CULTURAL HERITAGE AND EDUCATION. INTEGRATING TOUR MAPS IN A BILATERAL PROJECT

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Abstract

History and Geography as school subjects are inter-related in formal or non formal liaisons in European national curricula. This paper presents the case of a primary school from Greece and two secondary schools from Portugal and Sweden that collaborated in a bilateral European project under the title "Mapping our city monuments". After the selection of significant monuments and bibliographical research, students organized guided tours using GPS devices and digital cameras. Following the field trips Maps Tours were created on ArcGIS Online, myHisto website and Google Maps, integrating collected photographs and data from the site. The use of digital maps in education designed by students leaded to the rediscovery of historical and archaeological monuments in urban settings linking spatial thinking to cultural recognition. Thus the suggested didactical approach promotes spatial citizenship and cultural preservation through innovative pedagogical practices.

Keywords: Geography education, heritage education, ArcGIS Online, myHistro, Google Maps

1. INTRODUCTION

Cultural heritage is a group of resources inherited from the past which people identify, independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge and transitions. It includes all aspects of the environment resulting from the interaction between people and places through time (Council of Europe, 2005).

The definition adopted by the Faro Convention differentiates from the concept of cultural heritage as a traditional notion of protection or conservation of single monuments, archaeological sites, group of historical buildings, landscape or historic town centres. The Convention promotes citizen participation in decision making and management processes related to the cultural environment. This consideration was adopted by the 2014 Conference "Heritage First! Towards a Common Approach for Sustainable Europe" organized by the Hellenic Precidency of the Council of the E.U. It is suggested that heritage should be enhanced and promoted as a driving force for active engagement and social responsibility

while consisting a resource and prerequisite for a Europe of "smart, sustainable and inclusive growth" (Hellenic Presidency of the Council of the European Union, 2014)

Formal education addresses the aspect of public participation and involvement. The cultural heritage dimension is suggested to be included at all levels of education, not particularly as a core subject but through interdisciplinary actions (Faro Convention, Article 13). Furthermore the Faro Convention fosters multilateral co-operations for the recognition of the common heritage of Europe (Faro Convention, Article 17).

Raising awareness and promoting the value and role of cultural heritage is integrated in several European curricula of History and Geography. In the Greek Curriculum for Primary Education among the general goals for the lesson of History the following are inter-related with heritage education: a) experiential learning of aspects of culture such as traditions, customs etc., b) contact with cultural heritage, c) appreciation of cultural heritage, d) identification of the contribution of the Europe to the world culture and of the value of world peace and collaboration (Official Gazette, 2003a). For the lesson of Geography the general goals that are linked with heritage education are: a) study of the interaction between physical environment and people and b) cultivation of attitudes and behaviours that allow regular and creative integration to the natural and socio-cultural environment (Official Gazette, 2003b).

According to the new programs for Geography, emphasis is given to research through school projects that focus on local issues with the use of GIS and ICT (Klonari, 2013). In Portugal the heritage concept is dealt with in depth mainly in History. However we can find some references in Geography´s curriculum such as *"pupils must be able to interpret and analyse critically the geographic information and understand the territorial identity, cultural, heritage and regional individuality, allow him to strengthen the sense of belonging to his country and the capacity of civic action"* (DEB, 2002).

In History we can find a clearer heritage learning sequence. Pupils between six and nine years old are expected to recognize and valorise expressions of the cultural and historic heritage on their region. Pupils between ten and eleven years old must be able to explain and valorise the elements of the Portuguese historic heritage. Finally, pupils between twelve and fourteen years old must be able to integrate and valorise the elements of the Portuguese historic heritage in the context of world historical heritage (DEB, 2001).

The development of geographical media and ICT offers new possibilities to teachers to create engaging contexts for learning. Cloud computing has expanded educational resources providing the opportunity for sharing maps, Figures, video, data, visualizations (Donert, 2014). In a recent publication of the Digital-Earth E.U. Network, on-line GIS were applied in examples of geo-media implementations in different ages and subject areas including heritage education (Donert and Parkinson, 2013).

