

VESUVIUS: AN APP TO EXPLORE THE GEOLOGICAL AND NATURALISTIC FEATURES OF THE MOUNT VESUVIUS

Work in progress: step by step

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Introduction

The project is currently just an **idea**. A multidisciplinary work will be carried out to create a software application which will give information about the geological, historical, archaeological and naturalistic features of the Vesuvian area. The aim of this project is to make a **Touring Club 4.0 guide**. The APP will be geo-referenced. All the information about the history of the **Vesuvius** volcano will be accessible with a simple click on your mobile phones or tablets.

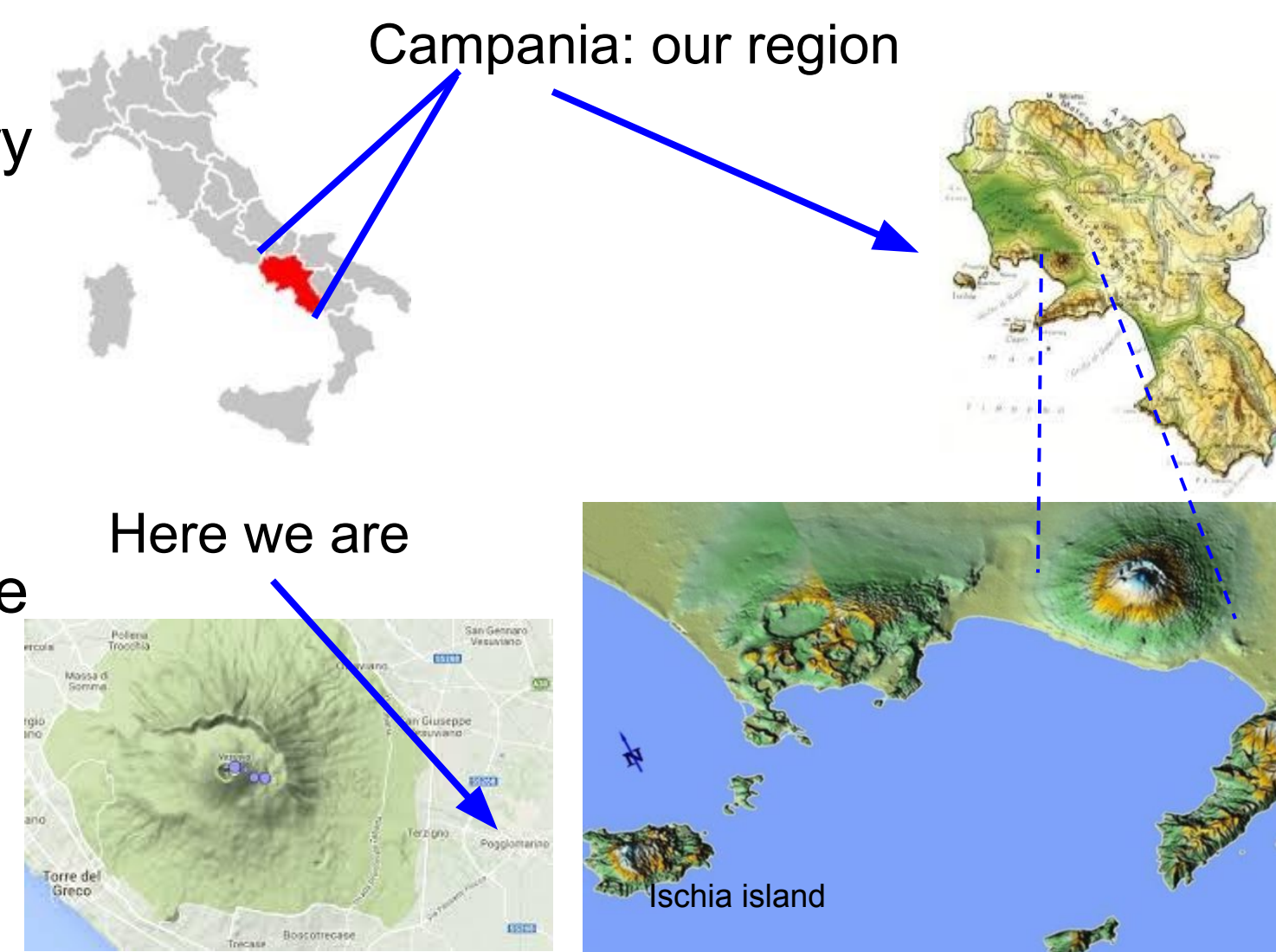
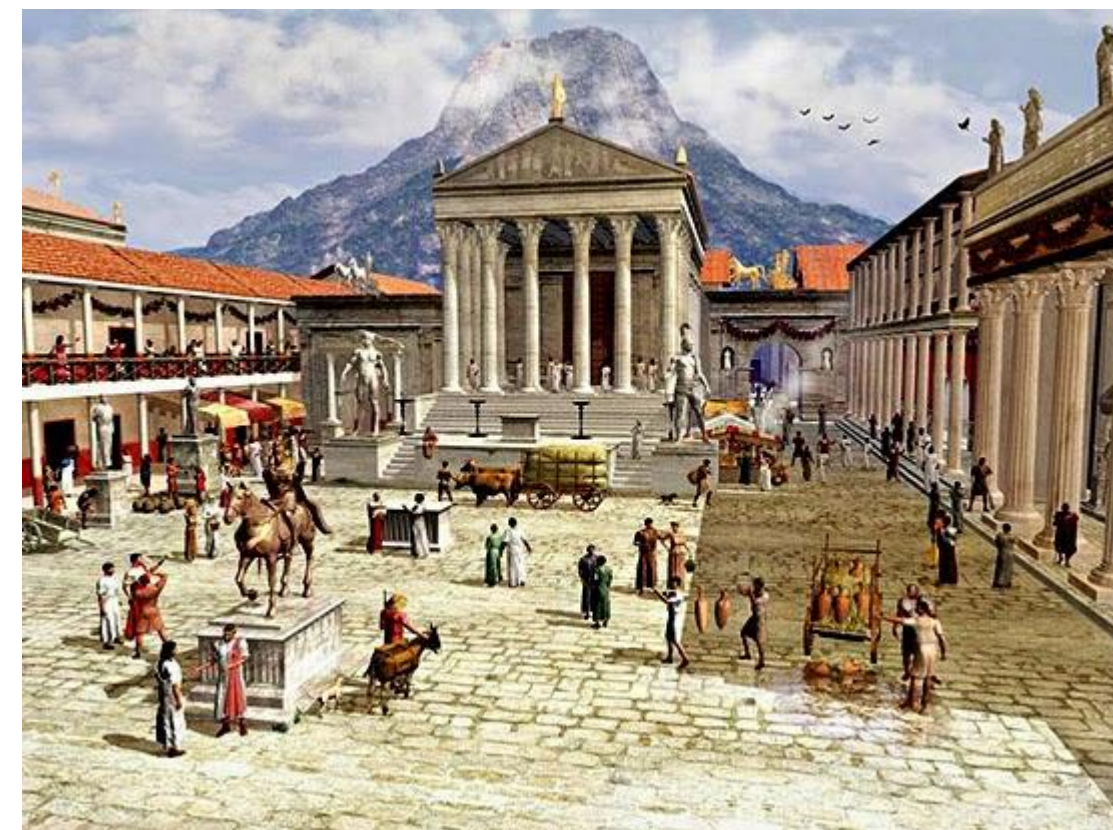


