Module 3: Sequencing/integrating GIS into the curriculum

4) Sequencing GIS into the Spanish Curriculum

St Mary's University London

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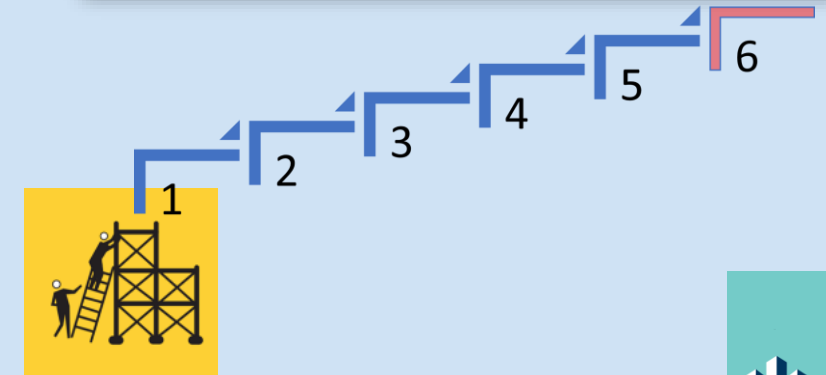
KING'S ELY

Rosenshine's Principles of Instruction (dual coding icons) for teachers' use

Principle	Description	Icon
1	**(Daily) review** — Start each lesson with a repetition of previous material. Regular repetition reinforces what was learned and leads to more spontaneous recall.	
2	**New materials in small steps** — Present learning materials in small amounts. Accompany students with practice after each step.	
3	**Ask questions** (onderwijsleergesprek) — They connect the new learning material with previous knowledge and practise it.	
4	**Provide models** — Pupils can focus on the steps to solve a problem.	
5	**Guide student practice** — The best teachers spend a lot of time supervising the practice/learning of new material.	
6	**Check student understanding** (onderwijsleergesprek) — By checking in between, pupils can learn the material with fewer mistakes.	
7	**Obtain high success rate** — Aim for the students to experience approximately 80% success in the exercises, questioning …	
8	**Scaffolds for difficult tasks** — The teacher provides temporary support that decreases as students become more competent.	
9	**Independent practice** — Provide practice time in and out of the classroom so that the learned material can be automated.	
10	**(Weekly and monthly) review** — Pupils need to practise intensively in order to automate the material. Not necessary for this key study.	

Icons based on Rosenshine poster by Oliver Caviglioli
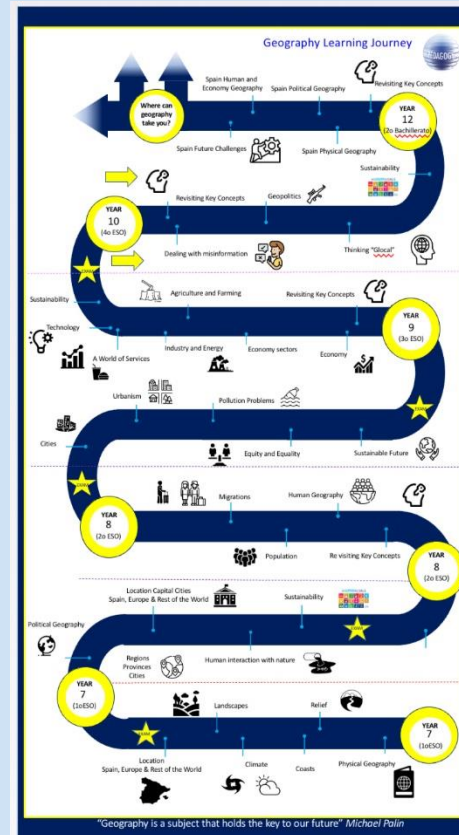
Gi Pedagogy: Concept Cube