ETwinning is a European program supported by the European Commission that promotes collaboration and school networking with the use of ICT. The eTwinning portal is a multilingual website that offers collaboration tools and services to teachers to create partnerships and collaborative projects in several subject areas (EACEA, 2013). Therefore the eTwinning platform fosters multilateral co-operations in the field of heritage education and geo-media and offers opportunities for the creation of a European identity. European identity does not occur by itself; rather it is a result of positive experiences, a sense of belonging and acceptance in a common European area (Resnik Planinc, 2013).

Taking under consideration the possibilities that on-line GIS offers for the promotion of cultural heritage and the active engagement of students in inquiry based learning activities the Intercultural Primary School in Alsoupoli, Greece along with Hjortsbergskolan from Sweden and Escola Básica Integrada de Santa Maria in Beja, Portugal decided to collaborate on the development of an eTwinning project under the title "Mapping our City Monuments". The purpose of the project was mapping historical and archaeological monuments of our cities

with the use of on-line GIS, re-discovering their importance and establishing an active "dialogue" between citizens and cultural heritage. The project was recognized as one of the best practices of the use of GIS on schools by Digital-Earth network and was awarded an eTwinning Quality Label. This project was also selected to be part of the GIS book "The Curriculum with Digital-Earth – Geo Media Case Studies in the curriculum" (Donert & Alan, 2013).

2. METHODOLOGY

Participants

The participants were primary and secondary school pupils and teachers from three different public schools from Greece, Sweden and Portugal. The pupils were from middle-class families and in the case of Greece and Sweden from a range of ethnic backgrounds. 48 pupils attending fourth and fifth grade aged 10 and 11 years old participated from the Intercultural Elementary School in Alsoupoli, Athens, 22 pupils from 5D in Lungby aged 11 years old and 106 pupils aged 11 and 12 years old from Escola Básica Integrada de Santa Maria, in Portugal. The project involved four teachers from the Greek school, four teachers from the Portuguese school and one teacher from the Swedish school.

3. RESULTS

Map making process

At the first phase of the project the participants identified the historical and archaeological sites of the research and selected the most relevant monuments. The criteria of selection were the historical and archaeological importance of each monument, its state of preservation and accessibility and security issues. Communication and exchange of teaching materials was conducted through eTwinning space, e-mails, Skype and a Dropbox shared folder.

During the implementation phase students from the Greek school followed an initial presentation of the project demonstrating the location of Kerameikos in various maps, important historical and archaeological information and 3D representations of the monuments. The purpose of the project, the course of action and the anticipated outcomes were analyzed. An introductory lesson about coordinates and the use of Geographic Information Systems was presented. Pupils watched relevant documentaries, selected monuments of interest and created short texts. During the visit to the archaeological site of Kerameikos pupils used compass, photographed significant monuments and completed worksheets (coordinates of monuments, distance estimations, relative position) with the use of GPS devices. A total of seven monuments were selected. Students of the fifth grade were situated in the selected monuments while their peers from the fourth grade were divided into groups and with the use of maps visited the suggested monuments, heard short presentations and answered to a quiz in order to obtain a piece a puzzle they had to complete.

After the visit pupils created a Tour Map on ArcGIS on-line. They were first introduced to the ArcGIS on-line interface, they identified the location of Kerameikos using the "find address or place" tool and then they experimented on different basemaps. They suggested applying as basemap the Open Street Map driven by the level of analysis and the use of the Greek language. They placed map notes on the locations of the monuments and they added point symbols. The text of the description of the monuments was created during the previous phase of the research for the guided tour. They uploaded Figures using Figure URLs. A

