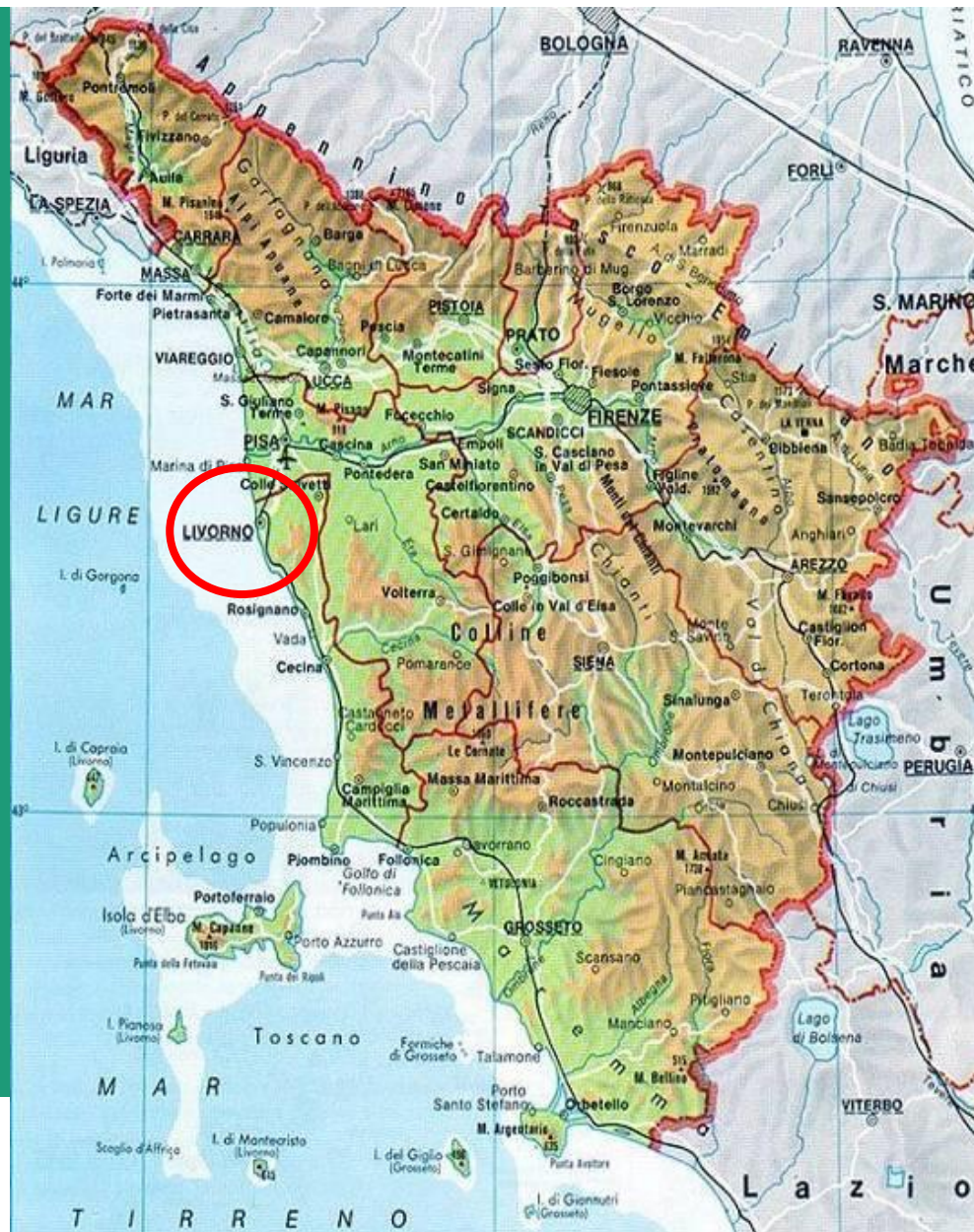


“THE STREAM IN A TRAP” EDUCATIONAL PROJECT ON RIO MAGGIORE STREAM IN LIVORNO

Pellegrino L., Castellano D., Ugolini F., Rossini G.

