

Travel Expo

Age-group: 12-15 years old

Number of hours: 21-23 hours

Short description of activity: Students prepare a trip for a group of students their age from another country. In groups, they prepare a virtual travel expo and a visit plan for the foreign students, each group exhibiting the most important aspects of one region in their country.

CT-competences:

- Data collection (gather statistical and geographical information)
- Data analysis (maps and distances, decision process modelling with decision trees)
- Data representation (infographics)
- Pattern recognition (on maps)
- Problem decomposition (Infographic with top-down approach)
- Abstraction (From maps to graphs)
- Algorithms and procedures (web-page design, Travelling Salesman Problem, Knapsack problem)

Goals

- Approach the history, geography, climate, and culture (musical, gastronomical, sports, etc) of the student's country
- Prepare a budget, understand decision making process and decision trees, path planning
- Oral traditions, legends and stories (mother tongue/foreign language)
- Collaborative work, inclusion, carbon footprint, sustainable development goals.

Realistic STEAM-context

A group of students (like ourselves) from another country are coming to visit us. We want them to get to know about our country and share with them the best of it. We want to select and exhibit the most interesting facts and places in a travel expo where we make a proposal for their visit plan.

From this entry-point we introduce students to the STEAM project. The following list summarizes the connections that can be established from our project to the subjects taught in that school-year, the curriculum and the teacher's approach. Only some will apply.

Natural Science

- Differences between living beings and inert beings. Types and classification of living beings
- Characteristics and classification of vertebrate animals, invertebrate animals and plants.
- Habits of respect and care towards living beings

Technology & Engineering

- Renewable and non-renewable energies. Energy sources.
- Use of ICT to produce different outputs
- PERT/GANTT diagrams, Decision making trees
- Travelling Salesman Problem and Knapsack Problem

Mathematics

- Operations with natural and decimal numbers: addition, subtraction, multiplication and division.
- Percentage increases and decreases.
- Units of the Decimal Metric System.
- Development of strategies to measure figures in an exact and approximate way.
- Election of the most suitable unit for the expression of a measure.
- Taking measurements.
- Graphs and statistical parameters.
- Collection and classification of qualitative and quantitative data.
- Realization and interpretation of simple graphs: bar, polygonal and sector diagrams.
- Critical analysis of the information presented through statistical graphics.

Social studies

- Mapping. Plans and maps. Scales.
- The Planisphere: physical and political.
- Climate and climatic factors. The types of climates in [country] and their areas of influence.
- The hydrosphere and the Lithosphere.
- The geographical diversity of the landscapes of Europe and [country]: relief, climate and hydrography
- Human Intervention in the Environment.
- The social, political and territorial Organization of [country]
- The European union
- Population of Europe and [country]: distribution and evolution. Migratory movements
- Our historical and cultural heritage.

Arts

- Identify the immediate environment and the imaginary one, explaining its characteristics with an appropriate plastic language.
- Carry out plastic productions following elementary guidelines of the creative process, experimenting, recognizing and differentiating the expressiveness of the different materials and pictorial techniques and choosing the most appropriate for the realization of the planned work.

Language

- Situations of communication, spontaneous or directed, using an orderly and coherent speech
- Expression and production of oral speeches according to their typology: narrative, descriptive, argumentative, expository, instructive, informative and persuasive.

Based on learning by doing (with different levels: from imitation to creation)

