

LESSON PLAN

Who is Afraid of Mathematics?



Category: MATHS in ART & ARCHITECTURE

Title of the activity:

“TESSELATION of MY TOWN SQUARE”

Year Group: Grade 4 -5 (9-10 -11years old)

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Learning Objectives:

- to develop the knowledge of 2d shapes and how drawing them on grids and white sheets
- to describe, name and classify 2d shapes based of their geometrical features
- to improve the concepts of translation and rotation in geometry in a creative way
- to develop good citizenship behaviours
- to be able to collaborate in group-work in order to gain the same objective

Success Criteria:

- task-based activities
- problem solving strategies
- to apply geometrical concepts in real situations
- to let children use their creativity in problem-solving

Resources:

- pictures, paper sheets, cardboards, pencils, crayons, rulers, scissors, protractors

Differentiation:

pupils can participate to the task by giving their personal contribution according to their own

knowledge and skills

Lesson Description:

STEP 1 – Whole class activity as introduction

STEP 2- Individual Activity

Each child think and create his/her own imaginary design of the pavement of the square by using his/her creativity and fantasy

STEP 3- Whole Class Activity

All the invented patterns (tessellation) are shown in a class exhibition where children can observe them and discuss about their concrete feasibility in geometrical terms.

Observations, ideas, opinions are reported, mainly they are referred to the features of the shapes:

- Some of them cannot be designed as a half-moon like the original design of the square pavement
- It is necessary to have different dimensions of the same shape (big, medium, small)
- Shapes need to get stuck each other
- Shapes need to have one side with the same length at least
- Circular shapes are not suitable because they cannot be attached

STEP 4 – Group Activity (Collaborative activity)

In groups of three, children create tessellations made up of one type of regular polygon and afterward they try to create another design made up of two kinds of regular polygons

STEP 5 – Whole class Activity

Teacher gives input by asking the question: “Why the sheet can be covered only with some regular polygons?”

Children investigate about geometrical rules involved in the created designs.

Children discuss, measure sides and angles and write reports.

STEP 6 – Individual activity

Children individually has to cover a small white sheet by using cardboard pentagons provided by the teachers in order to create a tessellation

STEP 7 – Whole class Activity

Children measure inner angles of squares, triangles, hexagons, pentagons and discover characteristics and regularities.

Introduction:

Children need to know the geometrical concepts of

- average point, symmetry, angle, regular polygon, perimeter and surface area

- Children start by the observation of the pavement of the square opposite the school. They walk on it nearly every day while they come to school or go home after school. They notice it is quite dismal in different points because of the ruined cube cobbles, so the square can become dangerous for cyclists, elder people, pedestrians in general. They discuss a lot about how the problem could be resolved. Children afford different issues: who is in charge of a new arrangement, how much it will cost, etc...

- Children make hypothesis about the causes of the instability of the pavement, the most successful theory is about how the cubes stones are aligned

- Children reflect on different possible designs of the pavement

Main Lesson:

This unit is focused on activities and different strategies in order to sort out solutions for a real problem. The process is aimed to the discovery of new geometrical knowledge about angles of some regular polygons. Children can discover that only polygons that have at least an angle measuring a factor of 360 (triangle, square, hexagon) can be used to create a tessellation.

Pentagons

Plenary:

All the tessellations designed by children are hanged in an exhibition.

PHOTOS