Country	Italy
Region	Tuscany
Province	Livorno (LI)
Frazioni	List [hide]
	Castellaccio, Gorgona, Limoncino, Quercianella, Valle Benedetta
Government	
 • Mayor	Luca Salvetti (PD)
Area	
 • Total	104.8 km ² (40.5 sq mi)
Elevation	3 m (10 ft)
Population (31 August 2017) ^[1]	
 • Total	158,493
 • Density	1,500/km ² (3,900/sq mi)
Demonym(s)	<i>Livornesi</i> <i>Labronici</i>
Time zone	UTC+1 (CET)
 • Summer (DST)	UTC+2 (CEST)
Postal code	57100
Dialing code	0586
Patron saint	Julia of Corsica
Saint day	22 May

en.wikipedia.org





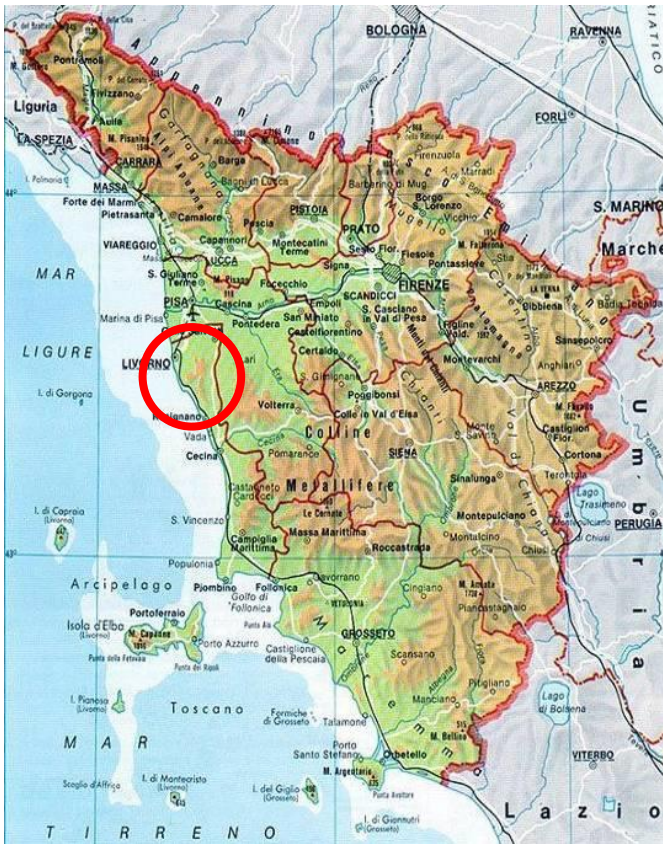


Livorno, 9-10 Sept 2017:

200 mm rained in a few hours, especially near the springs of the streams Maggiore and Ardenza where the rainfall was **242 mm**. These two streams overflowed: damages and deaths