Part	Description	Timing
0	<p>Practicing the CT skills.</p> <p>In this session some computational thinking skills should be worked, in order to be familiarized with them for the project. Each teacher can decide which CT skills they want to work on, but it's recommended to practice the one related to the project (ideally, knapsack problem and travelling salesman problem). For this purpose, bebras tasks are highly recommended, you can find them in the following links:</p> <ul style="list-style-type: none"> • https://www.bebas.org/node_56.html (this is the bebras main page, you can access the different country resources by clicking their flag). • https://digitalcareers.csiro.au/en/Resources/Years-7-8 (Australian bebras resources). • https://www.bebaschallenge.org/ (USA bebras resources). • https://www.bebas.uk/ (UK bebras resources). 	1-2 sessions
1	<p>Introduction/motivation</p> <p>A foreign group of students wants to visit us next month, so we have to make a trip plan for them. They don't know anything about our country so, we have to make two things:</p> <ul style="list-style-type: none"> • The first thing is a “motivacional plan”, where we should include some aspects about Europe and our country, to engage and motivate them to visit our country. • The second thing is a “travel guide”. We have to make a guide with all of the important information of the visit (places, routes, budget...), so they will know exactly what they are going to do. <p>If the last activity is possible, teachers can motivate their children with it. In this motivational session teachers should put attention on the things that make our country different and special, in general, just in order to take “suggestions” from the children and work on these “suggestions” in the next sessions.</p>	1 session
2	<p>Land and sea in Europe</p> <p>Students have to learn about the different landscapes from Europe and their country's physical geography.</p> <p>At first, they are given different paintings with different landscapes (european and their own landscapes).</p> <p>With all of this analyzed landscapes paintings students have to do the compare and contrast routine, focusing on the differences between landscapes and in the differences between Europe and their country.</p> <p>In this session sound landscapes can be worked, asking for the sounds that take place or represent a landscape. Related to this, typical folklore music can be seen.</p>	1 or 2 sessions

3	<p>From Europe to my country at night Students are asked to make a I see - I think - I wonder routine with the Europe light map (we can see an example of this type of map map in Annex 1). They should make explicit the patterns they think that are repeated (like, for example, higher light density by the sea).</p> <p>They should connect the light density with the population density, and make connexion with the knowledge acquired in the previous session.</p>	1 session
4	<p>Our country's puzzle Teachers and students make a zoom in from the EU and divide the country into regions so that, when put together, they cover the country. Each group of students has to have a piece of the map, deciding what they want based on the climate, political, seas, economic... (See Annex 2)</p> <p>For example: around a river or a mountain range, because a particular product is made, because it has a different language, because it has the same climate...</p>	1 session
5	<p>Cultural heritage Let's research about the most important buildings and historical places, music traditions, legends and oral traditions in the region. Look for a legend about mountains, lakes, historic people or whatever are special in this area. The main idea is focusing on the cultural heritage of the region, and try to understand and value the cultural manifestations.</p>	1 session
6	<p>Country's trends Students are asked to search some demographic and economic graphs, for example, in the following webpage: https://ec.europa.eu/eurostat.</p> <p>In this webpage they can compare different countries of the EU with different graphs, so they are asked to choose what they consider the most representative and important graphs to include in the first infographic. It could be interesting to use population pyramids, bar charts and pie charts in this activity, in order to use different representations of the reality.</p> <p>As an example, we can see graphs comparison in Annex 3.</p> <p>Teachers can also use other web pages like google trends or https://www.gapminder.org/.</p>	2 sessions
7	<p>Natural heritage The students are asked to research about the geography, plants, animals and climate of their assigned region. They should make connections with the economy and sustainable development shown in the 2030 agenda and with the SDG, specially with 11 and 15. They should classify animals and plants with a dichotomous key which could be done in a web page, in a scratch program...</p>	2 sessions

8	<p>Prepare infographic</p> <p>Through all of the activities, students have to take notes and information to make a final product: the infographic. The infographic has to have information about the cultural and natural heritage, expressed in an enjoyable format, as if they were publicists.</p> <p>This infographic can be a webpage, a genially, a cardboard, a scratch program... trying to use the most of the ICT tools you have.</p>	1 session
9	<p>Pair-share</p> <p>Students are asked to share and compare their infographics through the Aronson jigsaw technique (see Annex 4). They have to give and receive feedback from their partners in order to improve their work with new ideas.</p> <p>In the first part of the session they do the Aronson's puzzle routine (½ session) and in the second part (another half of the session) they return to their original group to put in order all of the new ideas with the partners.</p>	1 session
10	<p>Ending/concluding the infographic</p> <p>Students work on their infographic adding other students and teachers feedback and preparing the presentation for the next session.</p>	1 session
11	<p>Our country show</p> <p>Others are invited (parents, relatives, other students, teachers...) virtually or physically, depending on the format each one can do.</p> <p>Invite others/parents to visit (virtually or physically, depending on the format).</p>	1 session
12	<p>Preparing the route</p> <p>Students have to decide which places they are going to visit and why, inside their previous selection. Once they have selected the places, they have to solve the Travelling Salesman Problem, taking care with the distances, the way to move in the country (bus, car, plane...), and the CO2 emitted.</p> <p>During the planning and solving of the Traveling Salesman Problem they have to make decision trees, take into account the possible drawbacks (people with wheelchairs, old roads, public works...), and make an alternative plan if something happens.</p> <p>Finally, they have to prepare the Knapsack by solving the Knapsack problem, thinking about the weight of the objects and the value of them.</p> <p>More information about the Traveling salesman problem and Knapsack problem in Annex 5.</p>	2 session