reference on map symbols (point, line and area symbols) followed and pupils decided to use flag point symbols and the symbol of target at the entrance of the archaeological site. They experimented on the size of the symbols in terms of visibility. They used the measure tool to find the distance between the selected monuments. After discussing about the appropriate unit of length, they measured distances and compared them with distance estimations reported on the site. They also observed the bar scale on the bottom of the map and made references to different scales. Finally they saved their map (Figure 1). The map can be viewed at http://bit.ly/1hAPZyv
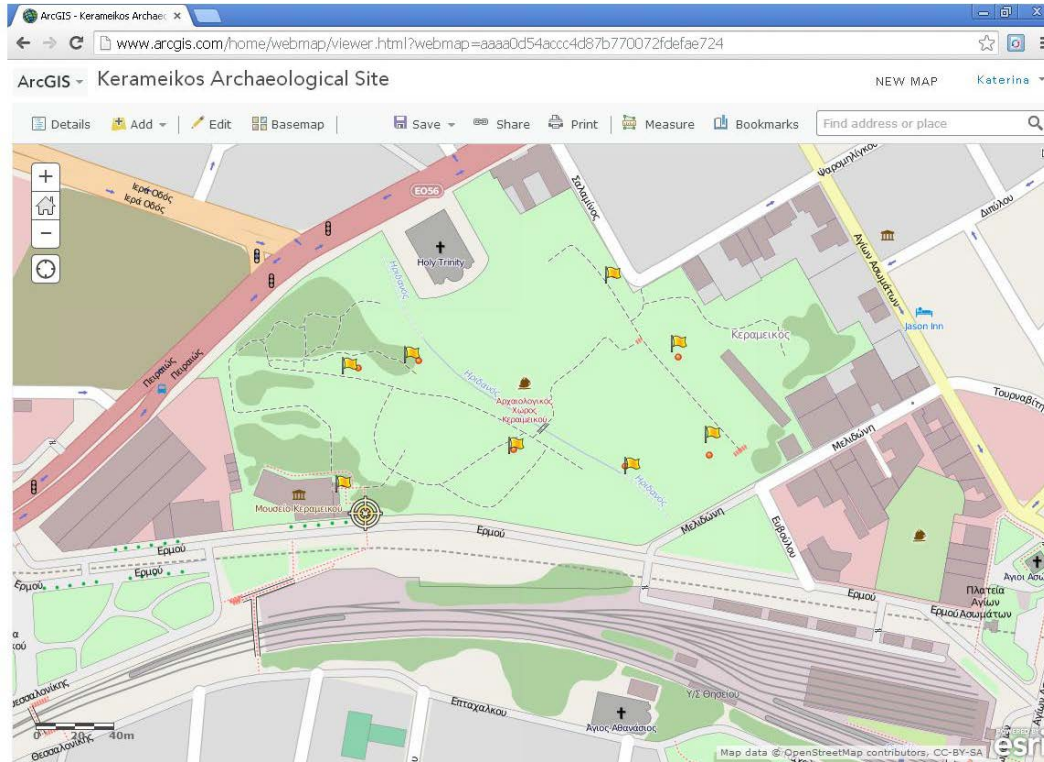
Figure 1: Web map of Kerameikos Archaeological Site on Arc-GIS on-line

