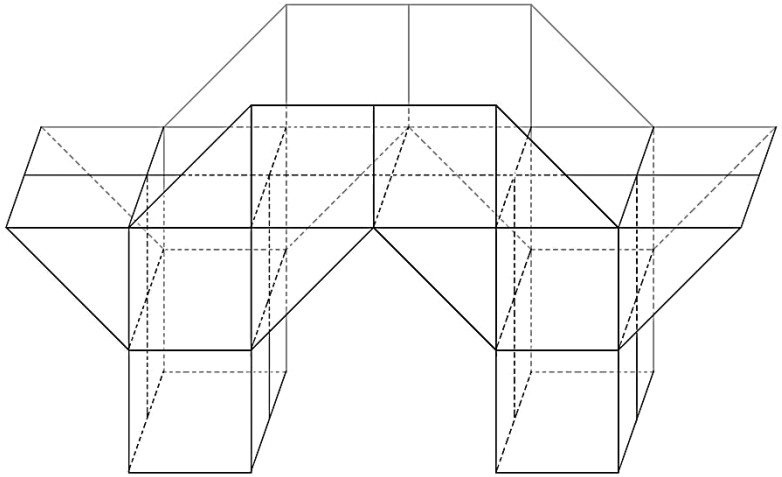
Elementary School „Vuk Karadžić“
41 Takovska Street, Belgrade

„The Bridge“ Project



Presentation authors:
Iva Bulikić and Natalija Đukanović

„The Bridge” Project

- **The aim of the project:**
- Design and construction of the bridge scale model using a variety of software tools
- Developing creative approach through implementation of mathematical knowledge and building correlation within Math as a subject
- Encouraging students’ teamwork in order to overcome generation gaps
- In teams, not only among students, but teachers as well, we want to expand our knowledge and experience on this subject through correlation among multiple subjects (Math, Computer Science, Constructive Trades, Art, Serbian language and literature).

„The Bridge“ Project

- **Project Development**:
  -Making a bridge design in teams,
  -Making a bridge scale model in teams,
  -Creating Math assignments according to chosen draft of the bridge in teams
  -Suitable promotion of the project theme (art exhibition, film-recorded sequence of events, preparing assignments catalogue).

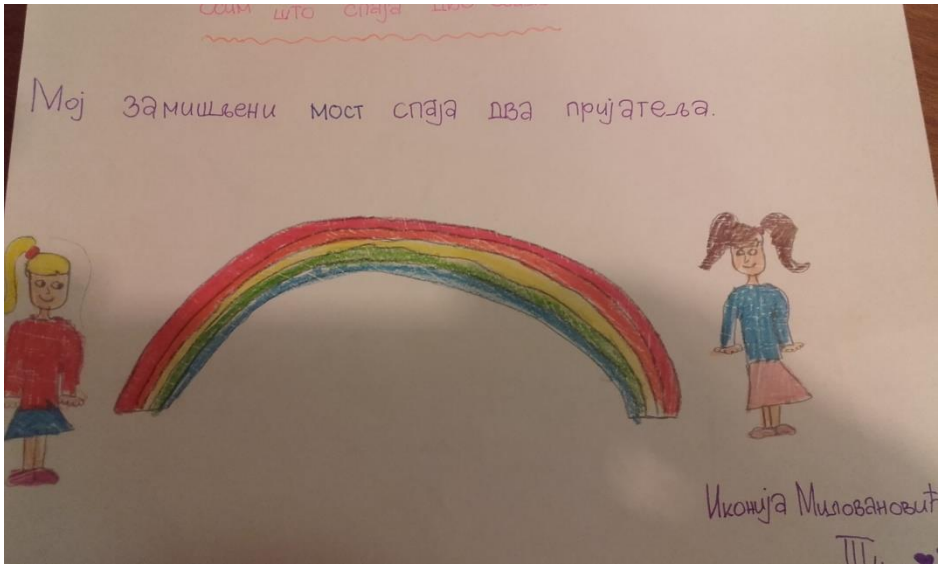
- **Project Presentation:**
  -Exhibition of technical drawings, bridge scale models and art drawings,
  -Making a Power Point presentation,
  -Making a film using Windows Movie Maker.

- **Stage 1 :** Students suggest and make different bridge drawings that will be used for creating scale models and assignments.

„The Bridge“ Project

Drawings of the third grade students answering a question: „What is your definition of a bridge, other than a structure which connects two river banks?“

Answers: „A bridge can bring together two friends, a family, planets, a boy and a girl, you can take a photograph there or hang out with friends or simply enjoy the scenery...it is also a gymnastics exercise and exercise equipment in the park **...**“