13	<p>The travelling guide</p> <p>The following activities could be done in any order. The main idea is to make a book/a webpage with all of the information of the traveling plan by the deep research of all the places they are going to visit. The final product is a “travel guide”, where the students can put all of the acquired knowledge.</p> <p>On Route Narrations/stories: Students have to search for legends or myths about the places they are going to visit (f.e. if they visit the aqueduct in Segovia they have to look for the legend of the aqueduct). Furthermore, they have to elaborate narrations/explanations of the natural phenomenon, animals, plants... and whatever they are going to visit, making a full guide book with deep information of the route.</p> <p>Students have to distinguish the stories to be told like legends (maybe they can tell in the bus-times) and the theoretical information of the places, using different linguistic registers.</p> <p>Budget: Students are asked to make a budget of all the trip, from simple estimation using a full session looking for information and making a spreadsheet with in/out credit and debit. Depending on the grade, teachers can request them to use different mathematical tools, using, for example, percentage discounts.</p> <p>Timetables: With some spreadsheet or tables software students have to organize the timetables of the trip to include them in the final documentation.</p> <p>Tips and tricks: Students should make a tips and tricks part in the book/webpage, including some aspects related to the places they are going to visit, according to the characteristics of the climate, orography, roads... (for example: bring water boots (wellies) because the climate in the north of our country is really wet).</p>	5 session
14	<p>Final presentation (optional)</p> <p>If possible, the school can connect with another school. Pair groups in the 111-scheme present their route and debate with the foreign team in english.</p>	1 session

Organization

Materials:

- Depends on the problem, the solution, and the school. Students can make their “travel guide” and their “travel expo” in any format schools can assist. These two outputs can be done on paper, with a web page, in a scratch program... It's important to try to use the most of the ICT each one has.
- Computers also will be needed in order to look for information.

- For the final presentation (the optional activity), schools need some computers, cameras and internet connexion.

Coaching

Useful questions:

Part	Questions	Area
0		
1	<p>Introduction</p> <p>Do you think that our country is special in any way? Why?</p> <p>What has to have a travel guide? These things are the most representative/important in your country?</p> <p>What is important to show a visitor? Why?</p>	Class teacher
2	<p>Geography</p> <p>What criteria can you use to compare two landscapes? How are the landscapes of Europe similar to your country's landscapes? How are they different?</p> <p>How does this landscape make you feel?</p> <p>Is there a river in the capital city of your country? And in other important cities in your country/Europe?</p>	Social Science
3	<p>Connections with arts-- landscapes in painting, in music, musical landscapes</p> <p>What is a landscape? (make some reflexions about landscape concept)</p> <p>What significant differences do you see in the two landscapes in painting?</p> <p>Can you tell us the different types of music you recognise? What do you sense when you listen to the different musical landscapes? How do you feel when you listen to traffic noise or the bird's song?</p> <p>Which is the role of painting connecting with the music? Which is the main difference between these types for the musical landscapes?</p> <p>Headline: Which headline you will create when you see a landscape in painting?</p>	Music/Arts

