



Mathematics Problems Project - project overview and teacher's guide

Introduction

The Connecting Classrooms 'Mathematics Problems' project is a three-stage project. Teachers from partner schools discuss and choose a maths problem to focus on which is interesting to the two groups. Learners share their ideas for solving the problem with students in their partner country. They ask questions about the way that students in their partner country will approach and solve the problem.

Learners think about the problem which the teachers have chosen and decide how to solve the problem with students in their partner country. They ask questions about the ways in which students in their partner country solve maths problems. Learners make a presentation to compare the way they look at maths problems in the two countries.

In the evaluation stage, learners say what they like about the presentation made by other students in their own country or from their partner countries and what they learnt from it. Learning outcomes, cross-curricular links, personal development outcomes and key English-language areas can all be found in this guide.

The three stages in the project

Learners take part in the project through the project space on the Connecting Classrooms Online website.

In each stage, learners interact with their classmates and/or learners in their partner countries. They ask and answer questions, then upload presentations and evaluations for others to see and share.

The three stages provide support for learners in each stage of the project and clearly show how the process and product work for everyone.



Stage 1 - Investigate

In this stage learners discuss the problem that the teachers have agreed to set for them. They discuss the methods they will use to solve the problem. They ask questions about how students in their partner country will solve the problem and exchange their work. In this way, learners understand the approaches of students in their partner country to the chosen problem and which can be used in a presentation.

Stage 2 - Create

In Stage 2 learners can be creative with the way they present their combined ways of working on the problem. They can combine or contrast the way they approached the problem with what students in their partner country did. They can say what was the same and different about the ways of working and what they learned from the partner school students' approach. They can make a presentation describing and/or showing the ways of solving the problem, and then upload their presentation to the project space. The presentation may be in the form of a poster, PowerPoint presentation, audio or video file or another digital format.

Stage 3 - Evaluate

In the final stage of the project, learners can download and evaluate the Mathematics Problems presentations produced either by their classmates, or by the learners in their partner country. The presentations can be downloaded from the Connecting Classrooms website, and there is also an evaluation form to be downloaded. Learners use this to evaluate the other presentations.

When the evaluation forms are complete, they can be uploaded to the project space so the creators of the presentations can see them.

Read more about the learning outcomes, cross-curricular links and English language target areas in the project below.



Mathematics Problems Project (ages 11-14)

Summary	Students share ideas or discuss problems on a Mathematical issue with their partner school.
First activity	Students research a Mathematical issue or problem that might be of interest to discuss and/or solve with their partner school (e.g. a statistical or trigonometry problem).
Exchange	After having sent their issues students discuss the issues and discuss problem solving tactics if relevant.
Share	Students design a presentation about their findings and what they have learned from the project. They will then upload this to the Mathematics Project Forum. They can then evaluate a presentation from their partner school.
Extension activities	They can present their work to the school. They could compile a list of other Mathematical problems and invite other students to solve them.
Useful resources	http://www.teach-nology.com/teachers/lesson_plans/math/ A website with lessons based on Mathematics http://www.readwritethink.org/classroom-resources/lesson-plans/giant-story-problems-reading-146.html lesson plans combining Maths problems with reading, writing and drawing. http://web.informer.com/1million+dolar+math+problem a website full of Maths problems and problem solving strategies.



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Joint Curriculum Project Notes

Project: Mathematics Project! - (11-14)

Aims and Outcomes: This project invites students to think about and discuss Mathematical concepts and problems. They will present their findings and finally evaluate one of their partner schools presentations.

UK Curriculum links:

Mathematics at key stage 3

The '*Mathematics Project*' project fits in well with concepts of Mathematics at Key Stage 3.

1.1 Competence

Selecting appropriate mathematical tools and methods, including ICT

1.2 Creativity

Combining understanding, experiences, imagination and reasoning

1.3 Applications and implications of Mathematics

Engaging in mathematics as an interesting and worthwhile activity.

ICT at key stage 3

This project also fits in with the key concepts of ICT at Key Stage 3

1.2 Communication and Collaboration

Exploring the ways that ICT can be used to communicate, collaborate and share ideas on a global scale, allowing people to work together in new ways and changing the way in which knowledge is created.



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Cross-curriculum dimensions:

The 'Mathematics Project' project engages students in the following cross-curricular dimensions:

Enterprise

Students learn to be innovative and work creatively with others to solve problems.

Technology and the Media

Students use technology confidently and productively to find things out, try things out, develop and present ideas, and communicate with local and global audiences.

Creativity and critical thinking

Students learn to think and act creatively, using their imagination to explore the unfamiliar and make unlikely connections.

Personal, Learning and Thinking Skills:

The 'Mathematical Project' helps learners develop the following PLTS areas:

Effective Participators

Students discuss issues of concern, seeking resolution where needed.

Creative thinkers: generate ideas and explore possibilities and try out alternatives or new solutions and follow ideas through.



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Key language:

Vocabulary to talk about Mathematics and numbers

The English language used in the 'Mathematics Project' project can be supported and extended through the following links from British Council's Learning English website:

A game practicing numbers and sums

<http://learnenglishkids.britishcouncil.org/en/language-games/fill-the-gaps/numbers>

A game practicing sums with money.

<http://learnenglishkids.britishcouncil.org/en/language-games/paint-the-words/money-sums>

An activity plus worksheet for practicing numbers

<http://learnenglishkids.britishcouncil.org/en/practise-your-english/numbers-20-100>

A quiz to practice numbers

<http://learnenglishkids.britishcouncil.org/en/practise-your-english/number-quiz>