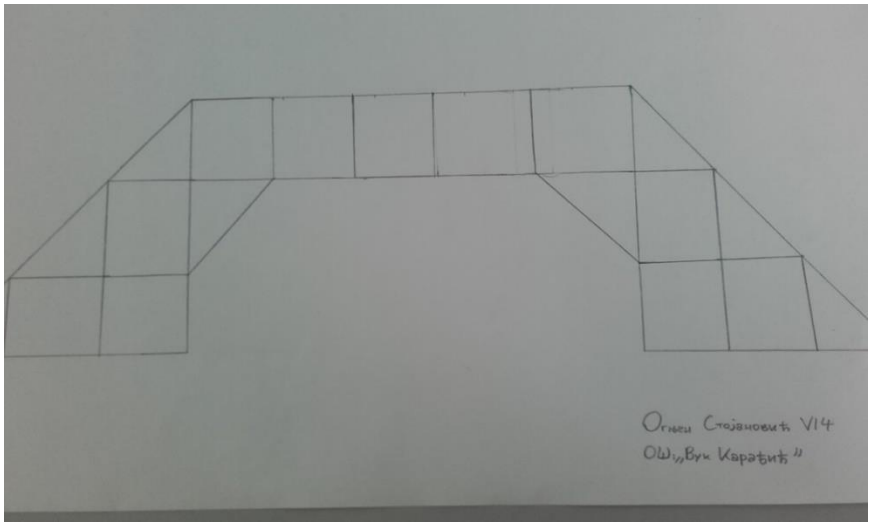


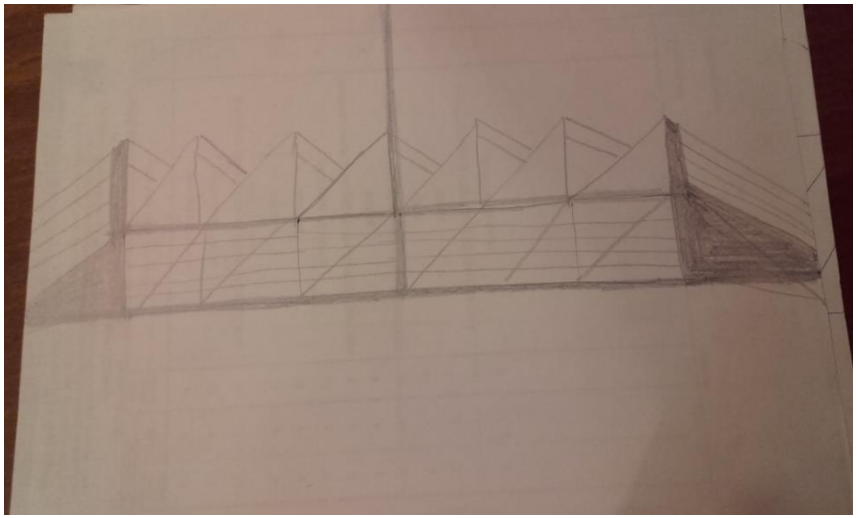
„The Bridge“ Project

„The Bridge“ Project

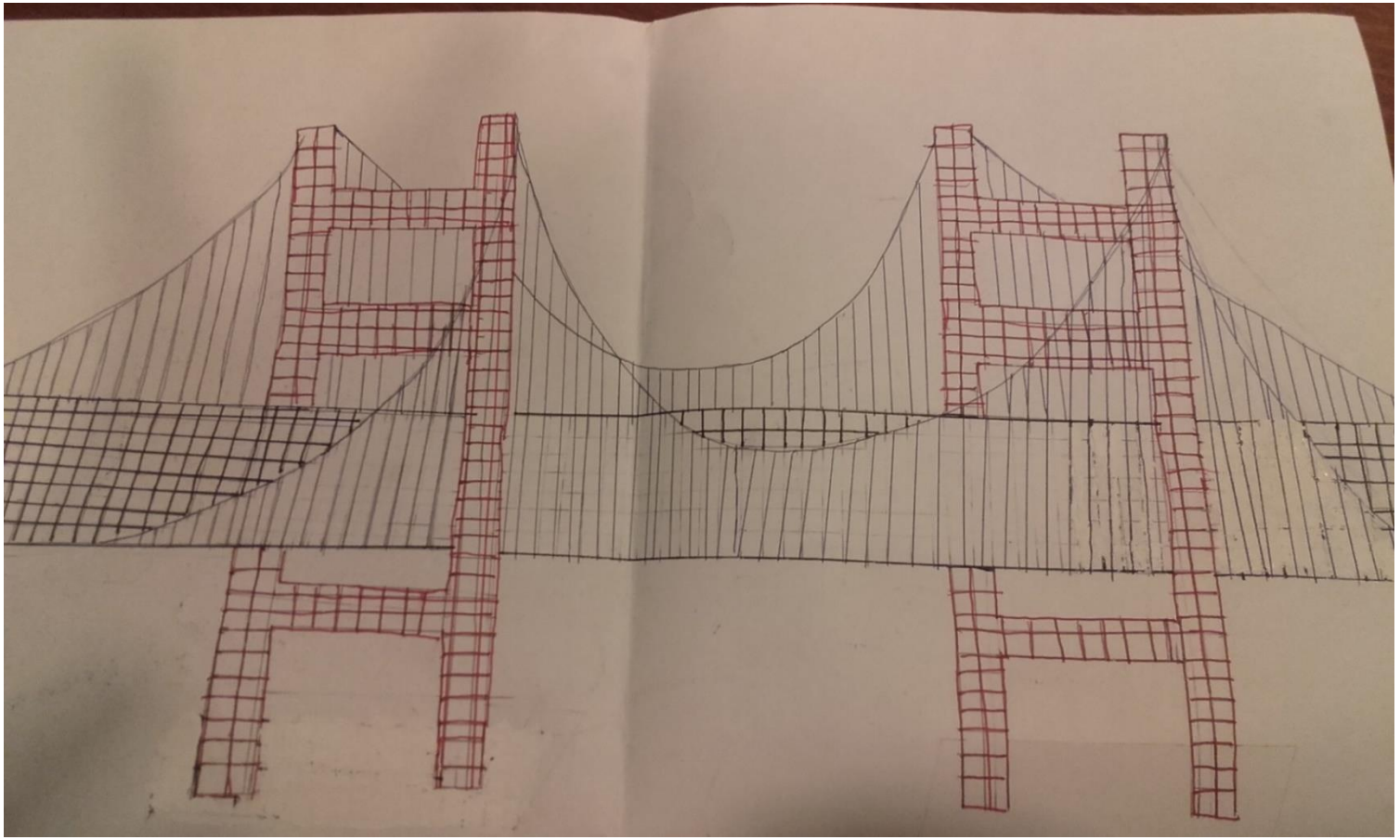
Suggested bridge drawings made by the fifth and sixth grade students.

Among the given drawings we have chosen one to be used for creating a scale model and math assignments.





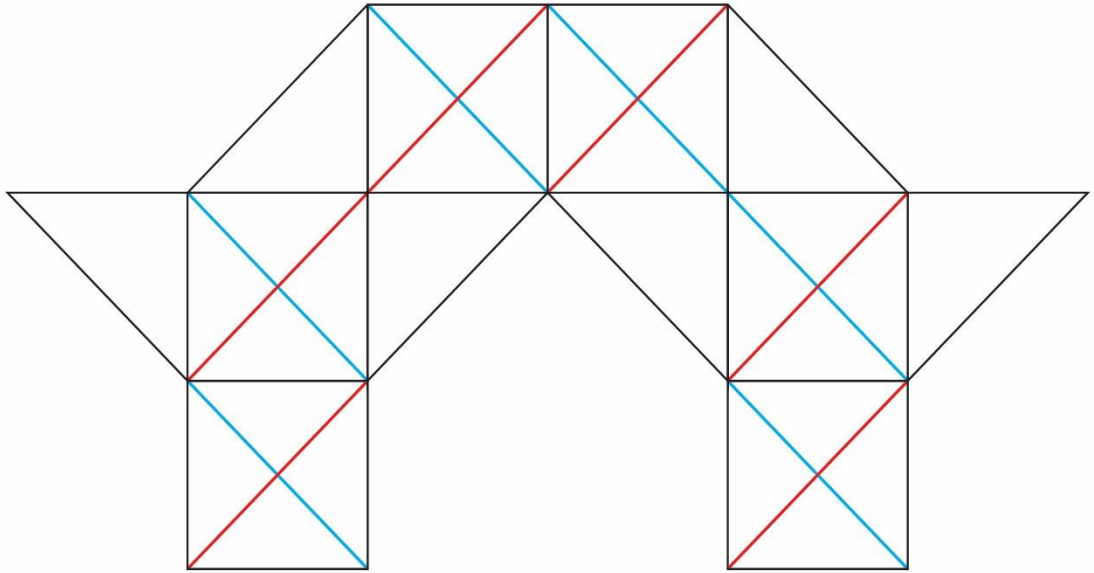
„The Bridge“ Project



„The Bridge” Project

The Chosen Bridge Drawing

Bridge drawing using Illustrator computer program,
author: Jovan Savić



„The Bridge“ Project

MATH ASSIGNMENTS FOR THE FIFTH GRADE STUDENTS

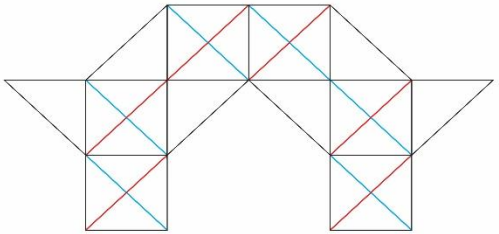
1. Look at the bridge drawing below, find all the squares and calculate the ratio of their areas.

2. Calculate the area of the bridge drawing below if a unit of measurement is:

a) the area of a square with a length of a side *a*,

b) the area of the smallest square,

c) the area of the biggest square.



3. Count all the **horizontal lines**.

4. Count all the **vertical lines**.

5. Count all the **diagonal lines** (considering all the points of intersection disregarding the colour).

6. Shade only one area of different squares, as long as they have one common line.

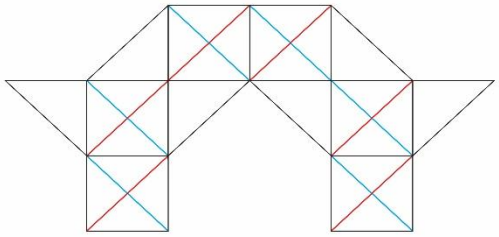
„The Bridge” Project

MATH ASSIGNMENTS FOR THE SIXTH GRADE STUDENTS

1. Find **the isosceles trapeziums** in the bridge drawing below. How many different sizes are there?
2. a) Calculate **the area** of the trapeziums.
   b) Calculate **the ratio** of their areas if a unit of measurement is the area of a square with a length of a side *a*.
3. Find **the isosceles right angled triangles** in the bridge drawing below. How many different sizes are there?

a) Calculate **the area** of the trapeziums.

b) Calculate **the ratio** of their areas if a unit of measurement is the area of a square with a length of a side ***a.***

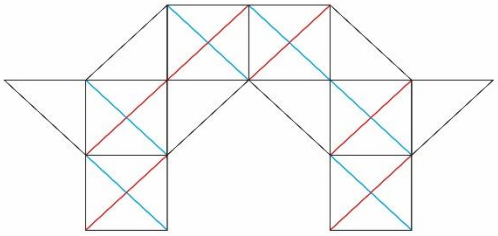


1. Find the pairs of **trapeziums with the axis of symmetry.**
2. Find the pairs of **isosceles right angled triangles with the axis of symmetry.**