In the next phase of the project pupils were introduced to the creation of web mapping applications. After browsing the templates of web mapping applications they decided to use the Map Tour template. Using the "Switch to builder to mode" they edited the point symbols of their map and regulated sequence of the archaeological Tour. Pupils made references to the original web map they have created and navigated through the application (Figure 2). The map can be viewed at
http://www.arcgis.com/apps/MapTour/index.html?appid=b2302279dc7349ffab5f7e23a99c174a&webmap=aaaa0d54accc4d87b770072fdefae724
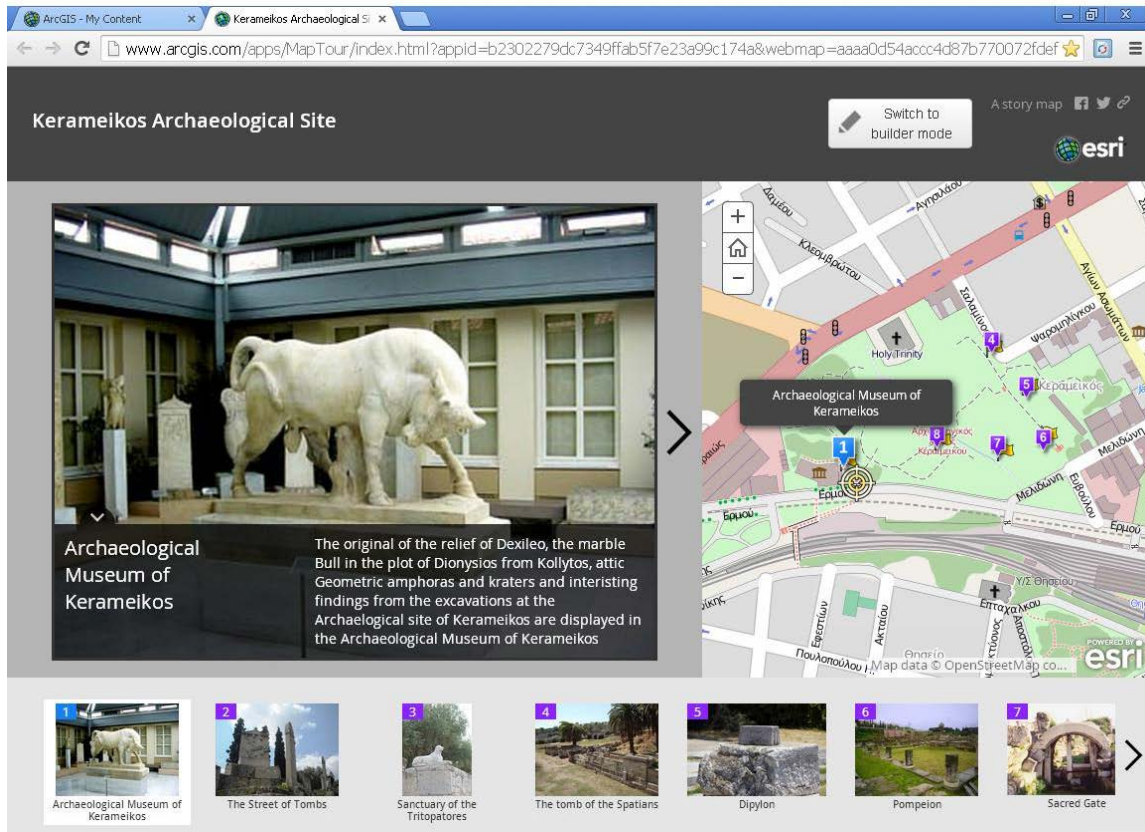
Figure 2. Tour Map of Kerameikos. ArcGIS on-line web mapping application

A third on-line digital map was created on My-Histro website. Pupils participated in inquiry based learning activities about the Labours of Theseus. They studied related
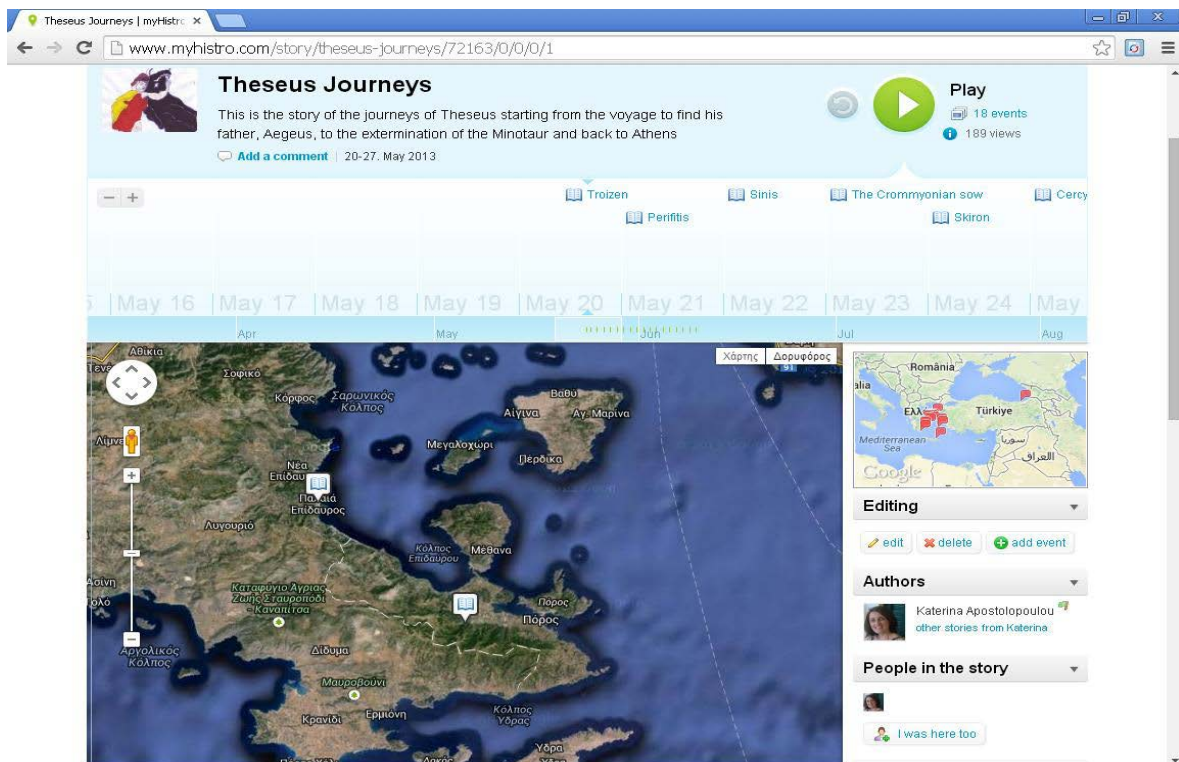

