



Co-funded by the
Erasmus+ Programme
of the European Union

Project 2017-1-IT02-KA201-036968 - IO3



1

Floods close to home: exploring the digitized press

Module:

Water cycle

**The impact of human
intervention on river ecosystem**

Hydrogeological risk

River management

Total duration: 3 hours

Field work: No

List of materials:

PC, internet

Paper and pen

Worksheets: 1

Students' age: 16-18

Use of apps/software: Yes

Brief disciplinary introduction

Heavy rains and associated floods are one of the most common risks on urban areas. Mediterranean countries are especially at risk by the combination between frequency of heavy rains (especially in autumn), mountain landscapes, historical soil and vegetation degradation and neglected urban planning. The research of floods by students is not possible to be empirically carried out by academic organization and security issues.

However, now is becoming common the existence of digitized press libraries which store not only the image of the original newspapers pages but also they have been analyzed by OCR in such a way that the content of the text is easily searchable. We can take advantage of this huge quantity of information to do an analysis of places at risks and a critical assessment of urban planning deficiencies.

Objective of the learning unit

To learn about:

- ✓ Hydrological risks associated to heavy rains and urban development
- ✓ How to search and download data from digitized newspapers repositories
- ✓ How to create efficient searches of information on textual databases.

2

To be able to:

- ✓ Develop skills to link written (textual) information to geographical information systems
- ✓ Propose improvements in urban planning in relation to hydrologic risks.

Introduction (orientation)

Time estimated: 20 minutes

Where the activity takes place: in the classroom

Method (how the students have to work): class brainstorming

Instructions for the teacher:

Short introduction by the teacher to the floods, its local importance in the history of the town (in this case, Murcia), reviewing the most famous and severe ones. Also he/she can review what are the natural causes of floods. Human actions enhancing risk are not treated, only the general question is posed.

3

Conceptualization

Time estimated: 35 minutes

Where the activity takes place: in the classroom

Method (how the students have to work): group-work

Instructions for the teacher:

Ask students to discuss in groups and answer these questions in 20 minutes:

1. Do you personally experienced flood problems of any dimension (from street water logged, basement flooding to town difficulties to communicate)?
2. What was the meteorological situation and which was the season?
3. Were the damages expensive?
4. Do you think that the damage was enhanced by human actions? Which ones?

The last 5 minutes the students find the common answers.

Investigation

Time estimated: 3 hours

Where the activity takes place: in the computer laboratory with Internet

Method (how the students have to work): group-work

Instructions for the teacher:

1) Planning

Location: In the classroom

Time: 55 minutes

Materials:

Computers and internet

The objective is to learn search a digitized newspaper library, match description of the newspaper to a concrete location obtained from geographical information web service and to establish qualitative scale of damages.

In our concrete case, students access the library of Murcia municipality

<https://www.archivodemurcia.es/presentacionHem.aspx>

Teacher explains how to search for texts. Next, the teacher introduces the server of the National Geographic Institute of Spain

<https://www.ign.es/iberpix2/visor/>

A couple of examples are showed, about retrieving text about floods from the library and finding the place on the geographical server.

The whole introductory part by the teacher will last 20 minutes. Then the teacher proposes to the students to create a list of keywords to search on the historical newspaper flood-related news. Students discuss about it and also experiment with the on line search. Finally they have to agree a set of keywords to be searched.

2) Performing

Location: Home work and in the computer laboratory

Time: at school, about 2 hours

Materials:

Computers and internet and spreadsheets

The time frame will be divided by decades. For instance 1950-2020 is divided in 7 decades. Each group of students is given a decade, and within a decade, a random year. Groups of students will perform a search on the newspaper library based on the agreed searching terms during the planning of the experimentation. They will fill a table with basic data.

Date	Location	Coordinates (approximate)	Damages	Risk factors

Damages are assessed from the information contained in the text. Risk factors like construction close or within water courses will be evaluated by exploring the area with the cartography server.

Students also download photographs of the flooding effects. Search will be restricted to Murcia municipality and nearby municipalities: Alcantarilla, Santomera and Beniel, all of them located in the same floodplain.

3) Data analysis

Location: Homework

Time: 2 hours

Materials: Paper, pen and computers

Students will write a report of 5-10 pages summarizing the findings of their research stressing places flooded, damages and human induced risks. Reports have to be summarized in posters titled: "Flood damages in Murcia. Year xxxx".

Conclusion

Time estimated: 55 minutes

Where the activity takes place: in the classroom

Method (how the students have to work): group-work (four groups)

Instructions for the teacher:

Presentation of the results per each of the four groups referred in the previous section.

Each group will have 5 minutes for the presentation. The students will discuss if there are places where flooding problems repeated along the time; if there are common patterns of human induced risk and if along time situation improved or worsen. As conclusion, they will suggest solutions to mitigate the problem.

Discussion

Time estimated: weeks

Where the activity takes place: in the school

Method (how the students have to work): posters

Instructions for the teacher:

Students prepare posters about the results and the posters will be shown on the walls of the school for being seen by the rest of the students. A specific poster of conclusions and recommendations will be added.