„The Bridge" Project

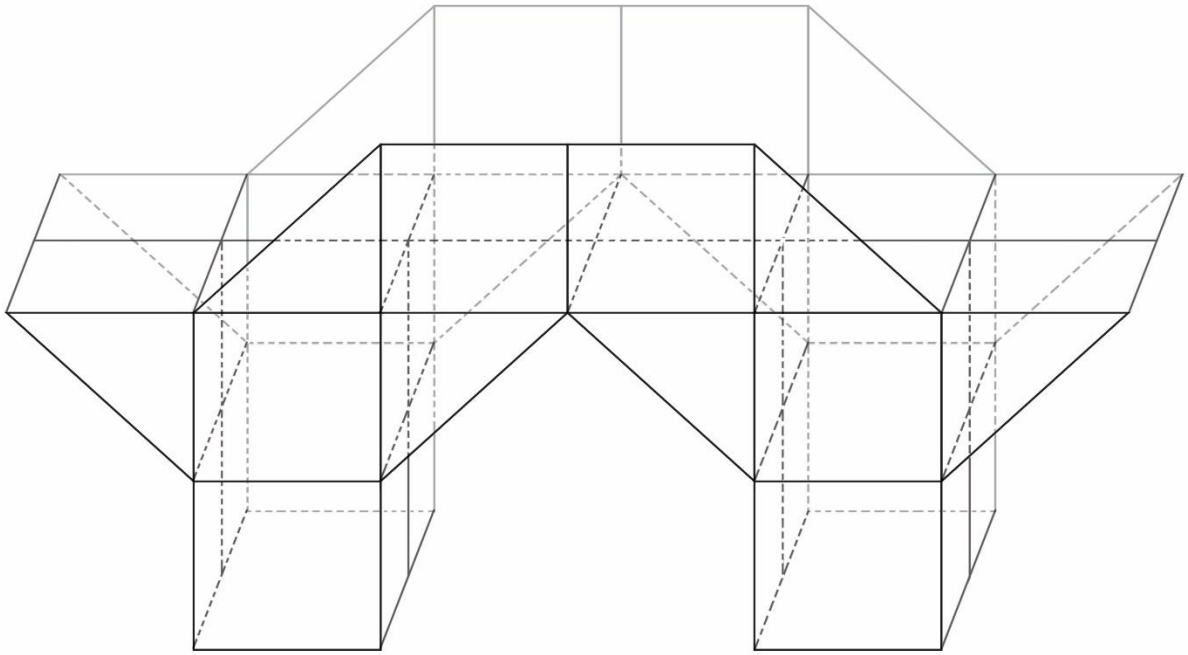
MATH ASSIGNMENTS FOR THE SEVENTH GRADE STUDENTS

1. Calculate **the perimeter and the area** of the bridge drawing below if a unit of measurement is **a length of a side *a*.**
2. Find the pairs of incommensurable **lines**.
3. Find the pairs of **isosceles trapeziums.**
   a)Calculate the measurements of their bases and legs if a unit of measurement is **a length of a side *a*.**
   b)Calculate their **perimeter and area** if a unit of measurement is **a length of a side *a*.**
4. Find the pairs of **the isosceles right angled triangles**.
   a) Calculate the measurements of their bases and legs if a unit of measurement is **a length of a side *a*.**
   b) Calculate their **perimeter and area** if a unit of measurement is **a length of a side *a*.**
5. Calculate the perimeter and area of the bridge drawing if a unit of measurement is **a length of a side *a* .**
6. Calculate **the percentage** of an area of each trapezium compared to the area of the bridge drawing.
7. Calculate **the percentage** of an area of each isosceles right angled triangle compared to the area of the bridge drawing.



„The Bridge” Project

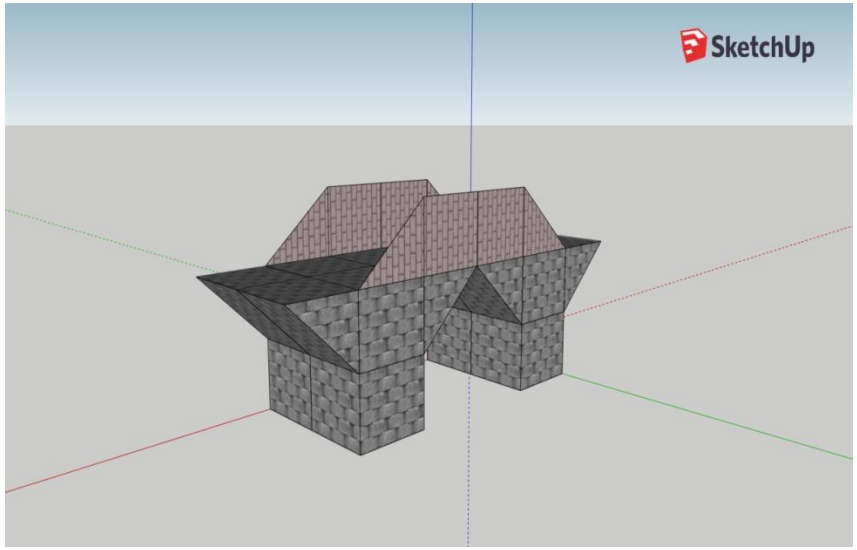
Bridge Drawing Projection using Illustrator computer program, author: Jovan Savić