Figure 3. Theseus Journeys on myHistro story map

children's literature, they participated in a workshop on greek Mythology by the published author Nanina Sakka-Nikolakopoulou and created pictures and texts about the labors of Theseus. The purpose of the project was to establish spatial associations between myths and actual places, the names of which altered throughout the history (Clark, 2012).

A two-hour lesson was designed to introduce to the function of the myHistro website. Using a tutorial pupils working in groups created a timeline of the Journeys of Theseus from his homeland Troizen to Athens, Crete, the Black Sea and the Lower World (Figure 3). They identified the locations of Theseus Labours on Google Maps, they edited their story details by selecting a story name and added and managed story events creating texts and pictures (Figure 4). They imported photos and finally they watched the evolution of the story commenting on the contemporary names of ancient cities and connecting mythology with geography and geology. They produced explanatory frameworks for toponyms and mythological features relating them to the relief. One of the cases discussed was the action of the robber Skiron that functioned as an alternative framework for explaining the geological phenomenon of rock falls, very common in the area of Kakia Skala, due to slope-related factors (Rozos, 2014). Pupils also searched for newspaper articles that referred to rock falls in the region in recent years. The map can be accessed at
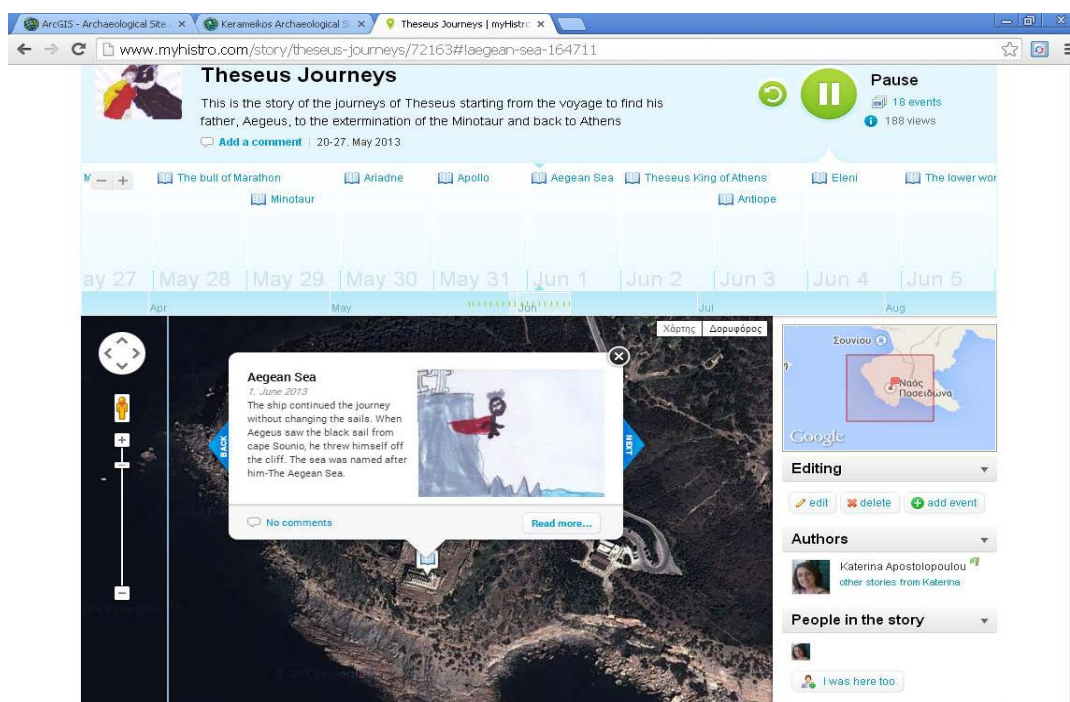http://www.myhistro.com/story/theseus-journeys/72163/0/0/0/1