3 Year 7 (1o ESO)
3.1 Physical Geography:
3.1.1 Maps, Coordinates and time zones. Introduction to GIS
3.1.2 Relief units, continental, oceanic and coastal. Natural Hazards.
3.1.2.1 *Spanish Relief. Location.*
3.1.2.2 *European Relief. Location.*
3.1.2.3 *World Relief. Location.*
3.1.2.4 *Use of GIS Level 1*
3.1.3 Weather and climate
3.1.3.1 *Weather and Climate elements. Climate graphics and weather maps. Natural Hazards*
3.1.3.2 *Spanish Climates. Location.*
3.1.3.3 *European climates. Location.*
3.1.3.4 *World climates. Location.*
3.1.3.5 *Use of GIS Level 2*
3.1.4 Landscapes
3.1.5 Definition and Landscapes elements
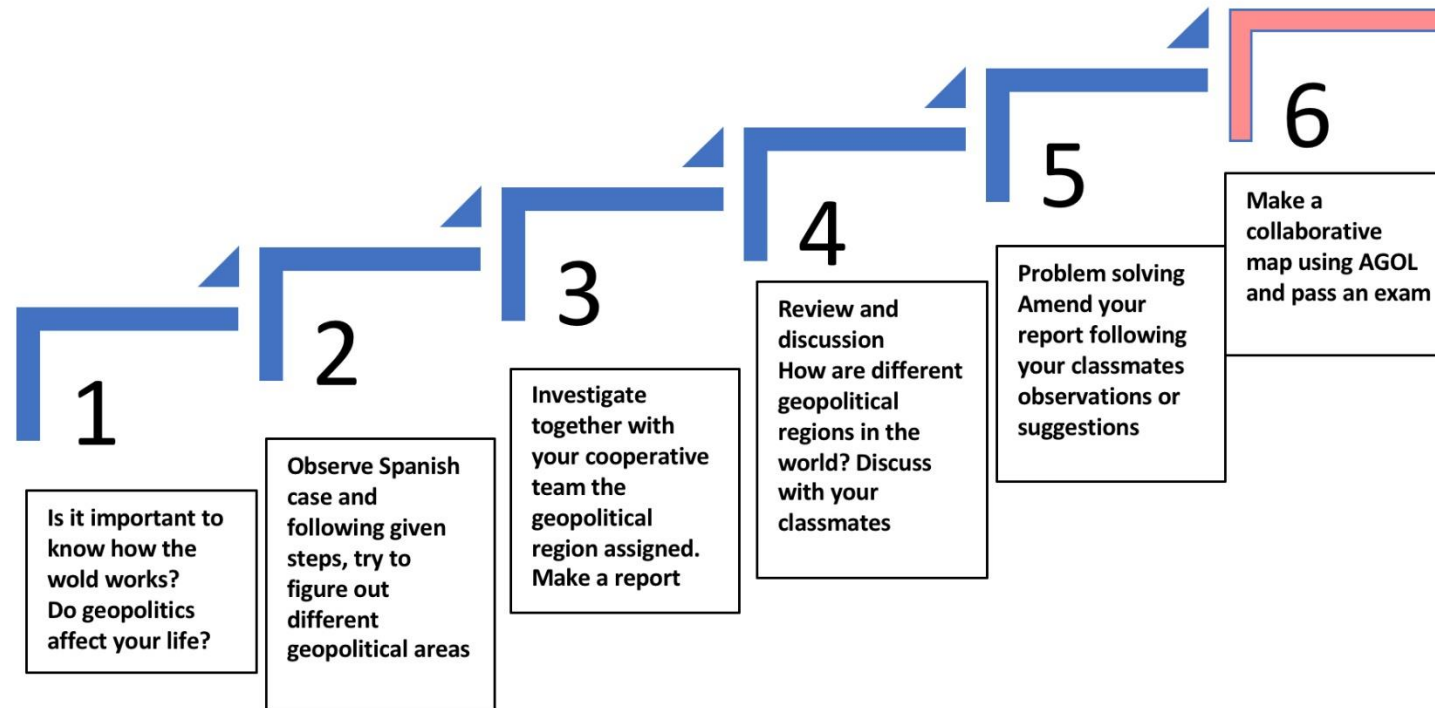3.1.5.1 *Spanish Landscapes. Location.*
3.1.5.2 *European Landscapes. Location.*