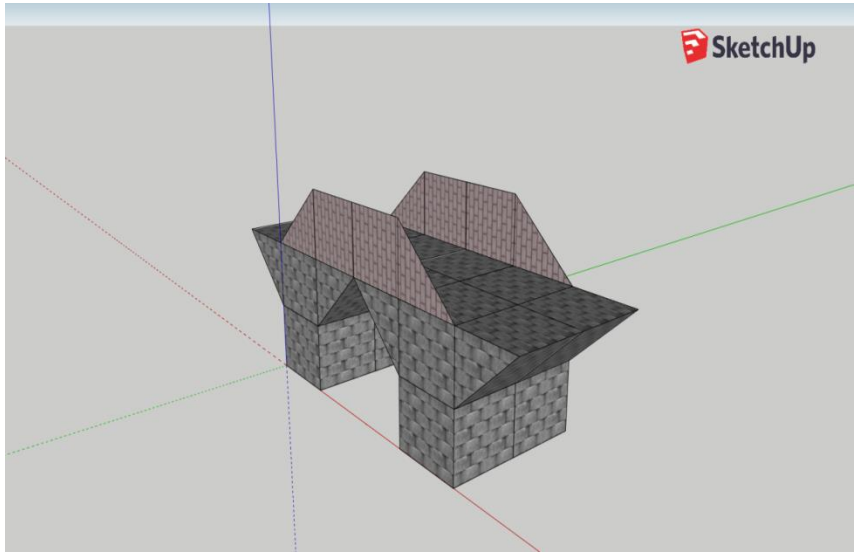


„The Bridge” Project

Software tool *Google SketchUp*

Author: Jovan Savić –8th grade

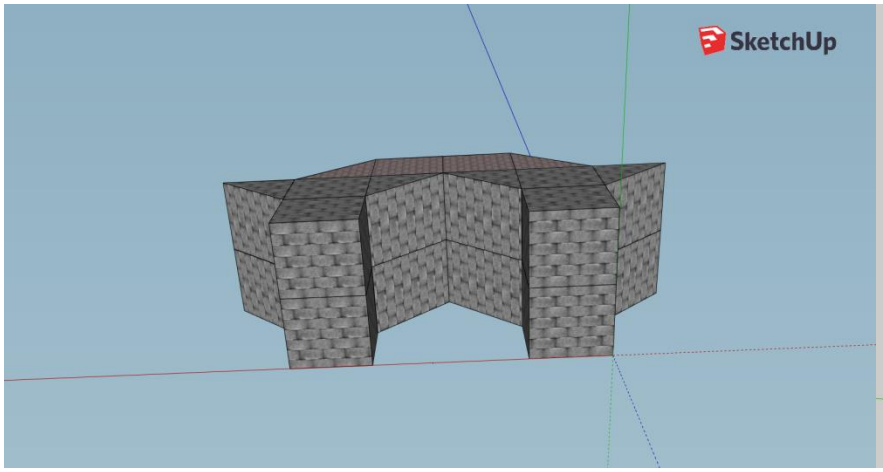


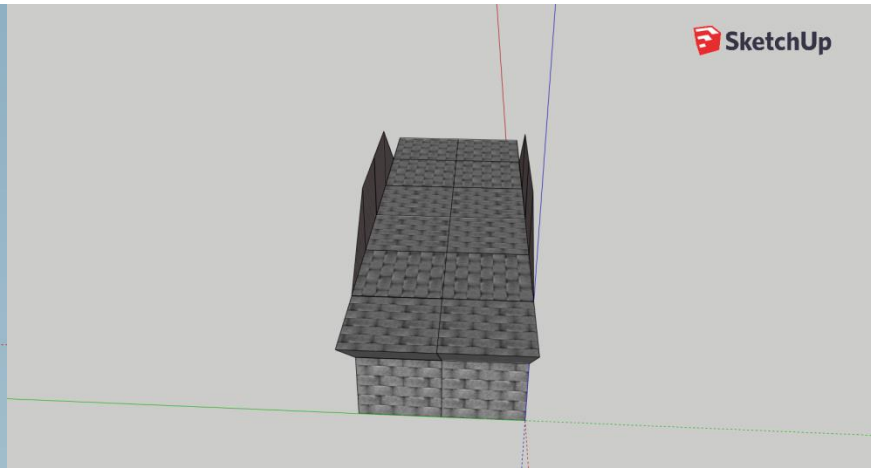


„The Bridge” Project

Software tool *Google SketchUp*

Author: Jovan Savić- 8th grade



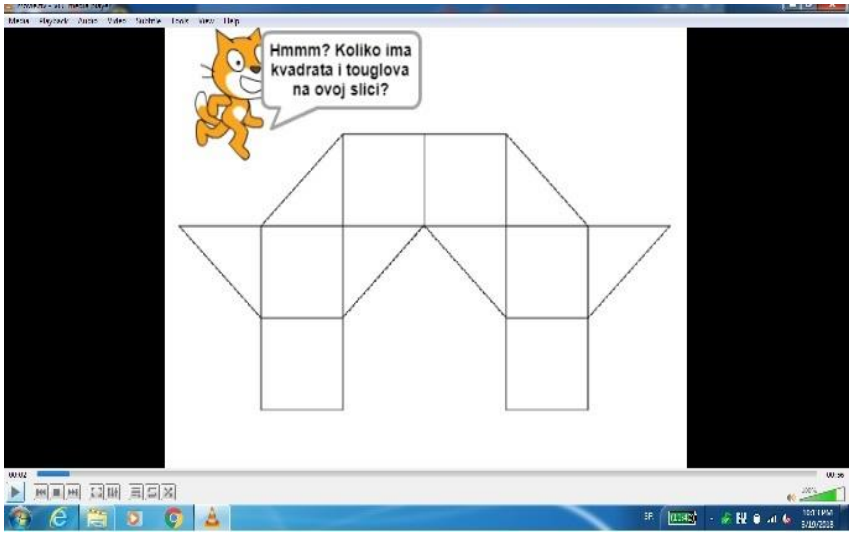


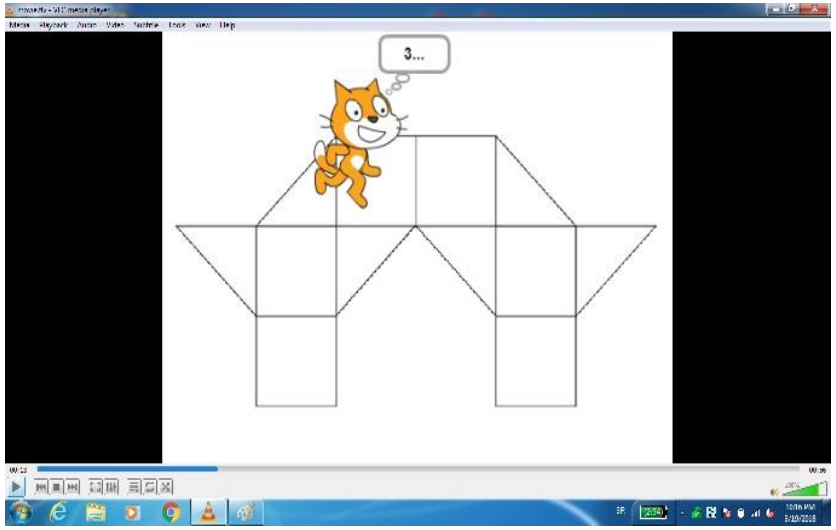
„The Bridge” Project

Seven Bridges placed as a replica of Euler Problem using Sketch Up program, author: Jovan Savić- 8th grade

„The Bridge” Project

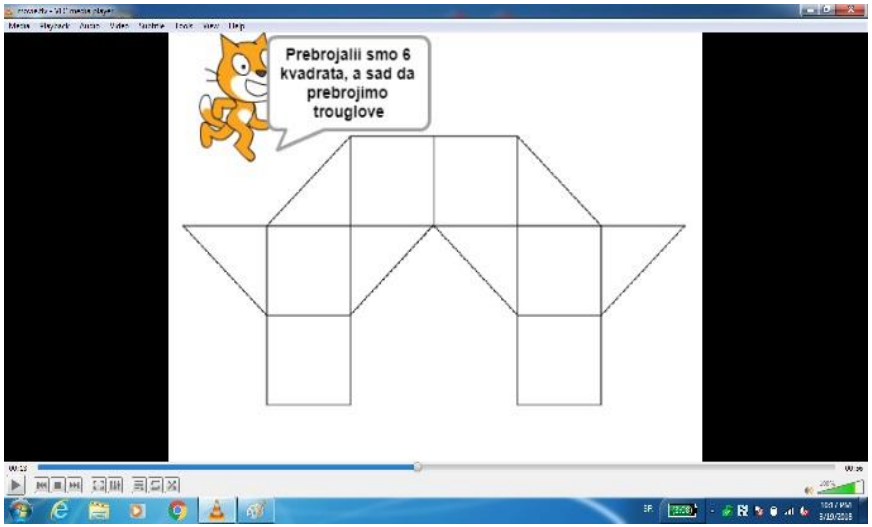
Software tool *Scretch*, author: Momčilo Simić, 6th grade