4	<p>From Europe to my country at night</p> <p>What is the picture showing?</p> <p>What do the light areas represent and what do the dark areas represent? Why do you think the dark areas and the light areas are in those places?</p> <p>Do you think that actual townships are similar than in the past? Why do you think that the capital city has grown so much and not others?</p>	Social Science
5	<p>Our country's puzzle</p> <p>How can we divide the country? Why do we divide it the way we do?</p> <p>Can we divide our territory in a different way?</p> <p>According to which criteria do you think the actual divisions have been made?</p>	Social Science/ Natural Science
6	<p>Cultural heritage</p> <p>What buildings or historical places are representative in this territory? Why is this place representative of this territory? (Not always the most representative places are the most famous).</p> <p>Who built this place and why? What historical events are connected with this territory or historical place?</p> <p>What legends or traditions are connected with this building or historical place?</p>	Mother tongue/ Social Science
7	<p>Country's trends</p> <p>Is the line graph/pie chart/bar chart the best way to represent the data?</p> <p>What kind of data do you consider important to represent your country?</p> <p>What can you say about the economy and the demography of your country compared with other EU countries? And compared with the whole EU?</p>	Math
8	<p>Natural heritage</p> <p>Are there unique animals, plants, rocks or what landscapes in that region? Do these plants, animals or rocks have a local name?</p>	Natural Science

	<p>Does it have a Natural Park or any protected area? Why?</p> <p>Are there unique traditional agricultural solutions in that region? Are there unique sustainable solutions in the energy production in that region?</p>	
9	<p>Prepare infographic (webpage/genially/cardboard/Scratch)</p> <p>How can you present all the information you have been gathering recently?</p> <p>Does your infographic show the remarkable places/sounds/etc that you have discovered in the previous sessions?</p> <p>Does it encourage others to visit your country?</p> <p>Can you think of a top-down approach that leads to an attractive, clear and fun way to explain what you have discovered? (From EU to the country to the region to the particular places)</p>	Technology/Mother tongue/Art
10	<p>Pair-share</p> <p>What did you like about your classmate's work? What are their strong points? How can it be improved? How can they get better? How can you give constructive criticism? What have you learned from your classmates?</p>	Class-teacher
11	<p>Ending/concluding the infographic and Our country show</p> <p>What feedback did we receive from our classmates? What changes can we make to improve our work and our presentation? How can you and your group get better?</p>	Class-teacher
12	<p>Preparing the route</p> <p>What does the word optimal mean? Can the route between two cities be optimal? How do you measure the length between two cities? Do you use time or distance or your CO2 footprint? Do you find the same path each time?</p>	Math
13	<p>The travelling guide</p> <p>On Route Narrations/stories:</p> <p>Which storie/s could be more engaging? Describing a landscape, a traditional history..?</p>	Mother tongue, Second language, ICT, Math, Economy

	<p>Is the language used in the legends similar to the language used to tell on route narrations? Which similarities and differences can you find?</p> <p>Do you think that legends and myths are an important part of the culture? Why?</p> <p>Budget:</p> <p>Can you estimate a budget? How do you do it?</p> <p>Have you taken into account the percentage discounts for student groups? It could be important in our budget?</p> <p>Which is the biggest expenditure in the budget? Can we reduce it in any way? How?</p> <p>Timetables:</p> <p>How can we divide the timetable? The timetable has to be very precise? Have we got free time?</p> <p>Which is the best organization for the timetable? Why?</p> <p>Tips and tricks:</p> <p>What do you think that the visitors have to know about the trip?</p> <p>Can you find more important information apart from the one that is already in the travel guide?</p>	
14	<p>Connect with another school (optional)</p> <p>What are you going to tell? How can you summarize your project?</p>	Class-teacher, second language.

Stimulation of cooperation: (concrete opportunities/remarks adapted to the project)

Teamwork: Groups will depend on the total number of students in the class and in the number of “slices” of the country. Each teacher can choose the number of these “slices” in order to form bigger or smaller groups. As a recommendation, groups with 3 or 4 students are really suitable for this project.

Sometimes, gender-balanced groups tend to split the work following stereotyped roles (boys do the technical job, while girls focus on the higher level tasks). We recommend some intervention to balance these roles, if they appear.

Skills recommended in a group:

- Leadership / coordination / mediation

- Creativity
- Handwork
- Research and documentation
- Empathy
- Pragmatism

Formative assessment: Students should be encouraged to concentrate on the process and not the final result. Teachers shall communicate often with each other to remark student's improvements or learning needs. Grading should never be based on their final outputs but on their searches, presentations and developed skills.

