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Utilization of Web2.0 Services in Secondary Education: Students Create Interactive Learning Objects About "Greek Revolution"

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Abstract: The present article describes the theoretical framework and the application of a teaching intervention of interdisciplinary character between the course of History and Informatics in C class of Greek High School. The interdisciplinary collaboration was aimed at exploring the dimensions of time and space regarding the Greek Revolution of 1821. The use of ICT focused on students creating multimedia information (image, audio, video, text processing) as well as the creative use of Web2.0 tools. The whole teaching intervention led to students creating a timeline that examines the course towards the Greek Revolution (from 1422 to 1821) and an interactive map that tracks the development of the Revolution (from 1821 to 1827). What remains from the completion of the intervention, are the students' creations as teaching material available on the Internet.

Key words: Web2.0, timeline, map, history, informatics

1. Introduction

Nowadays, it is demonstrated on a worldwide basis that the use of New Technologies can enhance the quality of learning and teaching (Groves & O`Donoghue, 2009). The qualitative upgrade of educational *methods* requires strengthening the educational process through a variety of teaching tools and materials (Sivaka & Ginoudi, 2013). The global flow of data has affected how the available volume of information is accessed, as well as how it is processed and utilized. Searching, evaluating, processing and utilizing information with "multimedia elements and hypermedia structure" that go beyond geographical boundaries, cannot leave the school unaffected (Tsortanidou, 2016).

Indeed, in recent years, the use of Web 2.0 services has offered enormous potential to education (Crook et al., 2008). The value of integrating digital literacy applications and the various services (rapid search and retrieval of knowledge) generally offered in education, have been the subject of considerable study and research (Fahser-Herro & Steinkuehler, 2009). By Web 2.0 tools, we mean a variety of web, collaborative and interactive tools designed in such a way that users can even create their own material (Wilson et al., 2011). Web 2.0 tools also represent a collective and dynamically changing multimedia or interactive environment (Albion, 2008). According to practical actions that have been implemented, these tools are in accordance with modern educational practices and perceptions (Crook et al., 2008); under the condition, of course, that the teachers continue to explore new and dynamic means by providing flexible pedagogical opportunities in matters of adaptation and renewal (Wheeler,

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2009). Moreover, integrating these tools in a traditional learning environment, despite any problems that may arise, offers a wide range of potential and advantages (Conde et al., 2012). Searching, evaluating, processing and utilizing information with "multimedia elements and hypermedia structure" that go beyond geographical boundaries, may affect the school (Tsortanidou, 2016). Therefore, the need for education to be readapted to the new demands of society is considered necessary and the integration of ICT (Information and Communication Technologies) in teaching individual subjects is one way process, in cases where the provided education is in line with the requirements of modern reality (Koutsoukou, 2014).

At the same time, image utilization, and especially supervision, in History textbooks can serve a wide range of general and special teaching goals (Psychogiou, 2009). Numerous studies have ascertained the educational power of image, when the latter is combined with other educational activities within a well-structured educational program (Koutsoukou, 2014). Modern curricula also focus on cultivating self-regulatory learning skills rather than merely acquiring knowledge. In other words, accessing and managing information is deemed as important as its own content (Aktaruzzaman et al., 2011).

Integrating ICT in the History lesson is directly related to the prospect of making it more attractive and creating the appropriate incentives for the direct and active participation of students in the educational process (Tsivas, 2011). Their use enhances students' active participation, the architecture of "openness", collaboration, more dynamic communication, sharing material and utilizing collective intelligence (Sivaka & Ginoudi, 2013). The interdisciplinary approach and teaching by means of ICT offers significant advantages and contributes to achieving teaching objectives, which would be very difficult to be met through conventional forms of teaching (Dalkos, 2002).

Thus, a new pedagogical environment is established, and educational possibilities and accesses are offered, which, until recently, have been difficult to implement. The utilization of ICT in the History lesson is assisted by the existence of material that can be utilized if properly processed by ICT in the school environment. The internet (especially web2.0 applications and services) has an advantage over conventional teaching aids. Apart from the fact that ICT provide easy access to primary and secondary sources, they also enable students to gain a kind of experience of socio-historical situations that they have not actually experienced and then better understand historical terms that are essential for their own historical literacy by means of appropriate simulations, videos, audio documents and other related material. Furthermore, they facilitate teachers in better delivering lessons by enrich them original supervisory material that complements the material given in textbooks (Vakaloudi, 2014). Through their intervention, ICT are expected to contribute to teaching by enliving it, broadening students' interest and enhancing their learning. The number, alternation and variety of audio-visual stimuli increase student attention (Kalogiros & Smyrnaios, 2012; Borich, 2004). Images, videos, music, dramatized narration, written sources, maps, paintings, engravings shape knowledge, place students in space and time, clarify and analyze terms and concepts, and revive historical events. Thus, they facilitate the assimilation and acquisition of historical knowledge, stimulate reflection, sharpen critical thinking, raise awareness, transmit values and contribute to students' spiritual cultivation (Hatzilakos, 2005; Lafatzi, 2005). In particular, ICT-based teaching stimulates interest in learning as an alternative activity, alleviates problems related to reading disabilities, directly addresses students' emotional world, contributes to their aesthetic cultivation, functions as a tool for the development of visual literacy skills (Sakka, 2003; Palikidis, 2008). With the advent of web2.0 services and applications, great potential has emerged regarding the utilization of their characteristics in the educational process (indicatively Anastasiadis, 2017).