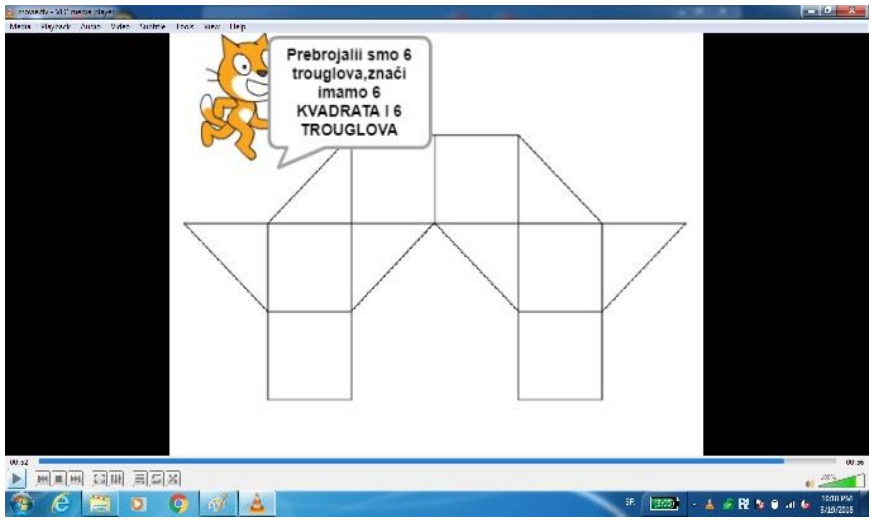




„The Bridge” Project

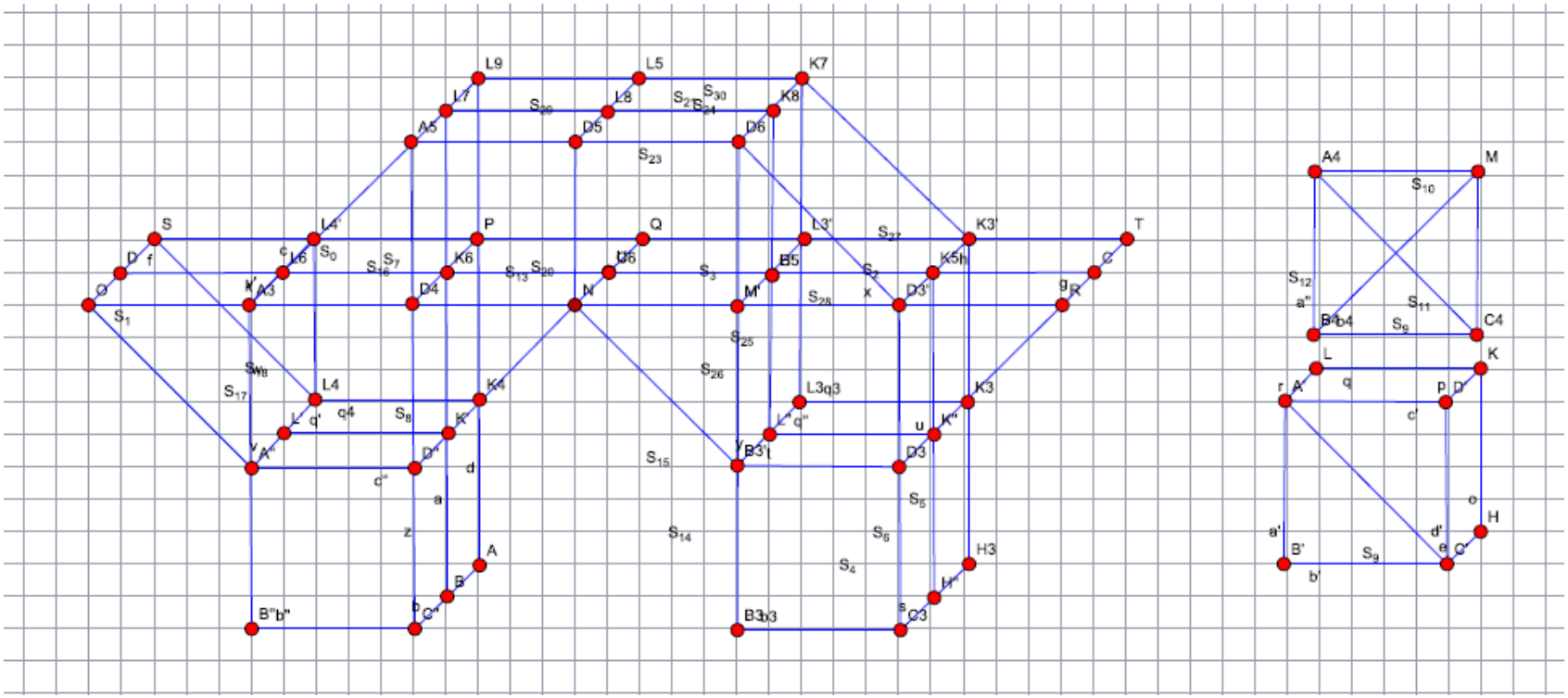
Software tool *Scretch,* **Author: Momčilo Simić, 6th grade**





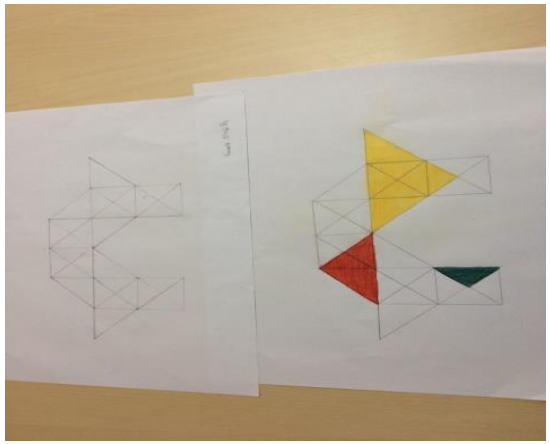
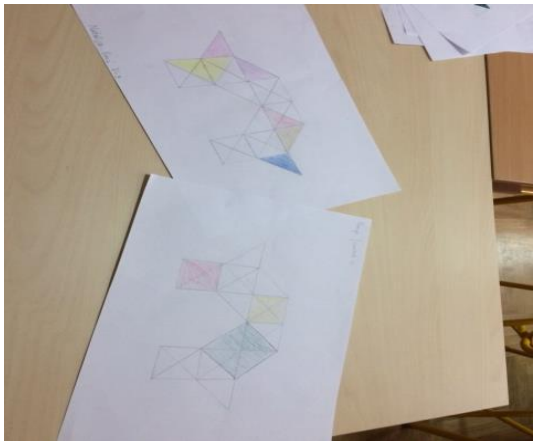
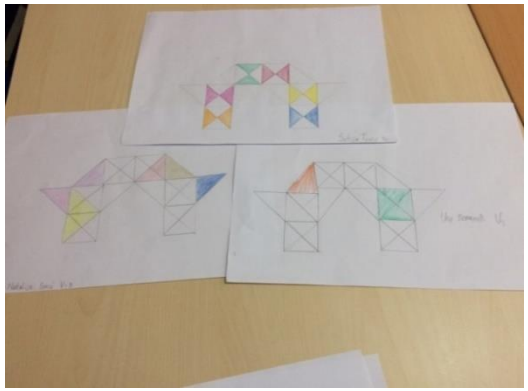
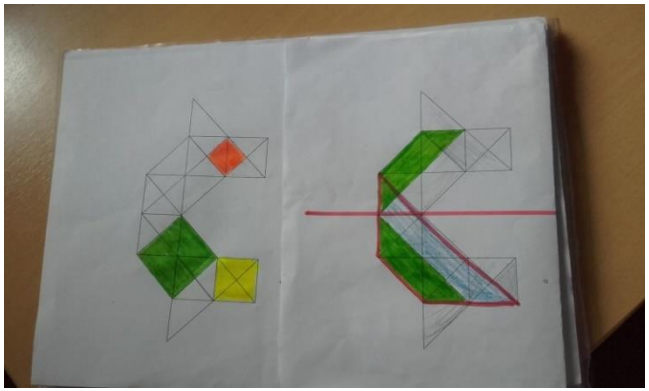
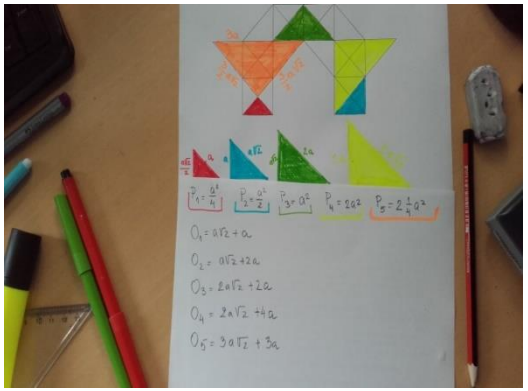
„The Bridge” Project