Figure 4. MyHistro story maps

Teachers and pupils from the Portuguese school organized three city walks with the aid of a tourist guide that provided historical information about the monuments. A total of nine monuments were selected for the research purposes. Using GPS devices coordinates were obtained for the mapping work. Pupils were organized in pairs. A member of the group was tasked to register the exact location of the visited monuments with GPS devices. In the classroom, pupils presented data from the site visits (photographs, notes, GPS coordinates and historical information) and using a tutorial created by the teachers, they placed the information collected on Google Maps (https://maps.google.com/maps/ms?vps=2&hl=pt-

PT&ie=UTF8&oe=UTF8&msa=0&msid=209284312810615279489.0004db3f553a155ecff5b) as we can see on the following example:
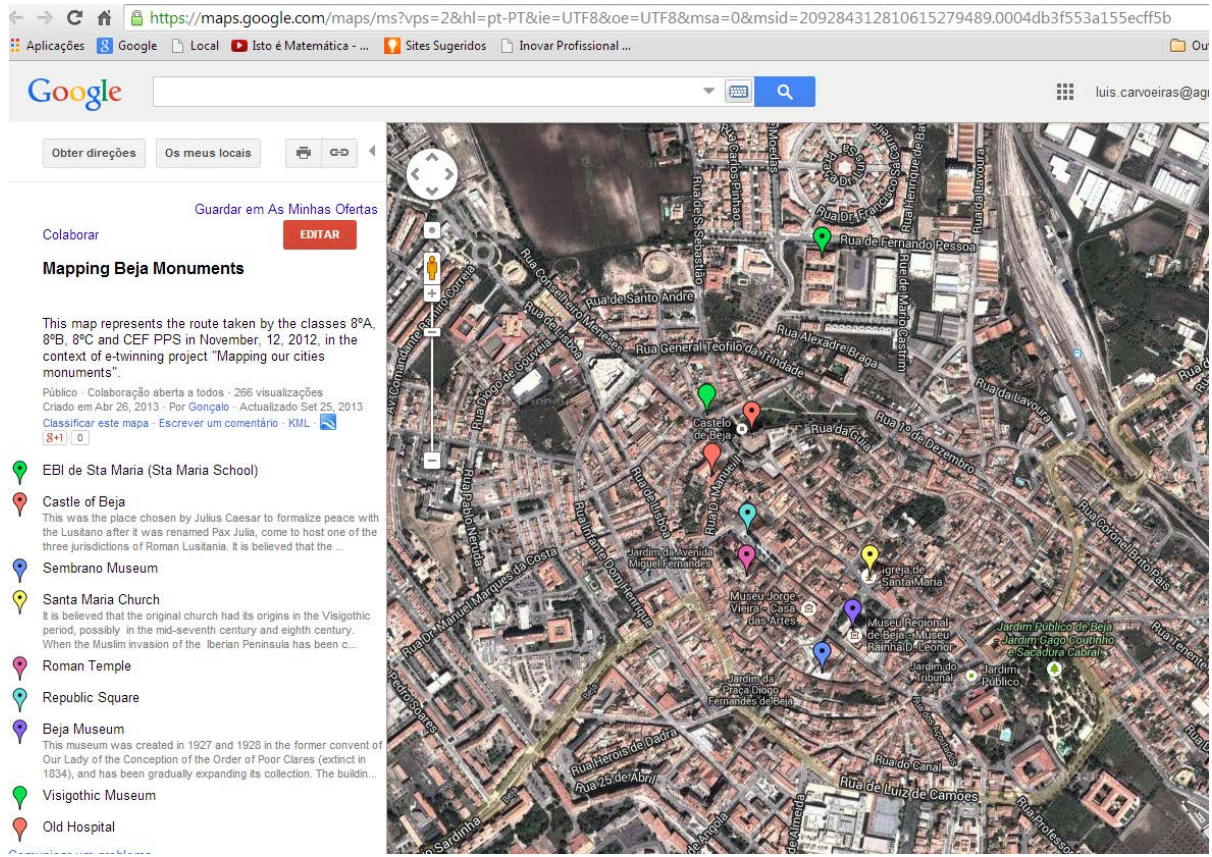