Step	Identify a topic / story that is going to be told / explored using GIS	Other
	[LESSON TITLE]	
	[LESSON SUBTITLE]	
	Curriculum context:	
	Target age group:	
LOs	**Learning objectives**	
	[Ideas for Learning objective statements] ● Retrieve prior learning about… ● Describe and explain links between… ● Describe, explain and evaluate… Can link to SDGs especially: (Choose only those related to the vignette topic and activities)	

GI PEDAGOGY

1
Is it important to know how the wold works? Do geopolitics affect your life?

2
Observe Spanish case and following given steps, try to figure out different geopolitical areas

3
Investigate together with your cooperative team the geopolitical region assigned. Make a report

4
Review and discussion How are different geopolitical regions in the world? Discuss with your classmates

5
Problem solving Amend your report following your classmates observations or suggestions

6
Make a collaborative map using AGOL and pass an exam

◢ **Checking understanding**

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VIGNETTE - Geopolitics

Step	Identify a topic / story that is going to be told / explored using GIS	Other
	Teaching and learning with GIS	
	Geopolitics in today's world	
	Context / place in SoW: Sustainable development, human geography (in K10 compulsory education topic)	
	Target age group: K10 = 15-16 y	60 min
LOs	**Learning objectives**	
	● Define geopolitical areas in the world ● Understand which are the most important countries and policies in today's world ● Learn basic skills about GIS ● Learn how to identify reliable resources when researching ● Interpreting maps ● Develop educational competencies. General (effort, team working, leadership) and specific (critical thinking, sustainable citizenship) ● Related to SDG:	

17 PARTNERSHIPS FOR THE GOALS

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Res	Key resources and embedded hyperlinks if appropriate		
	Personal Ipad in the classroom		
	Individual exploration:		
	Learning phases (may be one lesson or a sequence of lessons)		**Timing**
0	**Step 0: Retrieval (e.g. quiz to check prior learning)**		**30 min**
	Review Retrieval of prior knowledge about geopolitics What do you know about geopolitics? Does geopolitics affect your daily life? Questionnaire: https://forms.gle/LWUCb8EUvcq8Hqpn8		

	Individual exploration:	
	Learning phases (may be one lesson or a sequence of lessons)	**Timing**
0	*Step 0: Retrieval (e.g. quiz to check prior learning)*	**30 min**
	Review Retrieval of prior knowledge about geopolitics What do you know about geopolitics? Does geopolitics affect your daily life? Questionnaire: https://forms.gle/LWUCb8EUvcq8Hqpn8	
1	*Step 1: Direct instruction / teacher facilitated - schema building begin*	
	Definition of geopolitics Supranational organizations NGOs	
	Ask questions: ● What countries are the strongest ones in every region? ● What countries may represent a threat for others? ● Is economy important on politics?	

Geopolitical pre questionnaire 4º ESO 21/22

mapuertas@virgendemirasierra.eu Cambiar de cuenta

*Obligatorio

Correo *

Tu dirección de correo electrónico

What does geopolitics mean?

Tu respuesta

Do you think is it important? Why?

Tu respuesta

2	Step 2: Modelling / Scaffolding Review and Questioning – what data are needed?	60 min
Modelling		
	Teacher is giving a model with three topics. That is economic situation, internal and external conflicts. It is part of a guide, that students will use as a model. The guide is referred to Spain, and you must choose one of the eight geopolitical regions defined, European Union, Noth America, Middle East, etc.	
Scaffolding	In the next step, teacher will make questions to every cooperative team to check they are going in the right direction and not getting stuck.	
Obtain high success rate	Students make a diagram, programming what kind of information they are to use and design their research guidelines to obtain a report around 400/600 words on the three topics. You have to take into account best skills from every member of the team in order to optimize time and results.	