Taking all the above into consideration, it should be pointed out that the visualization of the curriculum enhances understanding and at the same time, it attracts students' interest, although one should bear in mind that students' enthusiasm can be ephemeral (Koutsogiannis et al., 2010). At the same time, the benefits of multimedia and multimodal teaching should not be taken for granted, as visualization does not miraculously lead to understanding unless it is part of an effective pedagogical planning (Smith et al., 2005).

2. Design of the Teaching Intervention

In the context of the aforementioned reflection, teachers of different specialties/disciplines (Philologist[1] and Informatics) in the C Class of the 2nd Model High School of Athens, decided to try (in principle of interdisciplinary collaborations applied at school) to guide students of a class to create their own teaching material for History lesson, using a variety of online services and tools, combining objectives and teaching hours from both subjects/disciplines involved. The whole effort was included in the framework of long-term research projects that are implemented in C Class of High School and in particular in the axis: I create, present, communicate and collaborate through ICT. Based on this action, the sections used more were: I seek information, I create and express myself through multimedia and presentations, I create in collaborative web 2.0 environments, I communicate and collaborate in online environments and I implement research projects.

Although the whole project was not structured as a research project, there are several interesting interacting issues, such as: collaboration-co-teaching in real classroom conditions, in real teaching hours, between teachers of different specialties and "culture" (literature and computer science), co-production of educational material by students (the student as creator), which was then used in teaching History, combined with the use/utilization of a variety of services and web2.0 tools as well as with the teaching objectives from two curricula (History and Informatics). These characteristics conceal a series of underlying "research questions". However, the main question in the whole process was whether that kind of intervention could be successful and whether there would be any production of reliable educational material by the students themselves.

Throughout the designing phase, the teachers had meetings which they discussed the initial idea and the details for its implementation. From those discussions it was understood that the combination of the visual and technological element can have a more powerful effect on students' mood, sharpening their interest and thus facilitating the learning process. The rich and appropriately "colored" narrative discourse of the videos becomes more understandable to today's students than the discourse of the textbook aiming at their effortless dedication. At the same time, the use of the textbook resources makes it up-to-date and stimulates students' interest in further study. The use of audiovisual material aims to facilitate the learning of the chronological order of events, while the use of map as a permanent monitoring tool aims to enhance the perception of space and its dimensions.

Also, it was taken into account that when the students' work is completed, it can be used by the philologist to teach the Greek Revolution since it covers three sections (the 5th, 7th and 8th ones) of the school textbook in its current phase. This implies that it meets all the specific teaching objectives set by the curriculum for each of the above modules. In fact, if the teacher proceeds to further elaboration and enrichment issues, all requirements of the relevant modules can be covered.

[1] In the Greek system of secondary education the philologist teaches the subject of History.

3. Identity of the Teaching Intervention

Two dimensions (space-time) were selected to be supported with two corresponding products that will be implemented with the respective online services: on the one hand, to explore the dimension of time by creating an interactive timeline on the course of the Greek Revolution, and, on the other hand, to explore the dimension of space by creating an interactive map on the development of the Greek Revolution.

The main intervention was implemented in the Informatics Laboratory of the school. It lasted eight teaching hours with frequent co-teaching of teachers from both aforementioned specialties. The intended objectives (beyond the cognitive ones for the History lesson), are related to the processes of research, collaboration, composition and interaction among students, their own familiarization with the use of specific, easy to use and functional creative online tools as well as their familiarization with basic functions of multimedia data processing.

A variety of creative tools were used (text editing, VDownloader, Video Cutter Joiner, Moviemaker, Audacity, Thinglink, Tiki-toki) and digital content posting services[2].

The following literature was used to create the material:

- Written Manuscripts: Modern and Contemporary History of C Class of Gymnasium OEDB/Ta kapakia & Kanellos Deligiannis K. Papagiorgi, Kastanioti/History of the Greek Revolution S. Trikoupi, Libani /The struggle of the Greeks for Independence 1821–1833, D. Dakin, MIET/The Greek Revolution of 1821, V. Kremmidas, Gutenberg/Stories of Human Acts, K. M. Kouma, Vienna;
- Documentary: From Byzantium to the revolution of 1821/SKAI 1821;
- Images, paintings, drawings, engravings: from selected websites.

4. Methodology and Implementation Process

The students worked in groups. The implementation was structured in four phases. Before entering the workshop we had come to the content that would be included in the two creations for the most part and the process that would be followed. In other words, a guided, partly exploratory process was selected. The students were divided into groups according to the topics that would be included in both the timeline and the interactive map. Each group had two roles: one for the timeline and one for the interactive map.