Software tool: Cinderella, author: Konstantin Ljepava, 6th grade



„The Bridge” Project

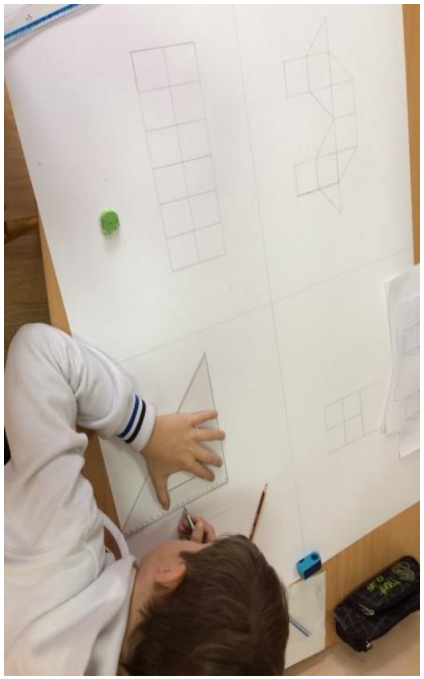
Project Development during Math lessons

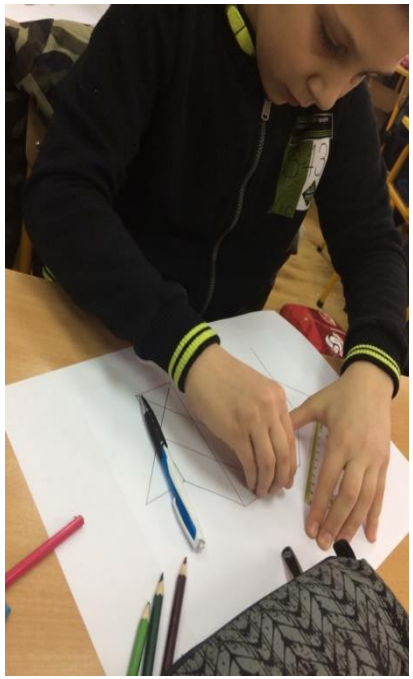







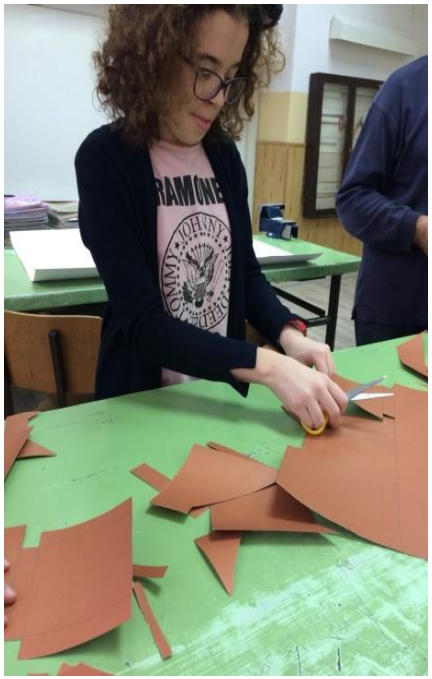
„The Bridge” Project

Project Development during Constructive Trade lessons –5th grade

creating technical drawings and cardboard scale models



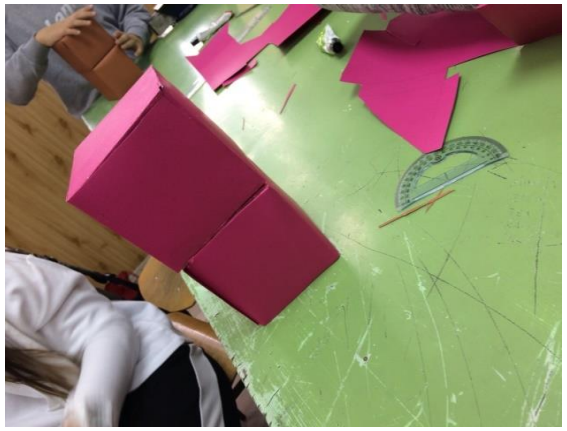


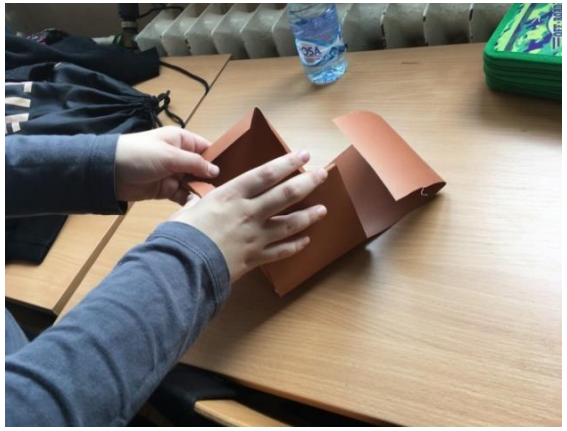


„The Bridge” Project

MAKING A CARDBOARD SCALE MODEL OF THE BRIDGE



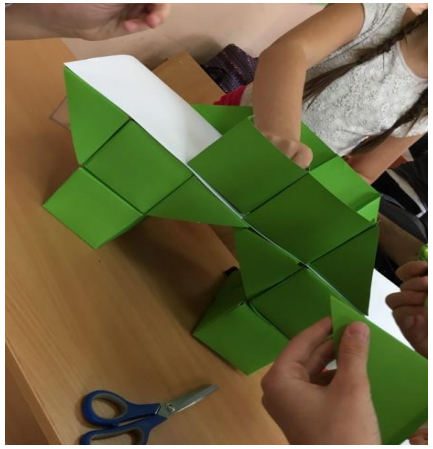


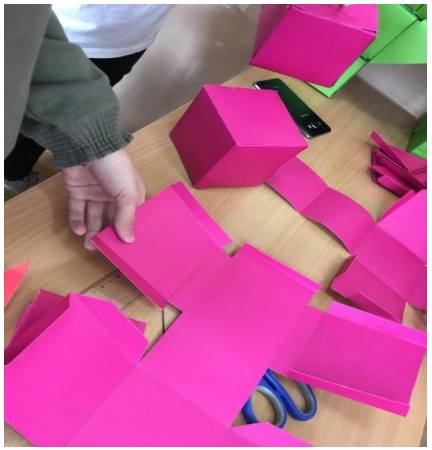



„The Bridge” Project

MAKING A CARDBOARD SCALE MODEL OF THE BRIDGE



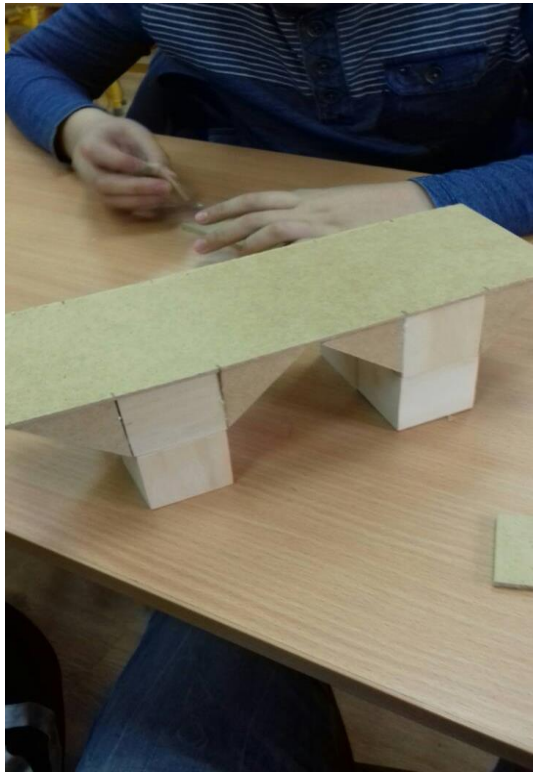


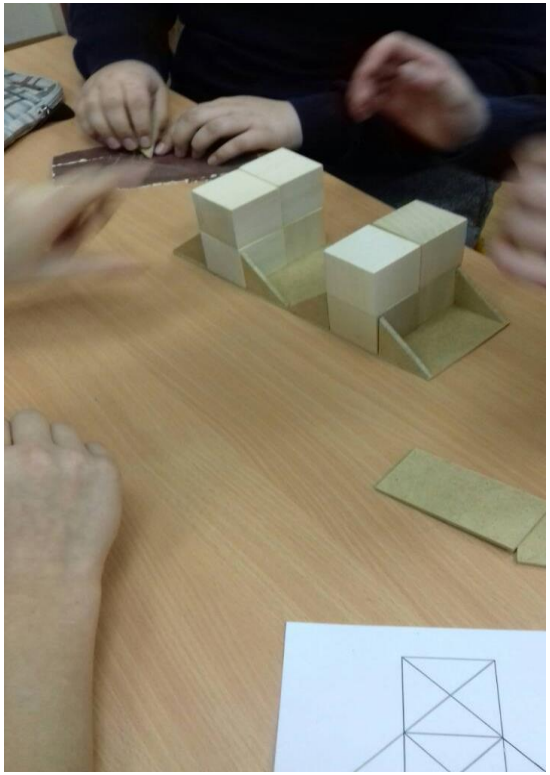

„The Bridge” Project

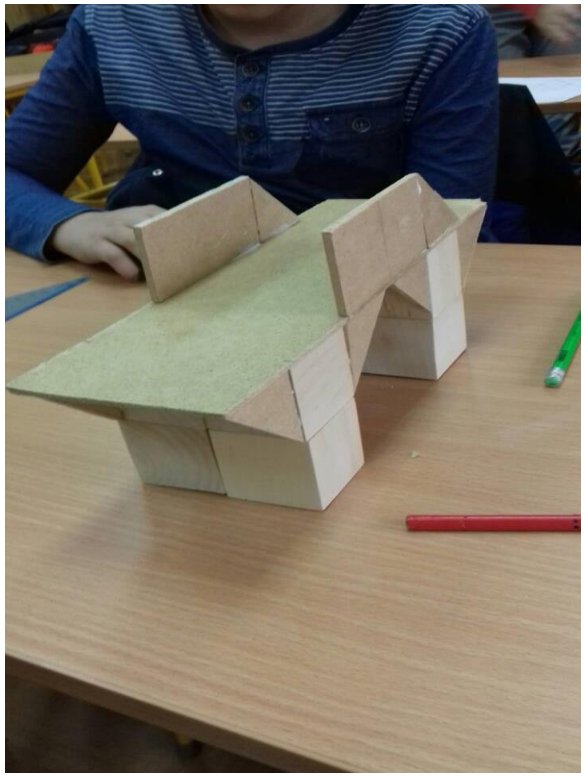
Project Development during Constructive Trade lessons, authors: 6th grade students