Figure 5.Web map of Beja Monuments on Google maps

On a second phase of the project the Portuguese pupils also worked on myHistro website (http://www.myhistro.com/story/mapping-our-cities-monuments/71738#!santa-maria-school-164274)
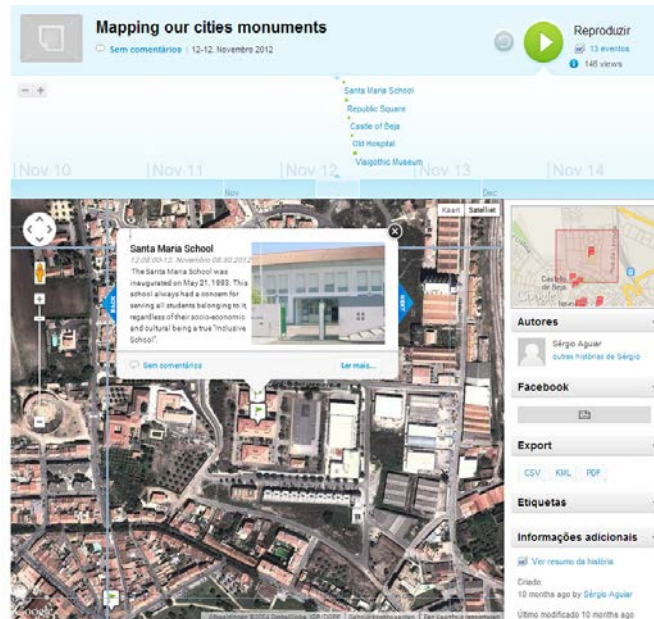

Figure 6. Tour Map of Beja on my Histo platform

The maps were made public to the school community at the end of the school year and shared on the school Facebook´s page. Last, the Swedish school organized a site visit to the city center and selected a total of six historical and archaeological monuments. After the site visit they placed their information on Google Maps and created a Power Point Presentation. The map of historical monuments of Ljungby can be accessed at

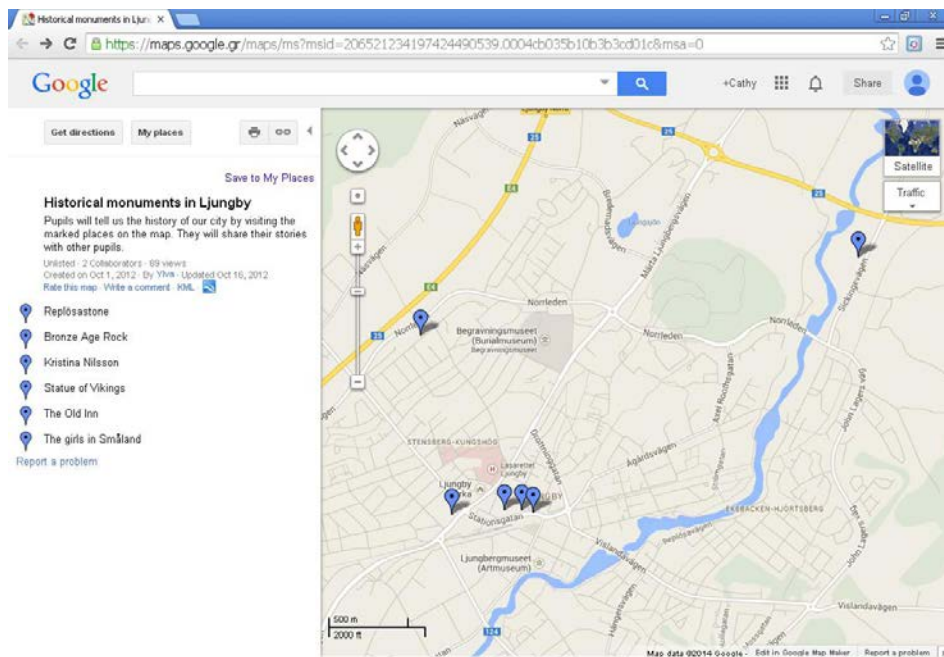https://maps.google.gr/maps/ms?msid=206521234197424490539.0004cb035b10b3b3cd01c&msa=0

Figure 7. Map of Historical monuments in Ljunby on Google maps

Throughout the mapping process pupils from the three schools exchanged map-making experiences with their peers and finally presented their work to their partners. Teachers scaffolded the learning activity and provided useful guidelines. Tutorials were created to support the learning process. The learning procedures mentioned above resulted in the creation of a community of learners that offered support to teachers and pupils.