Engagement/Orientation

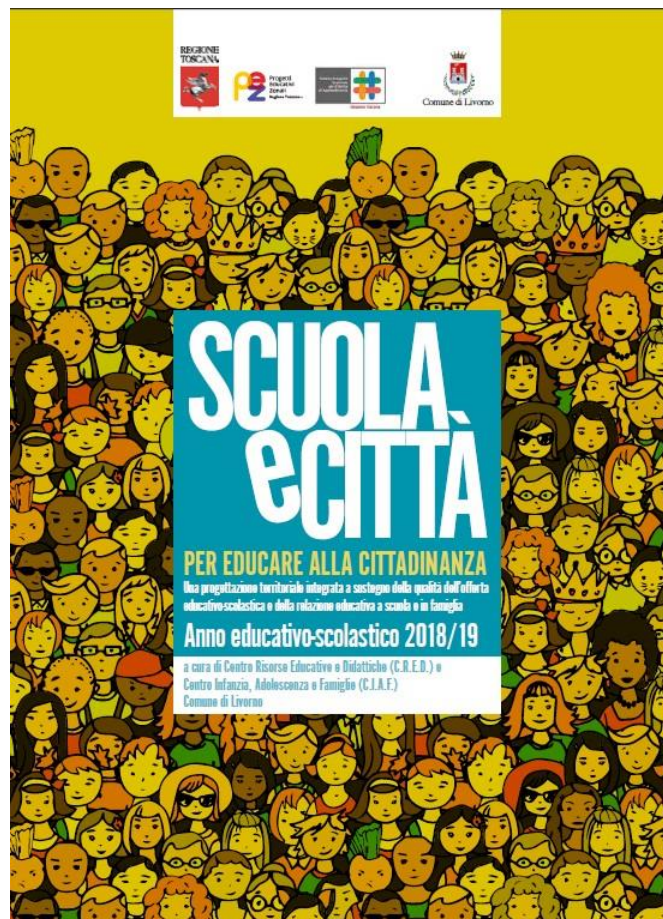
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Regional Nature Reserve of Monti Livornesi

→ Tuscany → Livorno →

Research Education and Didactic Centre Municipality of Livorno



National Research Council of Italy Institute of BioEconomy



Since many years, this Group has been promoting the Livorno Hills through volunteering, historical-naturalistic excursions and educational projects for primary and secondary schools.

Istituto Comprensivo "Don Roberto Angeli"

**Scuola Primaria
"Pietro Thouar"**

The OBJECTIVE of the project were to engage students in:

Mapping a urban stream from the spring to the mouth (2 excursions)

Analysing the ecosystem along the stream and the characteristics of the stream

Reflecting about the effects of climate change and urban soil sealing and river coverage.

Methodology

The project was implemented within the framework of the school curriculum and its duration was about 20 hours.

A class with 20 pupils took part in the project. Students were engaged in an oriented **inquiry-based learning** project with outdoor activities, hands-on activities and experiments, brainstorming and debating.

From the methodological point of view, the class of students was divided into heterogeneous groups of 5-6 students.

A specific topic with tasks was assigned to each group during the field trips, for instance:

one group focused on plant biodiversity along the stream

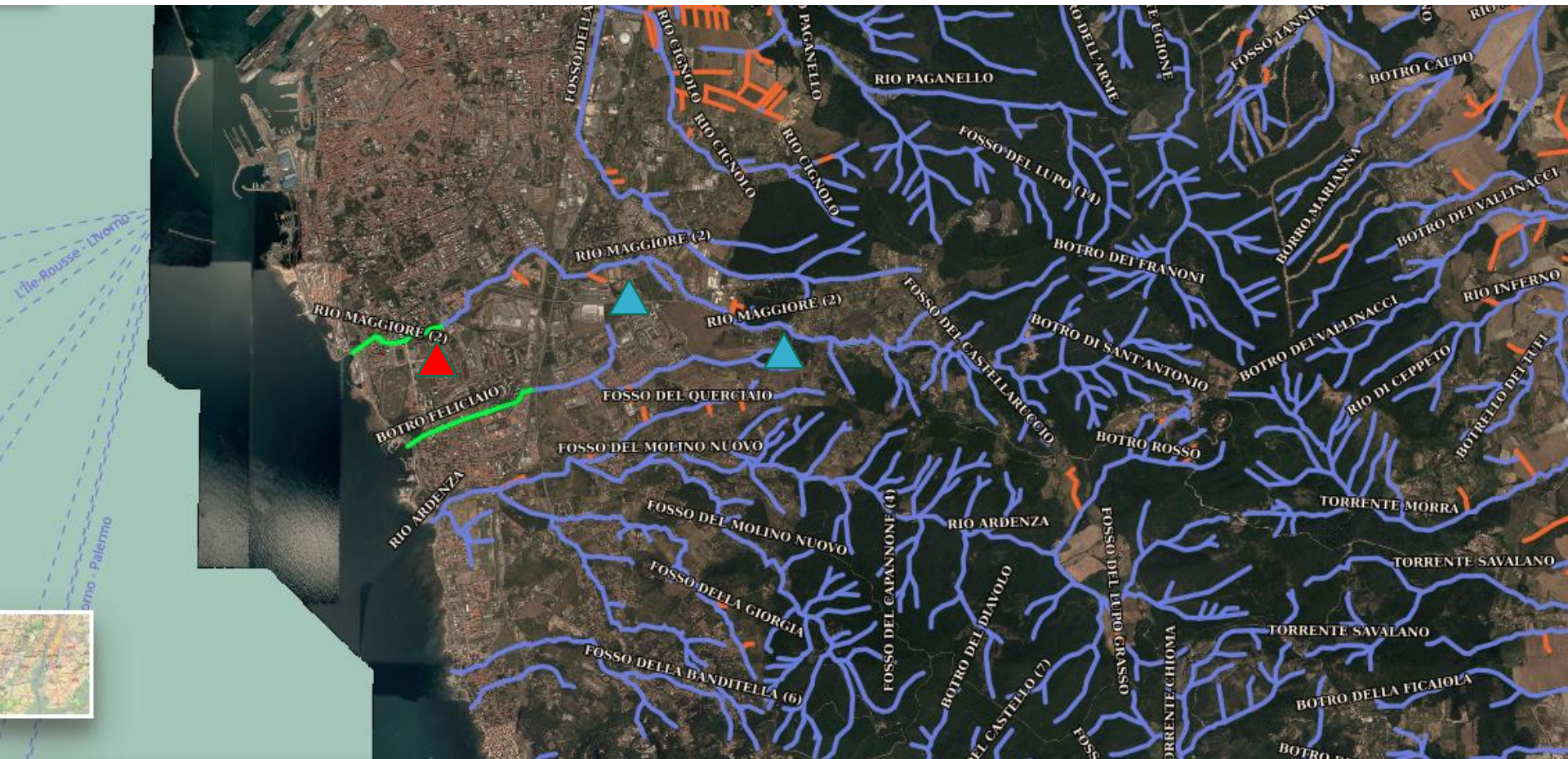
another group focused on sediments and stones

another group focused on water flow and quality

one more on land cover and use along the stream.

Since the end of the 17th century, the rapid and intense urban expansion has caused land sealing and the alteration of most rivers' flow. For instance, Rio Maggiore stream was partly covered.

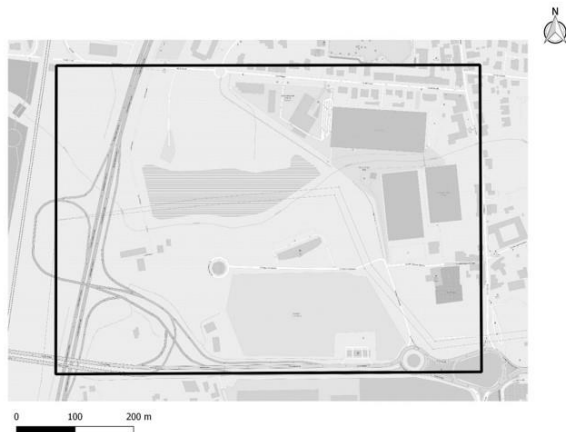
This is the map of the territorial information site, please observe how rich is the soil in waterways and the long Rio Maggiore flow and the point when it enters IN the urban territory



- **Map 1:** during the activity on March 13, the children orient themselves on the route and take photos. The built and green areas are colored over the map.
- **Map 2 and 3:** in class at the second meeting.

