Visual Mathematics in Practice

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Name and address of the school:	Electrical Engineering School „Nicola Tesla“ Nis
Theme of the lesson:	Regular polyhedron
Place in curriculum: (type of school, grade)	Vocational technical school
Age of the students/pupils:	17 (seventeen)
Title of the lesson:	Visualization of the Platonic solids

Description of the lessons

Time/min	Exercises, matters, parts of the lesson	Methods and forms of student activities	Developable competencies
15	Prepared material -Multimedijalni content is set a week earlier. The presentation is set up on the school Moodle platform. If a student's question remains unanswered I answer. I moderate discussion and presentation.	Students processed at home lessons. Students participate in the exposition of facts and the questions asked correspond to other students. Flipped Classroom (преокренута учионица)	Flipped Classroom is a method that we have used several times on our classes.
30	I split the students into groups, the five students in the group. Groups were determined on the basis of seating position. Students combine the two sidelines and occupy positions around them. Each group has the task of given materials make Platonic Solids. Each student needs to make the one solid. If he needs help, members of his group need to help him. ***Inspiration came from workshop Rinus Roelofs of the Summer School 2014.***	-Students needed materials adapted to the number of vertices, number of edges and the number of pages for each body, on the basis of previously processed fact. -Demonstrative heuristic (WOW effect) -group work	creativity, logical conclusion, flexibility of thinking, originality, creating skills, visualization.

30	I initiate to write down each of the properties of the tetrahedron, hexahedron, octahedron, icosahedron, dodecahedron. Students fill material prepared on the observed properties of regular polyhedra. Each group chooses a representative body which will be described by representative member of the group. We carry out general conclusions. Students then cyclically change places in groups. Each group perceptual processes works and works of other groups, expressed by different materials. I choose the body which one is the best and the student gets the public praise. We have set up the works in the classroom. Students fill out evaluation lists.	-Students participate in the presentation, answering questions of teachers and asking their questions, that clarify the content of the lessons. -Students raise their works in the classroom, enabling them to facilitate the work, a visual daily initialization will help to visually remember polyhedra. -Demonstrative (audio-visual)	Presentation and communication skills, looking for connections
15	The division of responsibilities prepared for the development of the body, with a prepared net of polyhedra. To prescribe a lesson from Moodle	- Students randomly elect paper, with the name of the body that should develop at home, the agreed material or some polyhedra, which is not refular, and net of the body is on paper. -Polylogue method	Individual homework

Summary

The students were very satisfied with a class that has a different form than traditional classes. Although we did two school classes continuously (90 minutes), the students were told that their time is incredibly fast elapsed. They were all engaged, which is very important for teachers and students as well, which is important for class to be successful. Such a class as this one was held in all departments of the third grade in which I teach, because students do not like to be discriminated, one class to provide more information than others. This has led to competition, because the classes start competing betveen themselves which work will be more beautiful and successful. In three of the five departments, departmental officers have wished to attend these classes our presence to support the activities of students. They also participated in the activities of groups that they selected. Such cooperation between teacher-teacher, as well as departmental officer-students contributed to the reputation of the school and the reputation of the teachers themselves.

Two (block) classes, was attended by Advisor to the Ministry of Education, Regional Unit in Nis, Ms. Minja Smrekar. Evaluation papers showed great satisfaction among the students, with the expectation that it will be more of these classes.

Supplements

Used materials:	*Group 1: straws with swiveling joint ,duct tape, scissors.* *Group 2: straws were cut in halfprepared connectors with three, four and five-spoke design.* *Group 3: prepared for cutting and pasting, the net of regular polyhedron, scissors, glue prepared for paper.* *Group 4: fast drying clay and colored plastic sticks, tempera, brushes for painting.* *Group 5: copper wire, straws divided in half.*
Photos:	*Live streaming Visualisation Platonic Solids on Youtube*
	More Pictures…
	
	


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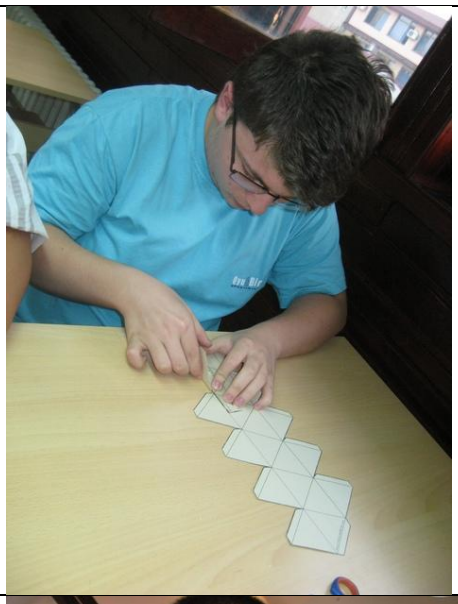

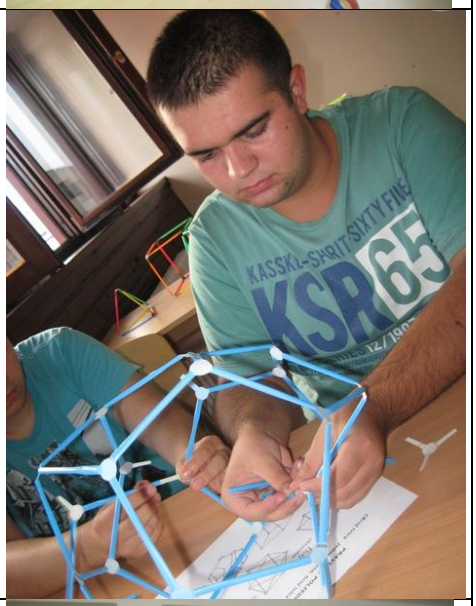
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