning from the nature, not harming it. The goal of a human being is to blend with nature, become its organic part. That is why we chose paper as an ecologic material to perform the project tasks. Paper is quite cheap and plastic, however, if being folded it becomes a firm material which can hold a certain load. Paper pipes also resemble plants.

First of all, students had to find out about the types of paper and its qualities. They found out about its nature, visited Grigiskes paper factory and learned such important facts about paper, as how it is made, where and how it can be used, the recycling peculiarities – how we can recycle the paper that more trees could be saved.

The next step was working in groups – students tried to make spatial constructions from paper pipes. It should be noted that the project was made as a team work - older students (grade 9) helped younger students (grade 5) to create various models, under the supervision of their teacher.

Some of the students created chairs and tables. One of these chairs was quite big and it appeared that it may hold a girl weighing 28 kg.

Other students were inspired by architectural examples and they made skyscrapers, towers and bridges. Using carton and brown baking paper the example of Big Ben was created, from copy paper and carton cylinder a skyscraper and other buildings were made.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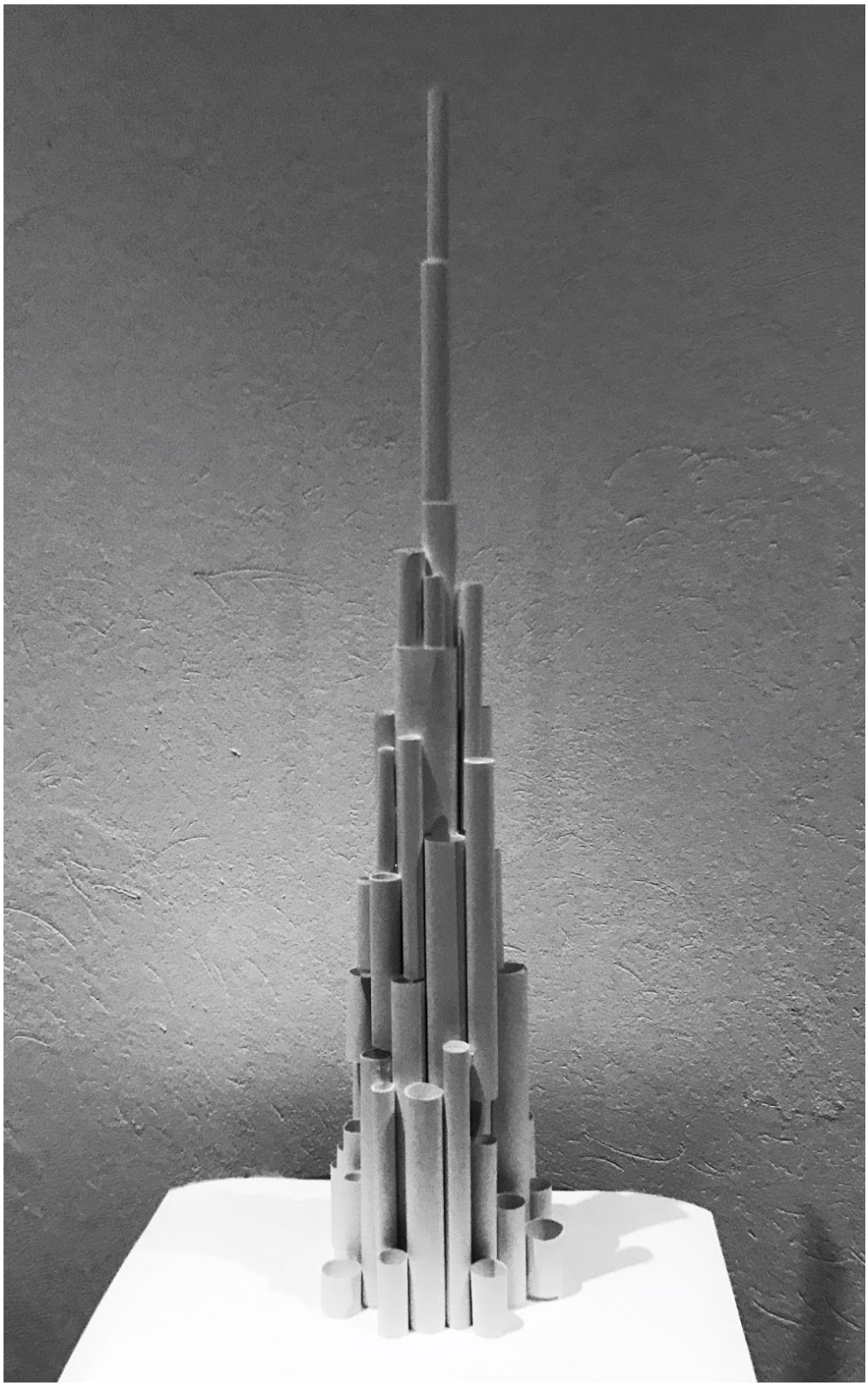