1

INDICATES THE STAGES OF THIS DAY ON THE MAP WITH THE LETTERS OF THE ALPHABET AND AT EACH STAGE, THE GREEN AREAS COLOR GREEN AND THE BUILT AREAS BLACK



2

COLOR BLACK HOUSES AND BUILT AREAS (STREETS, PARKING LOTS ETC.) YOU SEE



3

COLOR BLACK HOUSES AND BUILT AREAS (STREETS, PARKING LOTS ETC.) YOU SEE



Knowing that:

Surface area under consideration (the rectangle) = 379328 square meters

SEALED surface area (i.e. covered by asphalt or buildings, but also very compacted one) = 95656 square meters

How much green area is left?

Solution: $379328 - 95656 = 283672$ square meters

Knowing that:

Total length of the roads within the examination area = 7440 meters

Average width of the roads = 10 meters

How much is the total sealed area?

Solution: $95656 + (7440 * 10) = 179056$ square meters

How much green area is left?

Solution: $379328 - 179056 = 209272$ square meters

Investigation



stream mouth
Investigation



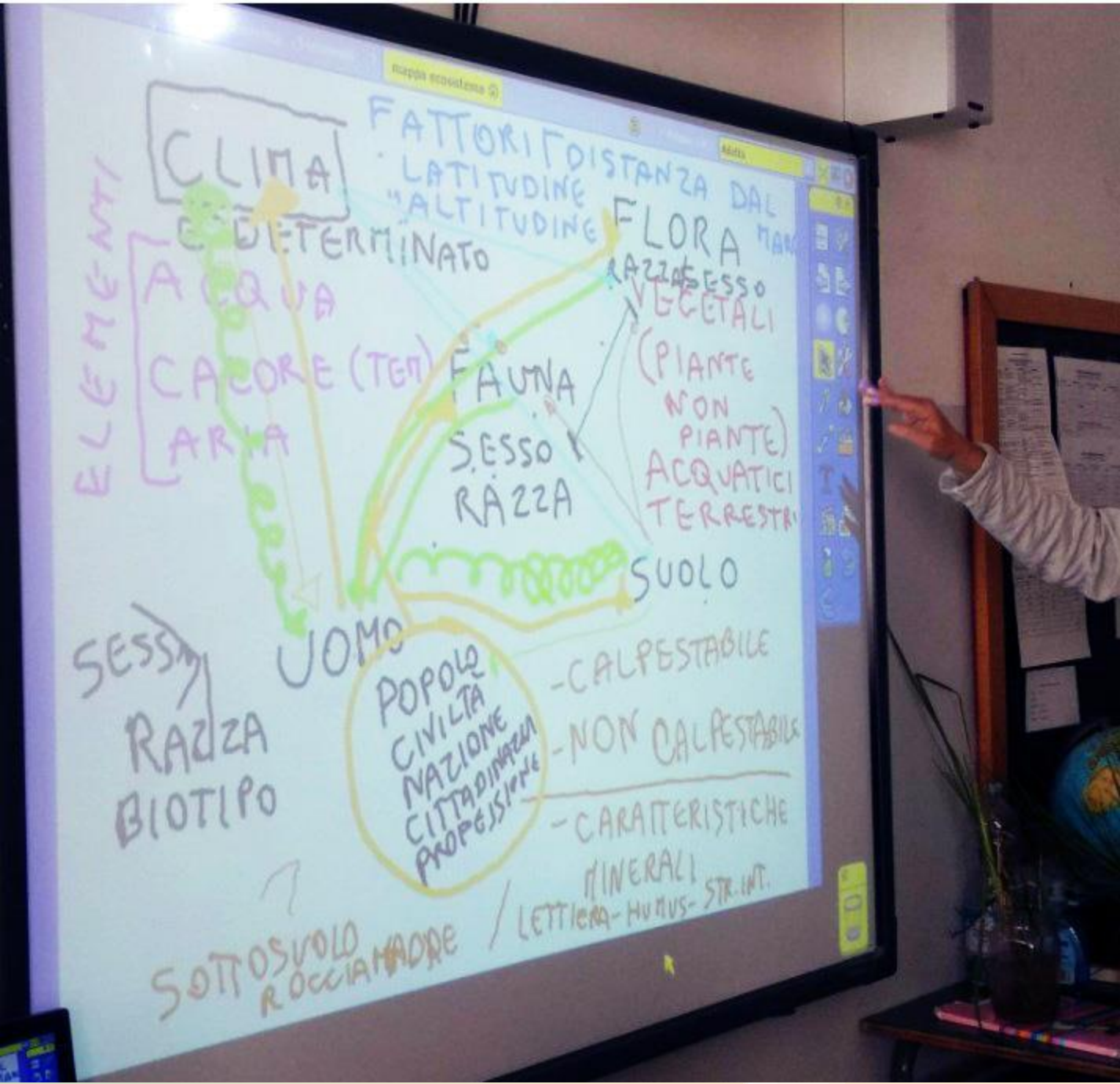
stream spring Investigation



More experiments were performed in the classroom, for instance:
they investigated the particle distribution of the soil samples;
identified the vegetal species collected or photographed during the field trips.