„The Bridge” Project

Making a wooden scale model of the bridge

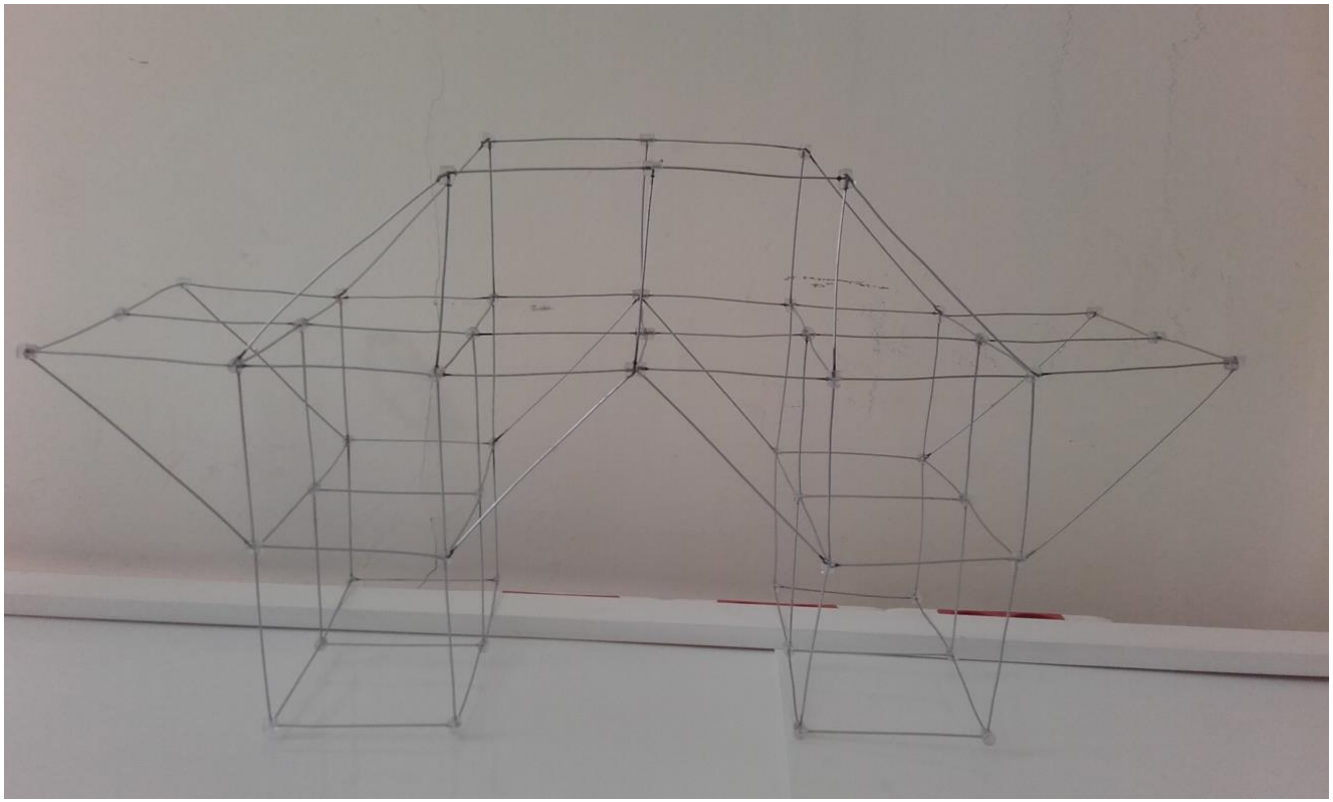






„The Bridge” Project

A wire scale model of the bridge



„The Bridge” Project

Project Development during Art lessons



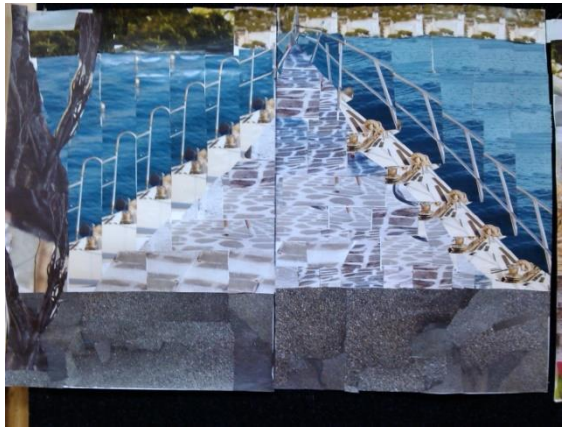



„The Bridge” Project

Art technique: collage, authors: 6th grade students







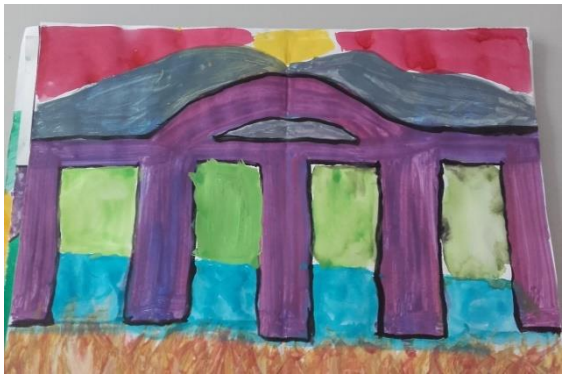

„The Bridge” Project

Contrasting colours,

technique: tempera, authors: 6th grade students





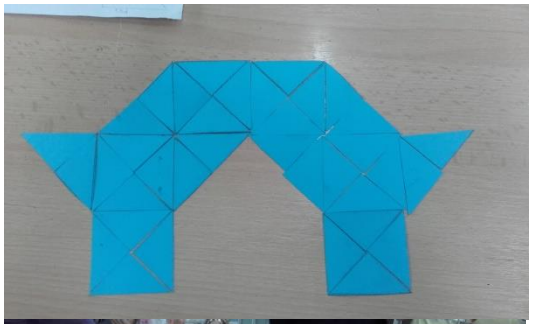



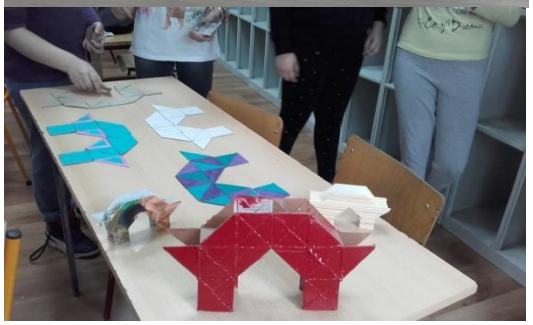
„The Bridge” Project

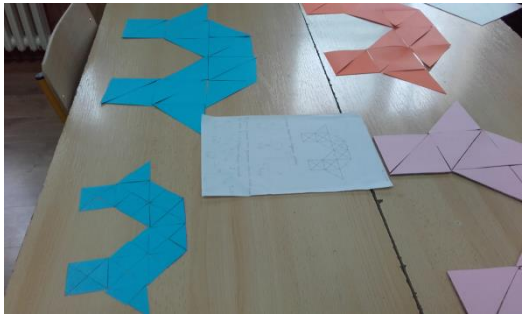
Aluminum foil collage, authors: 5th grade students

„The Bridge” Project

Fifth grade students taking initiative and making their own scale models.







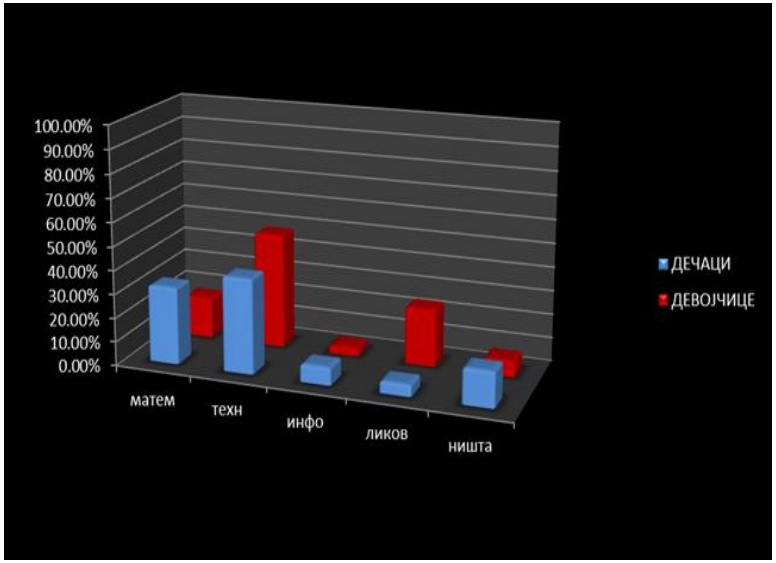
„The Bridge” Project

Some of the students’ answers from the poll conducted after finishing the project:

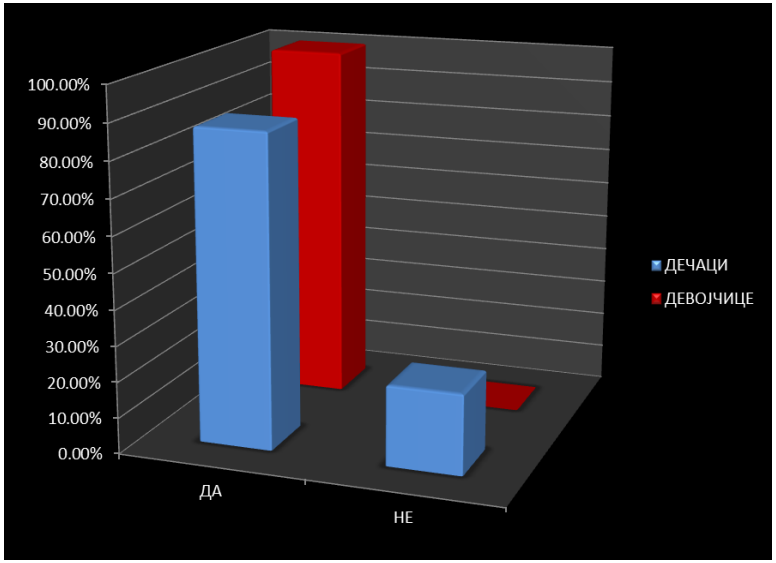
- „It is important to take part in the project, we had lots of fun working together...“
- „We have learnt a lot about the importance of teamwork, we got along fine and we really listened to each other...“
- „We have learnt to look at geometric shapes from an entirely different perspective...“
- „I really liked working on the same project in different lessons...“
- „Everything is great when we work together...,“
- „ I like it when we make something, we haven’t done anything similar before...“
- „I have learnt to look at things from different perspectives using a new program in Computer Science lessons.“
- „I have learnt to work patiently and help my friends...“
- „I can’t wait to start working on a new project and teach others some new skills...“

„The Bridge” Project

A graphic chart answer to the question: „Which subjects were more interesting than usual during the work on the project?“