Adaptations

- In the 3-6 ages, they can do only a "travel guide" of their neighbour, maintaining all the categories but searching for less information in each one.
- For 6-9 the information acquired from different sources can be simplified. Thus, the two outputs can be done together, preparing only a final expo and reducing the difficulty of the information search.
- In the 9-12 group, the requirements in the activities could be more concrete, looking for some specific aspects related to their curriculum. For example, they can classify animals, plants and rocks in a deeper way.

Tips & tricks

(only mention when relevant, e.g. background information, ...)

Annex 1

Light map:



source: <https://www.predif.org/tur4all-la-aplicacion-de-turismo-accesible/>

Annex 2

Decision Matrix.

Students make lines to form a puzzle of the Country according to the horizontal lines. Depending on the result, they fill the matrix. When they are done, they discuss that there is no “optimal” choice and make their final decision on how to split the regions for this project.

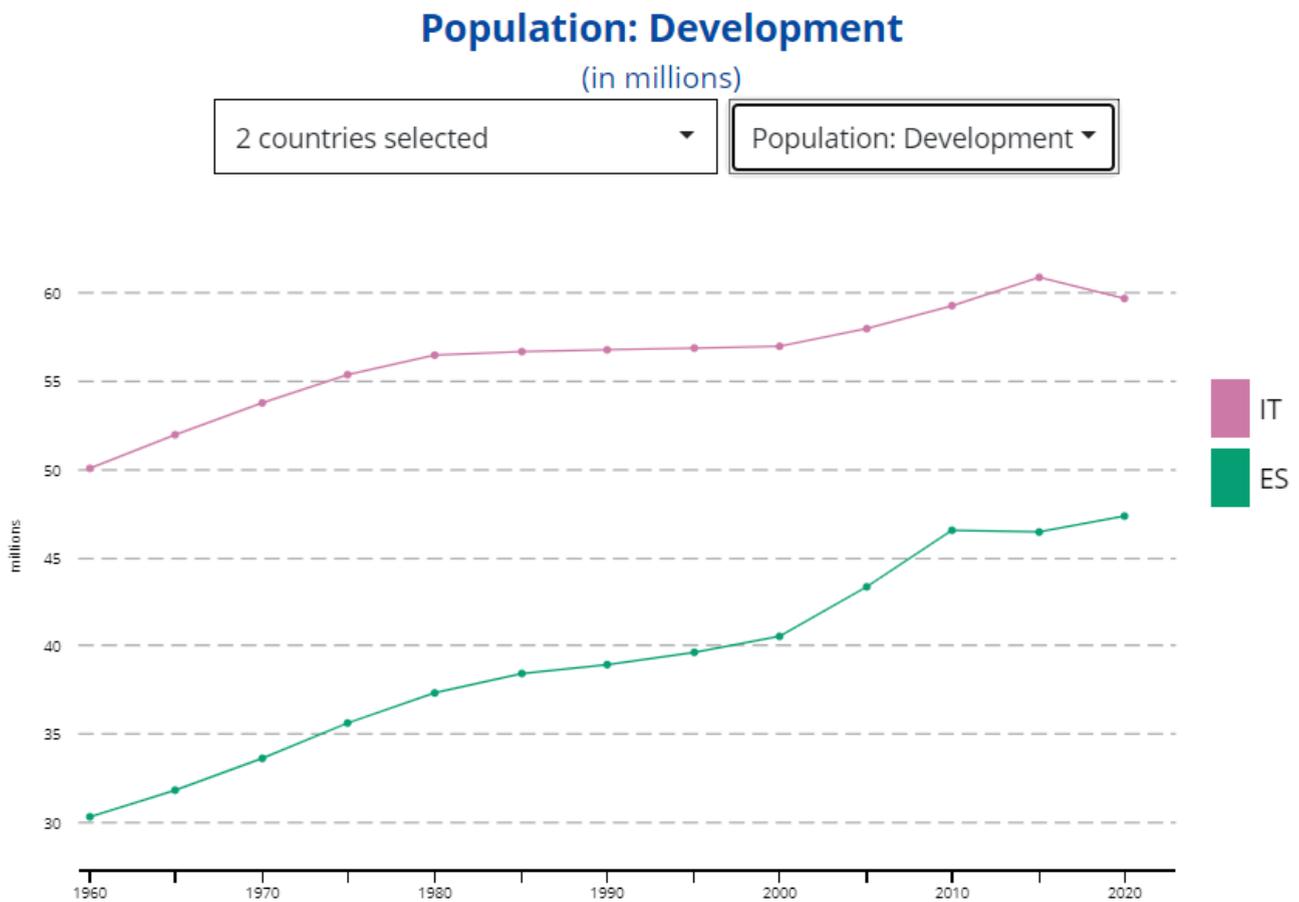
	Number of regions	Natural Variety (High/ Med/ Low)	Cultural Variety (High/ Med/ Low)	Maximum distance	Other criteria...
Political regions	17+2				
Climate					
Seas					