Photo volcanic are Vesuvius, Campi Flegrei, Ischia



Drawing forum of ancient Pompeii

Our **APP** also provides diversified features (culture, science, art, religion, cooking, catering) and essential itineraries for travellers who want to stay a few days in the Vesuvian sites. By activating the location on your own tablet or smartphone you can see paths, museums, villas, churches, hotels of a specific area and view the information on the screen through the dropdown menu in a simple and intuitive way.

Another purpose of this ambitious idea is to make students more aware of our wonderful historical-artistic-scientific-cultural heritage, which for centuries has been a source of inspiration for illustrious men and that today more than ever requires those who will make it shine again. As in the firmament there are small stars that shine much more than the big ones, so there are small "world-cities", which are able to mark the civilization with traits that are brighter than big cities. The students with whom we started the work are aged between 15 and 16 and attend a high school which includes in its curriculum the option of applied sciences. To stimulate the curiosity of users it will begin with a **storytelling**.

Teaching methodology and organization of activities

The student groups that **collaborate** and work **together** are heterogeneous and random. We spent about some on deciding the composition and roles (coordinator, writing secretary, process organiser, editing organiser, technology organiser, tutor) of the members of single group. **Each group** researched information on different topics such as recent volcanic activity of Vesuvius, flora, fauna, typical rocks of the Mount Somma - Vesuvius complex, the pathway of the Cognoli of Ottaviano, the storytelling, the app; the groups worked independently, guided by the teacher, for about one month. Then they made reports that they posted on the Padlet or shared with the Google modules sites of the class so that each student could read the work of others. Useful sitographies were also included. Student groups who have the role of computer technicians have done their research and are thinking of using language "scratch" simple enough to make our app and a software with graphical programming that allows both basic and more complex functions such as the integration of a social network, voice recognition and the use of sensors in the phone.



Photo of a group of students during one of the activities

Students' objectives and skills

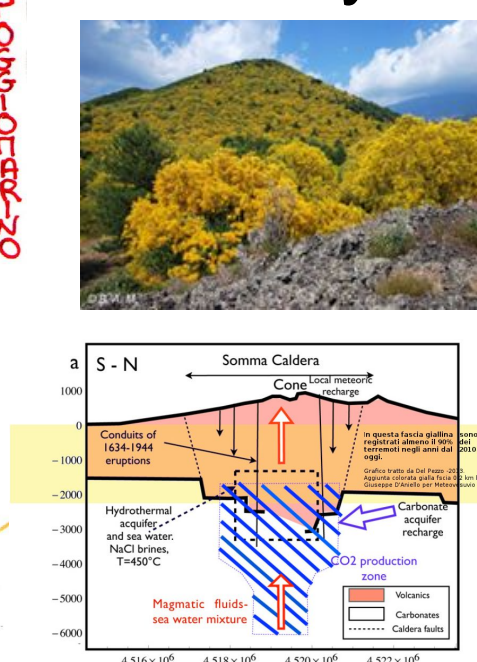
First of all students will learn to be more **motivated and interested** in the study, they will improve their skills in science, mathematics, computer science and foreign languages. **Secondly** they will understand the volcanic and seismic phenomena through the study of the territory where they live. They will learn to read and use a thematic map, to distinguish a lichen from a broom or a crystal of leucite from one of augite.

Furthermore they will **develop the key European skills** of the twenty-first century: to collaborate, to work in teams, to communicate in foreign languages in real contexts, to solve problem, to acquire and interpret information. **In addition** they will produce **significant and personal artifacts** that will be used in the app that the technological groups will realize.

And **finally** students will learn to grasp the beauty of **Earth Sciences** that in our Italian curriculum is always considered the Cinderella of scientific subjects.

A short extract of the storytelling

[...] They decide to leave, Bastian travels with his notebook, a chessboard, a picture of Ann, a pair of binoculars and a few coins. Andy has pens and pencils in his backpack. Under a smiling sun and in a fragrant September air, the two friends climb up the path of the Cognoli of Ottaviano, on the north-western side of Mount Somma, cross a thick pinewood, stop on the ridge and look out into the Valley of Hell and the Valley of the Giant. It is a Dantesque setting. Bastian and Andy have the giant in front of them. [...]



On Vesuvius there are 3 species of broom: the Cytisus scoparius, Spartium junceum and the Genista aetnensis.

On the left there is a representation of the internal structure of Vesuvius, on the right a schematic geological map