Students gathered all the observations and finally, they made a brainstorming session in which they summarized the results and made an analytical discussion of the observations and experiments carried out.



Discussion



CONCLUSION

The observations were collected and students elaborated the results summarizing them in tables and graphs, proposing also some solutions to specific problems.

They learnt also how to search for information from different sources of knowledge that were useful to compare the different parts of the river but also to know the evolution of the stream over the time.

From the educational and personality point of view, the application of role play and linguistic games was useful to stimulate and train students in the narrative. The aim of such activities was to stimulate imagination, observation, reflection and critical thinking as well as creative skills. In addition, they facilitate the expression of the personality and win shyness.

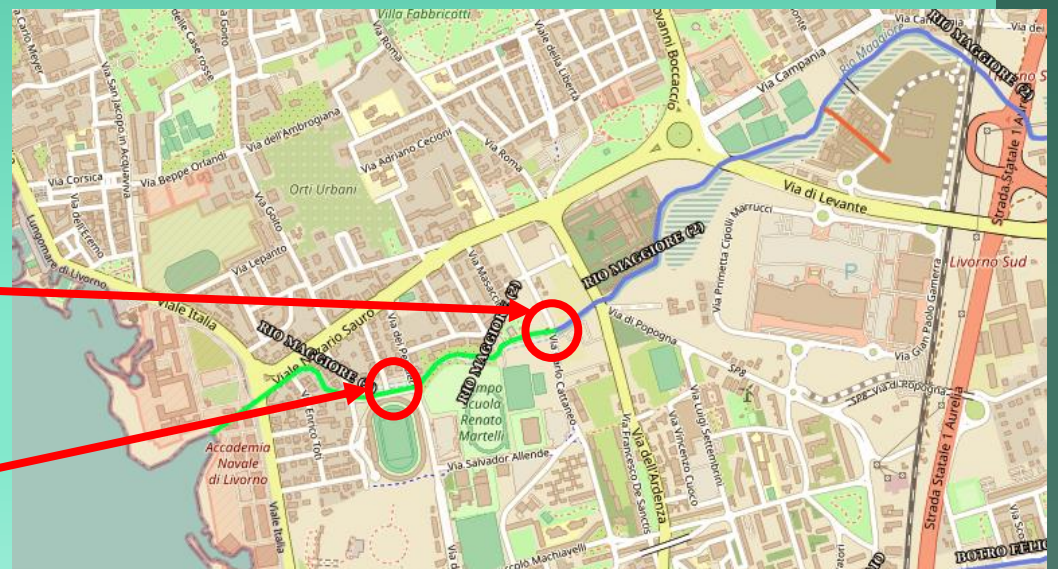




October 2020

Trap starts here

1° Work



Classe 4^a sez.A a.s. 2018-2019

Scuola Primaria Thouar – Istituto Comprensivo Don Roberto Angeli, Livorno, Italia



Thanks