Example 1 with two graphs.

https://www.ine.es/dyngs/ODS/es/indicador.htm?id=4987#!subGraph323_122

- Compare and contrast these two graphs (Study and pay attention to the scales).
- Indicate the type of variables (quantitative, qualitative, primary, secondary, etc)
- Make a table with relative and absolute frequencies with these data.
- Compute the average, mode, and range of the time spent by men and women in all tasks.

Example 2.



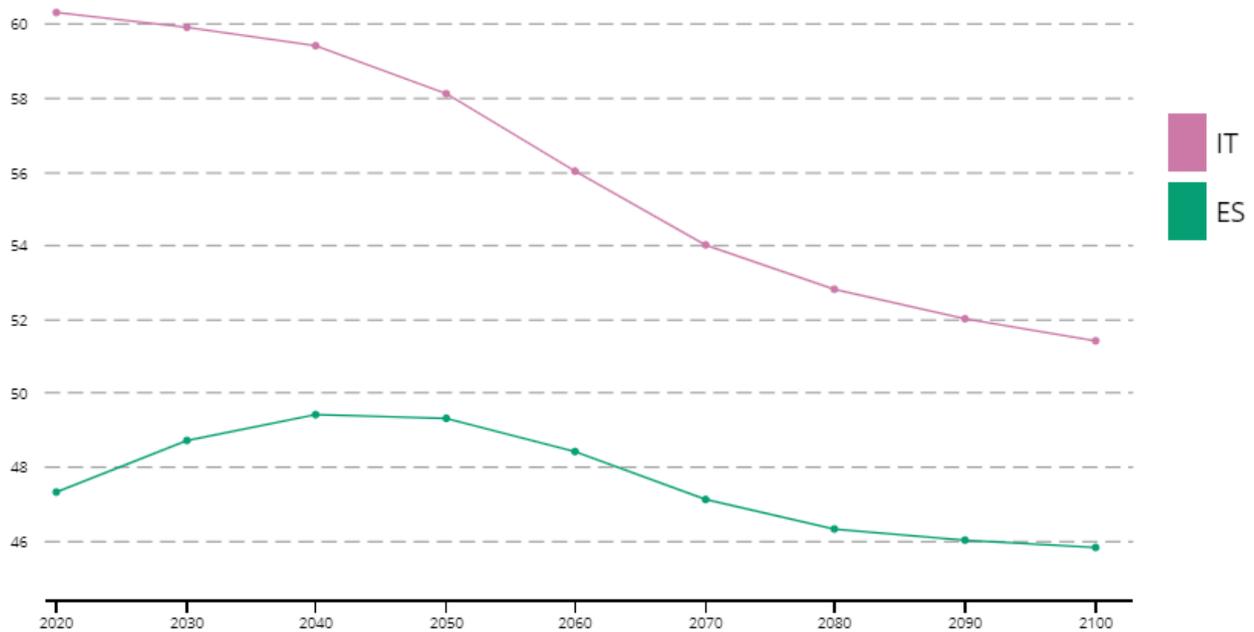
Source: Eurostat - [access to dataset](#)

Population: Projections

(in millions)

