

Europeana Learning Scenario

Title:

Create, Collaborate & Solve

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Abstract

Skills such as problem-solving, collaboration, creativity and critical thinking are fundamental at this day and age. This learning scenario helps students to acquire and work on different 21st century skill to produce mathematical word problems on a given Europeana picture and work out problems created by their peers.

Keywords

Collaboration, Creativity, Critical Thinking, Mathematics, Problems

Table of summary

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Subject	Mathematics
Topic	Problem solving
Age of students	7-11
Preparation time	1 hour
Teaching time	45 minutes
Online teaching material	N/A
Offline teaching material	Problem Cards, Biro, Pencils, Rubbers, Mini whiteboards, Markers, Interactive Whiteboard
Europeana resources used	Image 1 , Image 2 , Image 3 , Image 4 , Image 5 , Image 6 , Image 7 , Image 8 , Image 9 , Image10 , Image 11

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Integration into the curriculum

The following learning outcomes are taken from the Mathematics Syllabus (Year 5). These were taken from:

https://curriculum.gov.mt/en/Curriculum/Year-1-to-6/Documents/pr_syllabi/syllab_pr_mathematics_yr1_to_yr6.pdf

B.5.4 Use column addition and subtraction for $HTU \pm TU$ and $HTU \pm TU$ where the calculation cannot easily be done mentally and extend to 10,000.

F.5.2 Investigating mathematical problems and communicating the process adopted and/or their result/s.

H.6.5 Solving up to two-step word problems and communicating the process adopted and/or their result/s.

Aim of the lesson

By the end of this learning scenario, the students will have explored different 21st-century skills such as collaboration, communication and critical thinking. Apart from this, students will also be able to create and work together to solve different mathematical problems.

Outcome of the lesson

The students would have worked collaboratively in groups to create different mathematical word problems about a given picture. They will use the method of highlighting different keywords in a mathematical problem to understand it better. They will work collaboratively to solve the problem.

Trends:

Collaborative Learning: a strong focus on group work.

Student Centered Learning: students and their needs are at the center of the learning process.

Peer learning: students learn from peers and give each other feedback.

Edutainment: playful learning. Learning while having fun.

21st century skills

Collaboration: The students will work together in producing the different mathematical problems.

Communication: While working out problems the students will be able to communicate together and devise a way how to solve the problem.

Critical Thinking: Students will be encouraged to use their metacognition skills and think more deeply about the mathematical problems they have.

Activities

Name of activity	Procedure	Time
Introduction:	<p><i>Individual Work:</i></p> <p>Show Image 1 and place a scenario.</p> <p>Tell the students: ‘Today I am going to the cinema, and I plan on bringing 13 students with me. Each cinema ticket costs €6.00. How much money will we spend altogether?’</p> <p>Discuss the above mathematical problem with the students and highlight some important keywords. Give some time for the students to individually work it out on their mini-whiteboards. Share with the students today’s learning outcomes.</p>	
Activity 1	<p><i>RUCSAC Method:</i></p> <p>Elicit from the students today’s success criteria (A success criteria is a list of features that a teacher wants the students to include in their final work). Tell the students that to solve a problem, one needs to use the RUCSAC method.</p> <p>Clarify that RUCSAC is a set of steps which students need to follow to tackle mathematical word problems. RUCSAC stands for Read, Understand, Choose, Solve, Answer and Check.</p> <p>Use the previous word problem and use the RUCSAC method to solve it.</p>	
Activity 2	<p><i>Group Work: Creating Mathematical Problems</i></p> <p>Explain that for the following activity groups will be working together to produce a mathematical problem on a given image. A member from each group will pick up a random number from a box. Each number is assigned to an image taken from the Europeana Collections (number 2 = Image 2, number 3 = Image 3 etc.).</p> <p>Working collaboratively, the students will have to come up with a mathematical word problem. Each problem written needs to have a maximum of a two-step working method to be solved. Students can include multiplication, division, addition and subtraction.</p> <p>As soon as they are finished, they need to leave the unsolved word problems (see Annex; problem writing and solving card), together with the image related to the problem on their tablet, at their group station.</p>	

Name of activity	Procedure	Time
Activity 3	<p><i>Group Work: Solving Mathematical Problems</i></p> <p>Explain that for this activity the teacher will be playing a song and while the song is playing, students need to walk around the classroom. As soon as the song stops playing students need to sit down on another group's station, discuss the problem created by other group members and use the RUCSAC method to solve it. Give some time for the students to solve the problem and as soon as everyone's ready, discuss each answer and method used.</p> <p>Repeat.</p>	
Conclusion:	<p><i>Plenary:</i></p> <p>Highlight once again today's learning objectives and methods used. Give another two mathematical word problems for the students to individually solve on their mini-whiteboards.</p>	

Assessment

School Work: The students are to work collaboratively to create and solve mathematical word problems.

Take-Home task: Students are to produce their own word problem to images found on the Europeana Collection using their LearnPads at home, and present them to their peers to solve.

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

Student feedback

-During the writing part of the problem, students are allowed to discuss and give feedback on the problem created.

Teacher's remarks

This lesson tackles multiplication, division, addition and subtraction, but it can be developed further to other mathematical concepts such as fractions etc.

Prior to this lesson, it is of utmost importance that students are introduced to different mathematical problems so that they are familiar with the wording used in mathematical problems and find it easy for them to come up with problems of their own.

For younger students, teachers can create problems to the Europeana images themselves, and the students can work them out either collaboratively or individually.

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.

Annex

Website linked to the Mathematics Syllabus:

- https://curriculum.gov.mt/en/Curriculum/Year-1-to-6/Documents/pr_syllabi/syllab_pr_mathematics_yr1_to_yr6.pdf

Further Resources which can be used:

- www.youcubed.com
- <https://nrich.maths.org/primary>
- <https://www.twinkl.co.uk/search>

Problem Writing and Solving Card:

Problem and Image Number	
Problem:	
Working:	
Solved by:	