

Visual Mathematics in Practice



Name of the teacher:	<i>Katarina Ivanovic</i>
Name and address of the school:	<i>OS „Stevan Dukic”, Danteova 52, Belgrade, Serbia</i>
Theme of the lesson:	<i>Sierpinski pyramid and triangle</i>
Place in curriculum: (type of school, grade)	<i>Primary School, 8th grade</i>
Age of the students/pupils:	<i>14 years old</i>
Title of the lesson:	<i>Net, Area and Volume of Tetrahedron thru fractals</i>

Description of the lesson

Time	Exercises, matters, parts of the lesson	Methods and forms of student activities	Developable competencies
<i>Two days of work</i>	<p><i>This activity is organized as last part of project-based learning about pyramids.</i></p> <p><i>Before its realization : One group of students had to discover what are fractions, where we can find them in a world around as and to show some interesting examples. The next two groups had to investigate Sierpinski triangle and pyramid. Fourth group had to find out about Sierpinski. All groups presented their researches to the other students.</i></p> <p><i>Preparation: The teacher gives each group material for work and explains what their assignments are. By using models students cut tetrahedron nets out of paper. Then, they have folded it into itself, so they could make pyramid - tetrahedrons.</i></p> <p><i>Students had an assignment (already</i></p>	<p><i>Work in group and in pair, project work, exhibition.</i></p>	<p><i>Systematization, analysis, creativity, planning, whole-partial perception, looking for connections, judgement, logical conclusion, communication, modelling, image and solid creating skills, recognizing and perception of relations, algorithmical thinking</i></p>

<p><i>knowing what we are going to make) to count how many tetrahedrons they need to make a structure, for each level, so that become Sierpinski pyramid (4^n, in our case $4^4=256$).</i></p> <p><i>After finding a pattern and glueing smaller pieces together, we have built our structure - work of art and also 3D math lesson.</i></p> <p><i>Tasks: Student now has an assignment to count hight of that structure and discover its symmetrys. Students had to compute volume and surface area of a Sierpinski pyramid („without holes”) and also area of used smaller peaces.</i></p> <p><i>At the end of class: We have made an exhibition in the school.</i></p>		
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Summary	
<p><i>Although teacher was leading and monitor the progress of building, pupils were very proud because they did so great job and made so good pyramid. During the working time a group of girls have started drawing Sierpinski triangle on white board using markers. They have continued using fractal pattern as long as they could so that it stays visible.</i></p> <p><i>I like this challenge and project very much because it gives students an opportunity to enjoy in beauty of their mathematical, playful and artistic deed, that is, as they say, „even more beautiful in real life then on a photo or video presentation”.</i></p>	

Supplements	
Used materials:	<i>Pattern printed on coloured paper, scissors, ruler, glue, wax paper, scotch tape, marker.</i>
Photos:	