2 countries selected

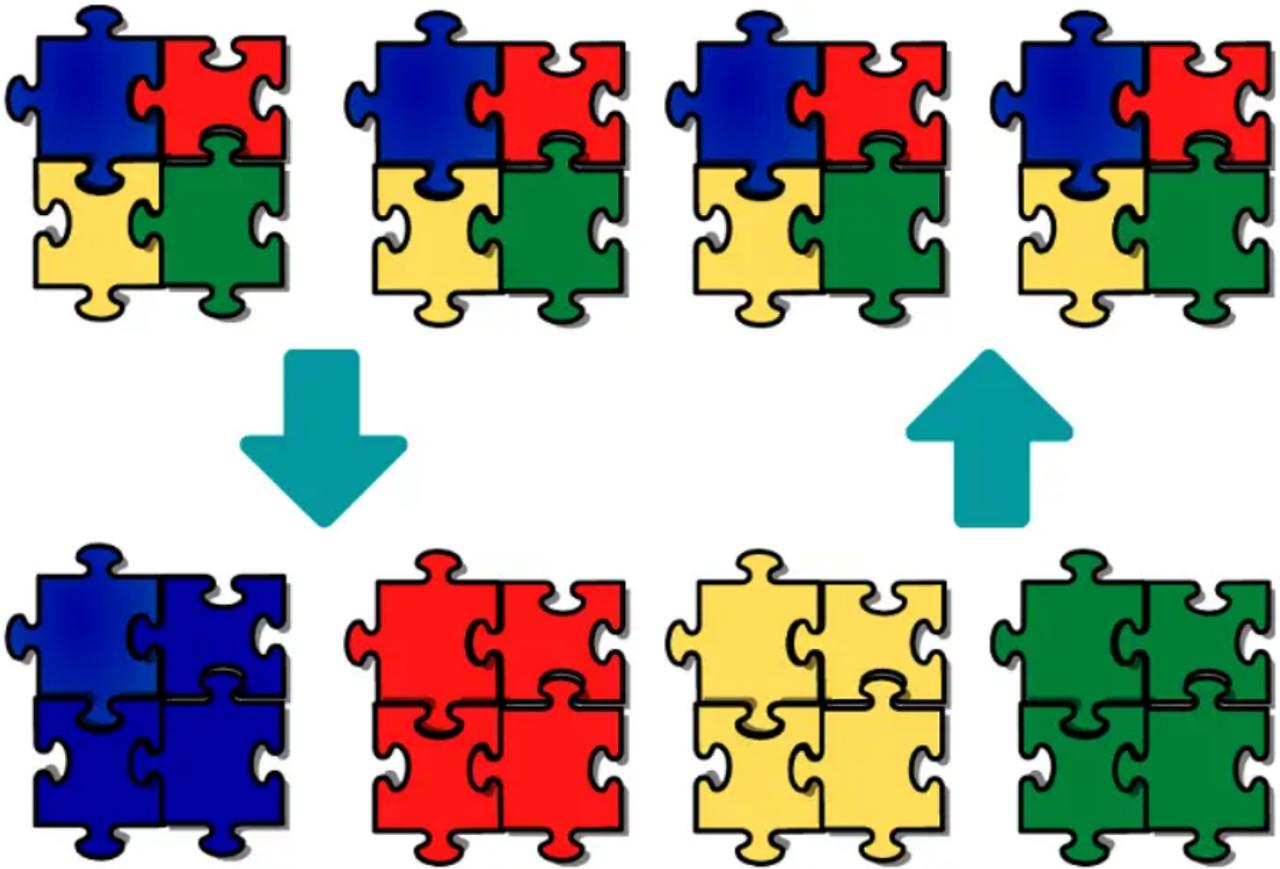
Population: Projections



Source: Eurostat - [access to dataset](#)

Annex 4

Aronson jigsaw technique: First of all, students have an original group, where they design their project. During the development of the project they will be mixed with other students from other groups, in order to share and compare their project. In the following picture we can see the distribution of the students in their original groups (the same colour) and in the mixed groups (mixed colours).



Annex 5

Travelling salesman problem: https://en.wikipedia.org/wiki/Travelling_salesman_problem
For kids: https://kids.kiddle.co/Travelling_salesman_problem

Knapsack problem:
https://en.wikipedia.org/wiki/Knapsack_problem#:~:text=The%20knapsack%20problem%20is%20a,is%20as%20large%20as%20possible.