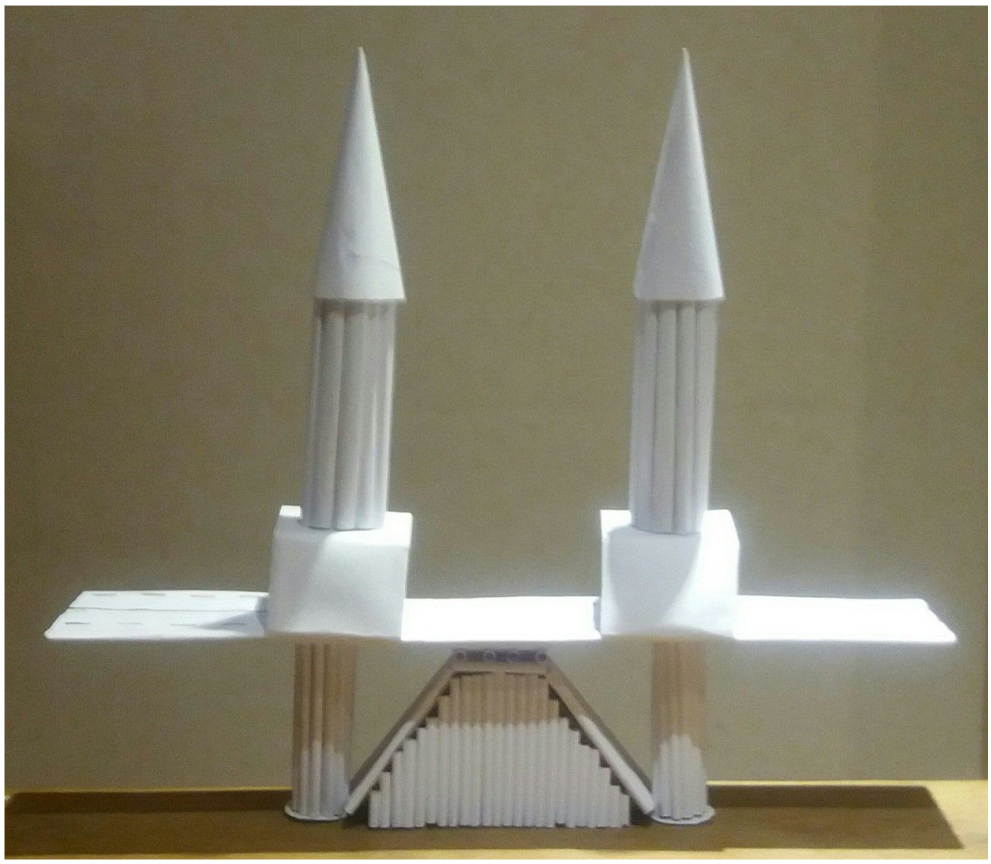

According to students, building the structures was a useful practical task to check the theoretical knowledge, as well as a good way to make lessons more interesting and motivating. Students faced certain challenges, as paper is not a simple building material, though the same architectural rules may be applied to every building. However, the problems were solved using teamwork, engineering knowledge and creative thinking.