Europeana Learning Scenario

Title

Mathematics in Art

Author(s)

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Summary

Table of summary	
Subject	Maths, Art, Physics
Topic	Area of geometric and non-geometric shapes
Age of students	12-13
Preparation time	2 hours
Teaching time	Three 45-minute lessons
Online teaching material	https://create.kahoot.it/details/percentage-in-art/ffe50d0b-204a-4384-b135-4f357042b887 https://pixabay.com/vectors/frame-black-white-border-outline-32181/ https://pixabay.com/illustrations/mondrian-red-blue-yellow-1504681/ https://www.pexels.com/photo/two-round-black-cases-2226387/ http://bit.ly/math_in_art
Offline teaching material	Ruler, calculator, millimeter paper, paper, ruler, triangle, paint
Europeana resources used	https://www.europeana.eu/portal/en/record/08547/sgml_eu_php_obj_v0003621.html https://www.europeana.eu/portal/en/record/08547/sgml_eu_php_obj_d0058267.html

Licenses

Integration into the curriculum

The topic fits in Maths curriculum for the sixth grade.

Aim of the lesson

Students calculate the area of geometric and non-geometric shapes in each colour and make their own sketch or painting.

Trends

Collaborative Learning: Students will work in groups

Peer Learning: Students will learn from each other during group work and by watching and listening to presentations of other groups.

21st century skills

Critical thinking: Students must choose the way they're going to solve the problems: how to determine the area of the figures and after that how to organize their painting with geometric shapes.

Communication: Students must talk to each other, choose colour, compare their results

Collaboration: Working in groups of 4-5, peer assessment

Creativity: Students will first explore the ways to measure and calculate area, and then create a new picture, connecting art and science (mathematics)

Activities

Name of activity	Procedure	Time
Introduction	Students form groups of three or four. The teacher introduces the task: how to work on the first and on the second part of the lesson, how to present their work to their classmates. The Europeana platform is presented to them, as an online space where they can find different kinds of material, including the one that will be used in today's lesson.	10'
Group work (Maths)	Measuring and calculating. Students open the link with a certain painting. Every group has the same task, but different procedure. They must decide how to determine the area, measure line segments on screen and then calculate area or measure (count) with millimeter paper. 1. group (black and white): Measure height and width and calculate the area of the whole painting and the area of the black rectangular. Then calculate ratio (black: white). https://pixabay.com/vectors/frame-black-white-border-outline-32181/ 2. group (Mondrian):	35'

Measure line segments and calculate the area of every color of the painting. Then calculate the percentage of all color.
https://pixabay.com/illustrations/mondrian-red-blue-yellow-1504681/

3. group (Globe):

Measure area of a different color (red, orange, yellow, green, blue), using printable handouts of the painting and millimeter paper.

https://www.europeana.eu/portal/en/record/08547/sgml_eu_php_obj_v0003621.html

4. group (black and white circles): measure line segments and diameters and calculate the area of every figure of the painting. Then calculate the percentage of black and white areas.
https://www.pexels.com/photo/two-round-black-cases-2226387/

5. group (Graphics - advanced group):

Measure area of a different color using printable handouts of the painting and millimeter paper.

https://www.europeana.eu/portal/en/record/08547/sgml_eu_php_obj_d0058267.html

Name of activity	Procedure	Time
Group work (Art)	All groups: Using paper, ruler, triangle and paint make your own sketch or painting. Use one of the colours from the painting you have seen before, and try to get the same percentage of that color!	45'
Presentation Peer assessment	Every group presents their poster-painting. Members of the other groups can ask questions about procedures used for measurement and calculation of area. They give feedback to their colleagues (good idea, nice work, bravo) or offer their ideas.	35'
Quiz	Students play Kahoot quiz about areas (estimation, percentage).	10'
Survey (Students' feedback)	Students fill out an online survey http://bit.ly/math_in_art	2'

Assessment

Peer assessment: presentation of every group's artwork, classmates' feedback

Kahoot:

https://create.kahoot.it/details/percentage-in-art/ffe50d0b-204a-4384-b135-4f357042b887

**************************** AFTER IMPLEMENTATION ****************************

Student feedback

http://bit.ly/math_in_art

Teacher's remarks

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About the Europeana DSI-4 project

Europeana is Europe's digital platform for cultural heritage, providing free online access to over 53 million digitised items drawn from Europe's museums, archives, libraries and galleries. The Europeana DSI-4 project continues the work of the previous three Europeana Digital Service Infrastructures (DSIs). It is the fourth iteration with a proven record of accomplishment in creating access, interoperability, visibility and use of European cultural heritage in the five target markets outlined: European Citizens, Education, Research, Creative Industries and Cultural Heritage Institutions.

European Schoolnet (EUN) is the network of 34 European Ministries of Education, based in Brussels. As a not-for-profit organisation, EUN aims to bring innovation in teaching and learning to its key stakeholders: Ministries of Education, schools, teachers, researchers, and industry partners. European Schoolnet's task in the Europeana DSI-4 project is to continue and expand the Europeana Education Community.