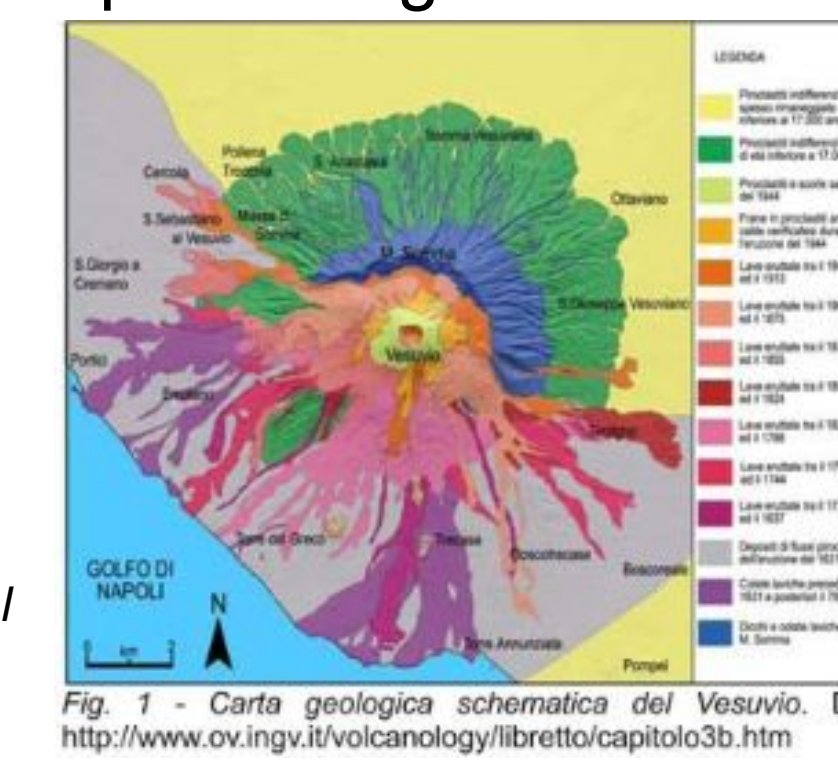


Fig. 1 - Carta geologica schematica del Vesuvio. Da: <http://www.ov.ingv.it/volcanology/bretto/capitolo3b.htm>

Path Along the Cognoli of Ottaviano

Overall length: 8134 m - Maximum altitude: 1112 m above sea level

Difficulty: high

Estimated walking times:

short route about 2.30 hours;

intermediate path 4.30 hours;