During the first phase, which lasted the first two hours, all groups were asked to search the World Wide Web for the two documentaries on the Greek Revolution, as well as a map of the Ottoman Empire of the early 1800s and a painting on the Greek Revolution. "SKAI 1821" contains eight (8) hour episodes, while "From Byzantium to the Revolution of 1821" is one (1), independent programme. After a short discussion, the students decided on a map and a table for the timeline background. The groups, then, took on each episode which they were asked to download with the VDownloader software. Once the download was completed, the students watched the video using headphones so that not to disturb each other and followed clear instructions. The goal was to pinpoint the part of the episode that provided ample information that concerned their group. After watching the episode that was assigned to them, the groups noted which part they should cut from the rest of the body and recorded the time points (beginning-end) of each passage. Thus, 31 video clips were collected. Three groups that had not been engaged in downloading the videos got involved in the collection of visual material (images, drawings, paintings, engravings) via Internet, to create thematic sections of the timeline for which the documentaries did not provide material.

[2] http://vod-new.sch.gr/, https://www. youtube.com.

During the second phase, which lasted two hours, the groups isolated the excerpts they were interested in by using the Video Cutter Joiner software. Then, some of these groups proceeded to editing some excerpts with Moviemaker software. Thus, from the original 31 video excerpts, 17 remained independent, while from the remaining 14, after editing, 6 new ones came out.

During the third phase, which lasted two hours, the three groups that had gathered pictorial material in the first phase, recorded their own narration with the Audacity software, while immediately after that, using the Moviemaker software, they matched that narration with the images they had collected in the first phase and created a video with alternating images managing to combine the visual stimulus with the historical narration. At the same time, 7 groups recorded quotes from the three textbook units in a Ms Word processor, thus utilizing the sources of the textbook. Finally, the other two groups "set up" the two basic mechanisms, the timeline with the Tiki-Toki tool and the interactive map with the thing link, respectively.

During the fourth and final phase and while all the videos had been uploaded to repositories, each group put their video in the appropriate place, on the timeline and on the interactive map.

In general, the students "ran"" through the tasks in which they were involved, the higher levels of the revised Bloom classification in the field of knowledge (Krathwohl, 2002), after applying instructions and specifications, analyzing and evaluating raw material and creating original one. The tasks (Figure 1) are posted on the pages http://www.tiki-toki.com/timeline/entry/743064/-1821/ (interactive timeline) and https://www.thinglink.com/scene/858244155577466881 (interactive map).

Figure 1 Snapshots From The Interactive Timeline (Left) and From The Interactive Map (Right)

5. Results & Conclusions

What emerged in the reflection phase and during discussions between collaborating teachers were cases of several students who seemed to demonstrate, apart from simple technical skills, problem solving skills, critical thinking and creativity, individual and collective responsibility, social functional and collaborative skills (such as such as communication, dispute and conflict management, collaborative discovery).

Teachers also had the opportunity to experience all didactic steps in the class using these web2.0 tools in school practice critically and creatively (Anastasiades & Kotsidis 2015). The proposed tools were accessible and easy-to-use tools that excited students not only with their capabilities but also with their interaction. Indeed, through the proper use of these tools, students actively participated in the formation and sharing of knowledge, received criticism and they discussed and exchanged views. Their originality and imagination were manifested. At

the same time, the distribution of specific roles to the students ensured the active participation of all team members.

The informatics laboratory was upgraded in a collective and creative place for the students. The teachers had the supervision while the students were in charge of the material management (collection, control, edit, decision making, and composition). The students created the contents through critical editing issues. Furthermore, through the production and co-production of educational content, they demonstrated in practice the importance of the "Learning by doing" principle (Schank, 1995). Eventually, the students became protagonists during the proposed method. As a result, their self-esteem and self-confidence were enhanced.

The result of this work and the interdisciplinary approach met the objectives originally defined by the educational community. In fact, it could also be stated that new ones are introduced, since the present work can be enriched with new material (additional multimedia material, worksheets that use student creations as educational material) or new extensions are given rise to (interdisciplinary approaches with Music, Fine Arts, Literature). One more parameter is to be taken into account: the work fulfills the philologist's need not only to go through the historical subject but also to teach the Greek Revolution in an impressive and attractive manner.

6. Perspectives-Tensions

In no way can computers replace teachers or books. But they can help teachers' work, to fill in gaps in the operation of the conventional-printed book, to promote the lesson in an impressive way. Informatics, moreover, permeates all cognitive objects as a means of knowledge, research and learning. For this reason, in recent years, serious efforts have been made to train teachers to use ICT by organizing programs in which they learn to plan their teaching activity utilizing them. At the same time, young people are quite familiar with Information and Communication Technologies. The educational system must treat the ICT, especially web2.0 services (Anastasiades & Kotsidis, 2013) not only as an object of learning but also as a mindtool (Jonassen et al., 1998; Jonassen, 2000) for the students in the context of the evolution of educational practice (Tan, 2019) according to modern learning theories and pedagogical concepts. The role of the State will be decisive. Restoring the relationship of trust between the State and Education will contribute to this perspective.

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