



The face of a country in fractions

Exploring land use with mathematics

Project in Citizenship and Maths PiCaM

Project Kit description

The students discuss the distribution of land use patterns in different countries and, at the same time, get into the topic of ratios. The climatic and geographical differences in terms of land use are also addressed. They work with data and get to know advantages and disadvantages of simplification and modelling processes.

This toolkit includes two tasks: **Getting to know different kinds of land use** and **Create your own country set**. It provides opportunities for students to examine global issues, to consider differences and inequalities and to explore the living conditions in other countries. Through engaging with the activities and sharing their responses with students in partner countries they explore a set of different countries' land use distribution and get an understanding of how to interpret simplified data and break down complex information themselves. The mathematical content covers estimating, rounding, simplifying and analysing data and interpreting and comparing proportions and fractions.

The activities in this toolkit are from the Erasmus+ Project in Citizenship and Mathematics (PiCaM). This project provides resources to support teachers and teacher educators to develop critical global learning through the learning and teaching of mathematics, opening up spaces for learners to come together in meaningful mathematical inquiry. Resources for classroom activities, together with guides for teacher professional development, initial teacher education and further eTwinning kits are freely downloadable from the project website: <http://www.citizenship-and-mathematics.eu/>

Pedagogical objectives

- to create curricular spaces where children can realise their responsibilities as critical global citizens
- to engage a diverse population of children with mathematics in their school settings and communities, supporting and reinforcing their sense of themselves as inquiring mathematicians
- to enact ideas derived from Philosophy for Children (P4C) to create opportunities for critical thinking, communication, collaboration and creativity

Difficulty level

Intermediate

Key competences

Mathematical, personal, social, civics, languages

Subjects

Mathematics/ Geometry, Social sciences, Geography, Biology

Level

10-13

- to help build classroom relationships which work towards creating a participatory, caring and inquiring learning community
- to understand how land use in different countries differs due to different climatic and geographical conditions and what this means for the people living in that country
- to gain insights in how data can be simplified and how simplified information can and cannot be interpreted

Orientation

Introduction

Getting to know different kinds of land use

Students are prompted to think about different conditions in various countries by having a look at foodstuffs from all over the world. They look up the food's countries of origin on the globe and identify differences in how the countries are depicted there. ("What else can be seen on the globe apart from shape and position of the countries?") The children then create a "legend" including the different land uses they are going to explore during the whole activity and get to know the associated colours.

		farmland
		grassland
		settlements and infrastructure
		forests
		water and wetlands
		other

In an eTwinning project, children have the chance explore the partner country through personal connection and tell the partner class about their own place. During or after the first activity, they can tell each other about typical crops from their countries. Are there any differences? Why or why not? Children might want to cook a meal with their parents from ingredients their partner class showed them.

They can look at aerial pictures of their own and the partner country and look for forests, mountains and big rivers. They can ask each other questions, for example: When you're in the countryside, do you see a lot of forests? Do you know what is usually grown on the fields in your country? What fruits do people grow in their gardens?

Communication

Collaboration

Create your own country set

After learning how the land use distribution in a country can be simplified to a set of 10 squares and learning the chances and limitations this data presentation offers in previous tasks, children have a go at making simplification choices themselves.

Therefore, they split in small groups and receive a research sheet about one of the partner countries (without their native country). Based on the information on the research sheet, the students create their own set of 10 squares. On the sheet there are pie charts with percentages, information about the land area, the number of inhabitants and other information. In an eTwinning



partnership, children research pictures and videos about their own country to complete the information on the partner classes research sheet. It is the students' job to put the information into useful categories, and round the numbers to include very small entries "other". They have to make their own decisions, which categories they summarise, whether they need an "other" category and what is included in it. Finally, the results are presented to the other groups.

The children should take some notes about the other groups' strategies during the presentation. Afterwards, they compare their strategies and try to identify similarities and differences in what the groups did. Some countries will have been covered by both classes and offer the chance to compare the results in more detail.

Evaluation & Assessment

Ask the children to discuss in groups what they have learnt from the project and to share this with the whole class. Recapitulate what can and can't be shown if breaking a country down to only 10 squares. If there is sufficient time, conduct a P4C enquiry with the children to identify and discuss questions that they find particularly intriguing.

Follow up

To extend the activity from fractions to percentages you could gradually go towards finer units. Smaller squares might first represent five and then just one percent. Find a suitable way to represent your units if you're going up to 100 percent. This also provides an opportunity to have a look at land use types that don't reach 10 percent, e.g. housing areas and the differences between rural and urban space or nature reserves.

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