full path 8 hours

VESUVIO 1.281 m

MONTE SOMMA

COGNOLI DI OTTAVIANO 1.112 m

PUNTA DELL'ALFONE 1.131 m

VALLE DEL GIGANTE

COGNOLI DI LEVANTE 812 m

LARGO ANGELO PRISCO 730 m

OTTAVIANO

SAN GIUSEPPE VESUVIANO

the path starts here

At the top and left hand-drawn representation of the path

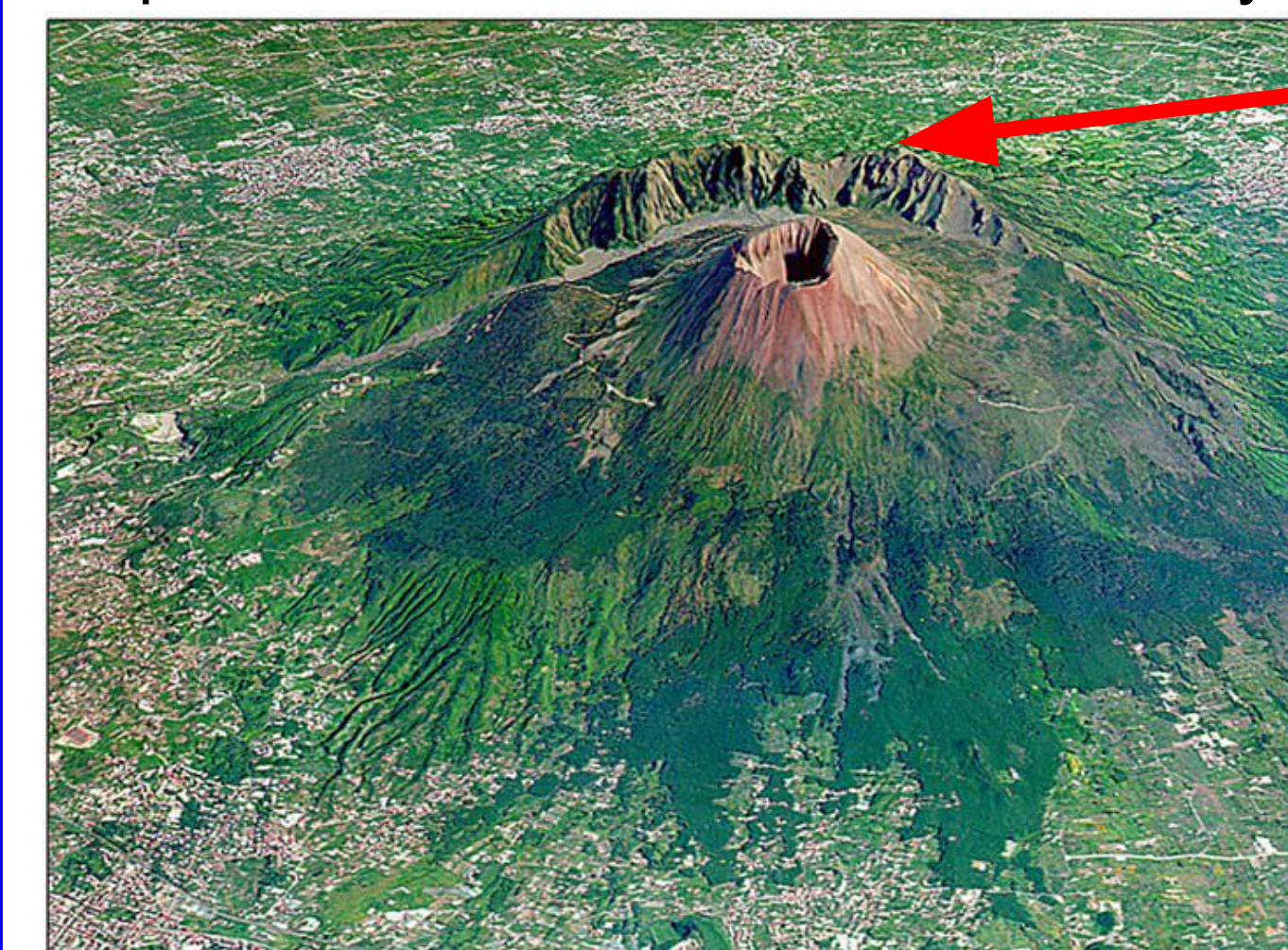
Below freehand representation of the path area using F.184-185 of the Italian Map 1: 25000

Preferable period: June or September

Research carried out by the groups of students

Current morphology of Mount Somma - Vesuvius

The **Mount Somma-Vesuvius** complex is a medium-sized strato-volcano that reaches a maximum height of 1,281 m above sea level. The **eruption** of 79 AD was so strong that it caused the complete destruction of the cities of Pompeii, Herculaneum, Oplontis and Stabia and modified the morphology of the volcanic system to the shape that can be seen today. The **Vesuvius** is the most dangerous among the active Italian volcanoes. It has a typical cone shape with a summit crater of about 500 m wide and about 300 m deep. The large cone partially encircled by the steep rim of a summit caldera caused by the collapse of an earlier and originally much higher structure.



Aerial view of Vesuvius (General Company aerial photography)

The Cognoli are the different peaks of Mount Somma. They form a boundary around the current volcano is Mount Vesuvius.

The belt of Monte Somma is separated from the Vesuvius by a depression called the Valley of the Giant, which is divided into the Atrium of the Horse to the West and the Valley of Hell to the East.

Information regarding the volcanic activity of Mount Vesuvius

March to 7 April 1944: mixed eruption, lava flowed to S. Sebastiano and Massa di Somma, while pyroclastic products fell on Terzigno, Pompeii, Scafati, Angri, Nocera, Poggiomarino and Cava. The lava flowed over the northern side of the crater heading east, south and north. The first phase of the eruption was characterized by a continuous seismic tremor. The thicknesses of the pyroclastic products reached values of 80 cm. The ash erupted during the explosive phases reached Avellino and even Bari. The last phases of the eruption were accompanied by intense seismic activity. On 24 March light whitish volcanic ash fell from tiny crystals of leucite; this event was considered a sign of the imminent end of the eruption.