GI PEDAGOGY
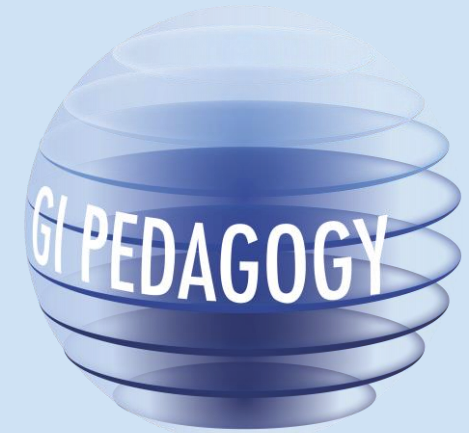
Appendix B

Guide for Modeling

This guide is going to work as an example of what you are supposed to do when making your reports on the different geopolitical areas.

You will have to fill in three different categories referring to the area assigned to your group. You will have available a rubric that will help you out when researching because you will know what you are expected to.

You have to make a short report about 400/500 words long

a) External problems. You have to identify what are the ma[in] area in its relation with other countries/areas. As these areas are think about the big issues that concern big countries or many no view, that is what we intend to do, try not to get lost in small qu[estions] that are not significant for the rest.

b) Internal Problems. As your assigned area is a complex the problems they may have are also complex. Selecting main p focus, again, on problems that are going to be relevant to main co[untries] Problems that may interfere with the region's internal balance.

c) Economy reality. As you know, the economic situation relevance that it has by itself and because of its implications idea about the economy you must, again, focus on the importa[nce] weight that this kind of country may have on the regional econo[my] which are taken can have an important influence on the global/re[gional] some economic indicators such as GDP (global importance), GD[P] index (equality), HDI (development beyond just money), Econom[y] made or main raw materials. Notice that we have to deal with thes[e] the big countries or big activities because of their influence.

Spain external problems:

Spain is a member of NATO and EU, so has strong allies. Being a medium-importance country it has no direct enemies but is affected by global policies and problems which affect all western countries, such as Russia's traditional rivalry. Chinese Economic growth has diminished European political power and influence over other Asian countries and recently over African ones. The latter becomes a big deal for European Countries, especially former colonial powers, mainly the U.K. and France. Although Spain is not directly affected, it is so in a collateral way.

As a country of the northern Mediterranean, Spain as Italy or Malta, is affected by irregular migration in an elevated way. This provokes internal problems as well, such as xenophobia and racism.

Other problems are territorial ones. Morocco claims two Spanish territories located in Northern Africa, Ceuta and Melilla. Spain also claims British Gibraltar, a small territory in Iberian Peninsula. As both countries are allies (NATO, EU for many years in the case of the United Kingdom), and have very strong economic and social links (800.000 Moroccans and 300.000 British live in Spain, almost 500.000 Spaniards live in the U.K. Spain is the second European investor in Morocco...) these problems are secondary and minor ones.

Spanish economy:

The Spanish economy is one of the most important in the world.

In volume, it is ranked 14th worldwide, with a GDP of more than 1200 billion dollars. If taking GDP per capita (current prices),Spain goes down up to 29th place (29.969 US dollars) , 18th among European countries and 13th in the European Union. Globally Spain is a rich country but in the European Union context is just a mid-level one. Far behind countries like Germany, Low Countries, Scandinavian or France and close to Italy.

GINI index 2019 (0.330), places Spain in rank 22th of the EU only over four countries, Latvia, Romania, Lithuania and Bulgaria and tied with Italy. This implies bad news for Spain because being a rich country when compared with other rich countries social differences are higher, implying more poverty than in other European countries. At-risk-of-poverty rate shows that fact clearly as Spain has a rate of 21.5%, much higher than poorer countries like Greece, Portugal, Hungary, Poland, Czech Republic and many others. (EU average is 16.8%)

Population by economic sector: in Spain, 4.2% of population work in primary sector activities, 12.1% belongs to industry, 6.2% to construction and 68.6% to services sector while in EU, distribution is as follows: 1.9% primary, 25.4% industry and construction and finally 72.7% in tertiary sector. From these statistics we can get to some conclusions. Agriculture and farming is more important than in other countries but industry is by far less relevant than in most EU countries.