4. DISCUSSION

In this paper we explored heritage education with the implementation of on-line GIS. Pupils created authentic digital maps collecting data from their local environments during organized field trips. Field trips are part of geographic and history courses in primary school and depending of the level of planning, teaching and follow-up activities they offer the opportunity for knowledge and skills development additionally to class work and raise attainment among school students (Rickinson et al. 2004, Nundy, 1999). The findings of our projects support these conclusions as pupils actively engaged in real-life learning activities and acquired new skills and knowledge rediscovering their local environments.

This paper is in alliance with previous studies supporting the integration of GIS in primary education for the promotion of cultural heritage. Lambrinos and Asiklari (2014) implemented a program related to local history with the creation of a local digital map of Agia Paraskevi village indicating four points of interest with the use of GIS and GPS with pupils aged ten to twelve years old. My special place: Ljubljana project (Krevs, 2013 in K. Donert & A.

Parkinson) directed to older pupils (aged sixteen to nineteen) made use of online ArcGIS to present preferred places in their town linking local environment and geomedia. Local enviroment was also investigated in the project "Young researchers in countryside" where 5th and 6th grade pupils aged eleven and twelve years old, collected data during a field trip with the use of GPS devices and created digital maps of an environmental trail (Klonari & Tzoura, 2011).

During the projects pupils related time to space by constructing timelines of mythical journeys and virtual tours. This way they created between the past and the present links integrated in a geographical dimension. They explored locations, conditions, analogs, change, movement, diffusion and demonstrated spatio-temporal thinking (Gersmehl & Anthamatten, 2008). Heroes of the ancient Greek mythology were linked to geological phenomenon and pupils were lead to produce logical explanations and exercised careful observation and critical thinking. In other words they were urged to see and not just look, to make the evident apparent (Klonari et al., 2011). City monuments were observed through a different perspective and pupils familiarized with them beyond a distant "museum approach".

Through organized learning activities pupils became actively engaged with the local and European cultural heritage and created foundations for future spatial citizenship. The evaluation of the significance of European historical and archaeological monuments affects both the quality of life in the cities and the existence and conservation of the monuments. The protection of the monuments exclusively from the state is not sufficient if citizens do not consciously participate in their actual protection supports Vemi (1994). She continues by suggesting that the creation of a closer relationship between monuments and education-especially elementary education- will not only turn to the profit of the monuments, but also to that of the educational process.

The projects were based on an interdisciplinary didactical approach that facilitated the dialogue between multiple disciplines, such as History, Archaeology and Geography. The educational benefits of the approach is the development of high order thinking skills while students become more independent and confident of their learning developing lifelong learning skills (Duerr, 2008)

A variety of digital tools (ArcGIS on-line, Google Maps, myHistro) enabled the development of spatial thinking, in accordance with Liben (2006) who supports that spatial performance can be facilitated through educational interventions. The advantage of these tools was that they offered high quality digital maps with free access. Therefore one of the educational implications of this paper is that teachers should be aware of the effectiveness of using GIS on-line for the planning of didactical scenarios in upper primary school students.

The teaching methodology was inquiry based and promoted collaboration between pupils and teachers from three different European counties, Greece, Portugal and Sweden under the e-Twinning European program. The European dimension in educational projects is very important for the formation of European identity among school students. During the proceedings of the International Session of the European Youth Parliament held in Instambul, Turkey, in 2012 (EYP, 2012) participants underlined the clear need to provide young people with opportunities to experience active European citizenship, intercultural dialogue and diversity of European cultures. This approach leads to the construction of a new, common, inclusive and pluralistic European identity that according to Žagar (2010) shields from the dangerous uprizing phaenomena of intolerance, racism and xenophobia.

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