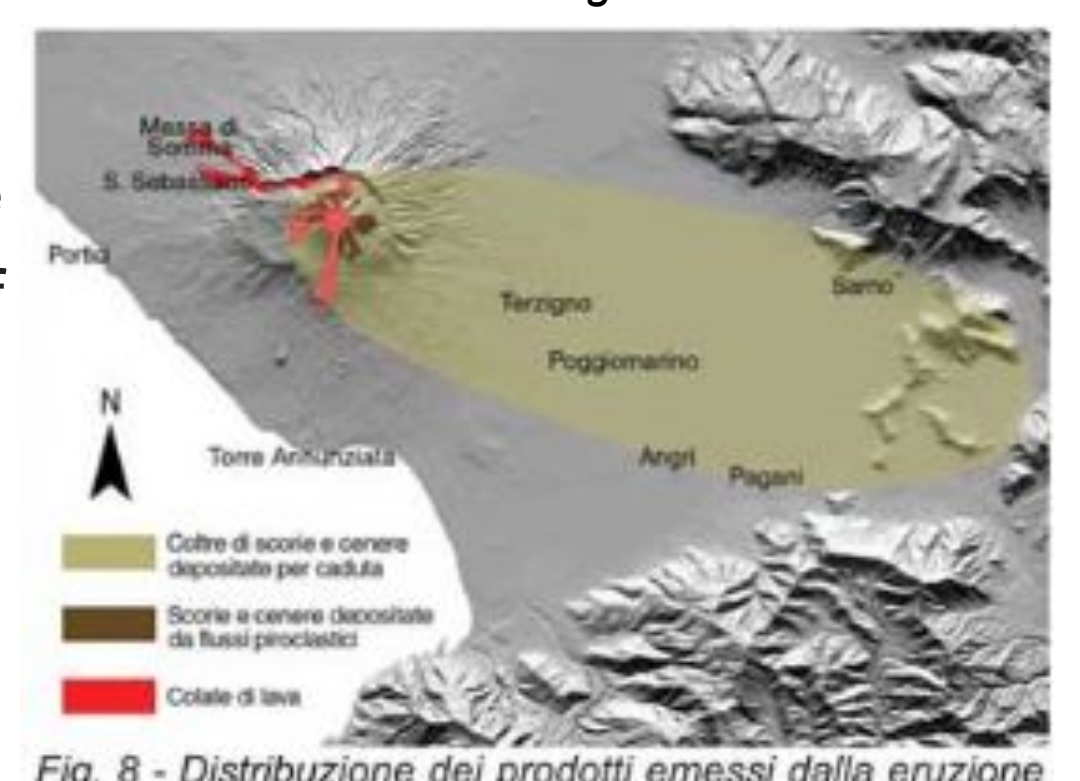


Fig. 8 - Distribuzione dei prodotti emessi dalla eruzione del Vesuvio nel 1944. Immagine tratta da <http://www.ov.ingv.it/volcanology/vesuvio/1944-fasi.htm>

Open scenarios and future developments

During the next school year the students of the current third A scientific high school option applied sciences will be joined by the future third A and together we will continue, enrich and update the app. It would also be desirable for future third-class classes of classical, linguistic, environment and territory construction, administration, finance and marketing to be included in the project. For the development of the scientific aspects there would be the intention to start a partnerships with one or more of these institutions: the Vesuvius Observatory, the Ente Parco Vesuvio, the WWF, the ANISN, the University. The final product of a school year is the starting point for the implementation of the app in the following school year. I would also like to involve Ottaviano's high school catering service which could take care of the aspect concerning the wine and food of the Vesuvian territory (hotels, restaurants, pastry shops). In addition, the Municipality of Poggiomarino, where our school is located, the neighboring municipalities of Striano, Ottaviano, San Giuseppe Vesuviano, Somma, the Vesuvian territorial associations could contribute to the realization of the activity by making available material and human resources (archives, experts). The app could also be financed by the advertising of craft and food businesses, hotels, associations. All the works already prepared or to be realized will be inserted in our Google Sites in Italian and in part also in English. The link is: https://sites.google.com/s/1nzlyR0Jlc9QAwyr5rlbv90Wqg2WGHRNA/p/1J1kbBRU_wl1NbdfKL9_RV7Ap_PwniD5f/edit

Sitography: <http://www.isprambiente.gov.it/>
<http://www.ov.ingv.it/>
<http://www.lavoripubblici.regione.campania.it> - www.vesuviopark.it/

This is only the beginning