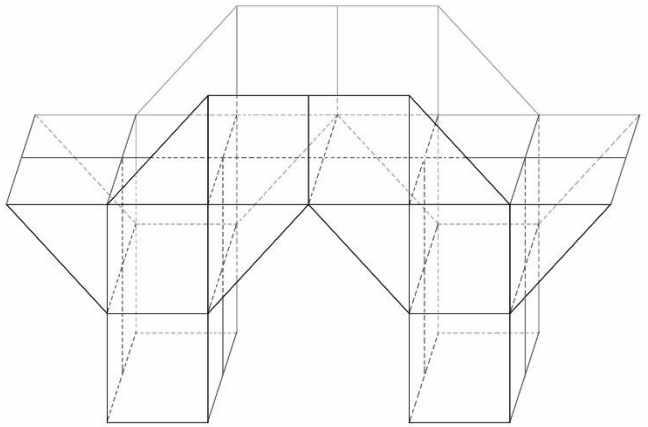
A graphic chart answer to the question: „Would you take part in a similar project in the future?“



„The Bridge” Project

Project authors:

- Nikola Šaranović -5th grade
- Marko Marinski -6th grade
- Lena Carić -7th grade
- Jovan Savić -8th grade
- students from classes 5.3, 6.4, 7.1, 7.3



Mentors: Biljana Kojić and Marina Lakčević

Contributors: Veselinka Miletić, Jelena Jakovljević, Aleksandra Baltić, Aleksandra Šijan, Radovan Kalabić and Branka Peruničić.

Photographs: Lana Gugl, Tara Šćepanović, Andrej Gardenin

„The Bridge” Project

Bibliography:

- Math Textbook for Elementary School, Grade 5-8, Publisher Gerundijum
- Computer Science Textbook for Elementary School, Grade 5-8, Publisher Institute for Textbook Publishing
- Constructive Trade Textbook for Elementary School, Grade 5-8, Publisher -Eduka
- The formula of life-Ivan Anić, Dragica Pavlović Babić, Vladislav Radak-Publisher Matematiskop
- https://www.sketchup.com/learn/videos/826
- https://scratch.mit.edu
- https://support.office.com/en-us/article/powerpoint-2013-videos-and-tutorials-bd93efc0-3582-49d1-b952-3871cde07d8a
- https://www.svetnauke.org/12464-mostovi-leonarda-ojlera
- https://www.youtube.com/watch?v=pcg6DGO9hpI
- https://sway.com/V2kCy-c9TSlKhWK5
- https://cinderella.de/tiki-index.php?page=The+Cinderella.2+Manual
- https://sway.com/rmqvKCeHIJeGHZfi?ref=Link&loc=play

„The Bridge” Project

The beginning and ending date of the project:
26/02/2018 – 19/05/2018

- Considering the fact that a detailed project description has been presented in the application process, this presentation has shown only the activities completed up to now, 26/02/2018 -16/04/2018.

Plans for the future:

Making a film about the project using the *Windows Movie Maker.*

„The Bridge” Project

Thank you for your attention!