Economic production: Spain's main production is Tourism (12% of GDP), cars, textile and fruits and vegetables. It is also a very important alimentary industry (first worldwide olive oil producer and third

Teacher evaluation. Competencies Rubric.

Critical thinking:

1. Students can't reflect on the topic
2. Student repeats simple popular messages without any reflection
3. Students are able to present their own ideas linked to the topic
4. Students are able to reflect on the topic developing her/his own ideas

Social Commitment:

1. Student knows nothing about social issues in her/his community
2. Student demonstrates a superficial knowledge about social issues but not much interest
3. Student is able to explain what social problems are likely to be relevant
4. Student firmly knows what social problems are important and gives solutions to them

Political general knowledge:

1. Student doesn't show any idea about politics
2. Students present some political knowledge fragmented and unlinked
3. Student has a general idea about political knowledge concerning the topic she/he is more involved with
4. Student shows a fine knowledge about internal and external politics

Analysis capability:

1. Student can't make any analysis
2. Student is able to mention ideas about the topic but can't make a proper analysis
3. Students can analyze the topic in a superficial way
4. Student is capable to make an accurate analysis about the topic

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3	**Step 3: Individual exploration**	180 min

Guide student practice
The team must organize itself to research on the three different topics, following the previous diagram you have already made.
You must have the given guide at hand if any doubts came out.
All of you must take advantage of your own skills.
The team will need some leadership but all member must contribute in the same manner
Teacher will supervise the task and will help you when necessary
Every team report will be included in a layer of ArcGIS online created by the teacher using Survey 123. As a result, a map with eight layers corresponding to the eight different geopolitical areas studied will be created and shared with all classmates
Every student can then obtain their own map and you might feel as personalize it changing predetermined icons, adding pictures,etc.

Obtain high success rate
Every team will make their reports thanks to an equal effort made by all members.
After a final review, reports will be ready for next step

4	**Step 4: Review - discussion**	1 m

A	**Check student understanding**

Every team will present their conclusions using their maps.
Discussion will be possible among the classmates that belong to other teams.
In this moment other teams students will ask them if having any doubts or will point out any mistake they find out.

Review of **Step 3: Individual exploration**
● Feedback from students about their findings. Corrections discussed.

Geopolitics case study Year 10 (4o...   Abrir en Map Viewer Classic

Miguel Ángel Puertas ...
mapuertas48

Obtener indicaciones   Acercar a

survey

Internal problems	In 2016 there was a referendum that voted the exit of the UK from the EU. They won with 51% of the votes in favor of BrexitThis brought consequences to both the UK and the rest of the EU, like the decrease of the GDP by a 2/3% or the difficulties it generated in the exportation and importation of products There is also a recent conflict involving Poland and Hungary, in which there are far-right governments in power and it is not doing well for the countries. This caused the

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5	**Step 5: Problem-solving**	30/60 min
	Independent practice You will have to amend your mistakes or add missing information after classmates review in order to make it perfect, you might need to check your sources You will have to study and get ready for a written exam.	
6	**Step 6: Presentation/Assessment (incl peer assessment) sharing of outcomes.**	120 min
	Check student understanding): ● Students will take a written exam about your outcomes and those from your classmates ● Afterwards you will make the questionnaire again to measure any improvement in the competencies mentioned above. ● Teacher will assess these two items ● Students will develop peer assessment about the procedure, specially about your tasks developed inside your team. You must check initiatives, leadership, skills and if all of you made the same effort and have equal amount of work. 　　　○ 　　　　…	

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