A PRE-STUDY ON THE USE OF WEB 2.0 SOCIAL NETWORKING TECHNOLOGIES IN GEOGRAPHICAL AND ENVIRONMENTAL LEARNING FOR SUSTAINABILITY OF GREEK SECONDARY STUDENTS

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EXTENDED ABSTRACT

The research study focuses on the investigation of new practices and teaching strategies in geographical and environmental conceptions for sustainability (Li & Williams, 2006), based on sociocultural constructivism and active-collaborative learning (von Glasersfeld, 1995; Fosnot, 1996; McRobbie & Tobin, 1997; Jonassen et al., 1999; Stauffacher, et al. 2006). Students' cognitive development is supported through the social interaction between them and co-construction of new knowledge, building on the pre-existing experiences and thoughts (Klein & Merritt, 1994; Bearison & Dorval, 2002; Rissee, 2004; Stahl et al., 2006). The constructivist view of learning geographical and environmental concepts, combined with the use of Web 2.0 tools (wikis, blogs, social networking and social bookmarking), has as a result the students' integration into a dynamic study, relative to their life and future (Klopfer et al., 2009; Estellés et al., 2010; Exarchou & Klonari, 2011). The article presents the context for two transdisciplinary case studies (TdCSs) with ethnographic and action research approaches (Cohen et al., 2007; Stauffacher et al., 2006; Stauffacher, 2010). In these case studies, it is utilized an educational and collaborative tool of Social Bookmarking Systems (SBS) by Greek secondary students, according to sociocultural constructivist pedagogy, in Geographical and Environmental science for sustainability (Steiner & Posch, 2006; Pegrum, 2009; Romero-Frias & Arquero Montaño, 2009; Glezou and Grigoriadou, 2010). As a basic design, organization and application tool of students' transdisciplinary activities will be used Diigo (Diigo, 2006), a network of educational, research and collaborative opportunities.

KEYWORDS: geographical and environmental education, social interaction, sociocultural constructivism, Web 2.0 social networking technologies, Transdisciplinary Case Study

1. INTRODUCTION

The changes in our present social life consistent with the utilization of technologies that offer -among others- new modes of connectivity, communication, collaboration, sharing of information, content development and social organization. Today we have the Web 2.0 tools with impressive features that affect a major part of our every day life (Aviv et al., 2003; O'Reilly, 2005; Anderson, 2007; Cho et al., 2007; Long, 2010). Downes (2005), believes that the emergence of Web 2.0 is a social revolution rather than a technological revolution. It is worth noting that many studies have been published on proposals utilization of these tools in an important sector, that of education. Web 2.0 applications (wikis, blogs, social networking and social bookmarking) now proposed in learning process and utilized with great interest of both students and teachers, based on present educational theories such as constructivism and connectionism (Alexander, 2006; Franklin & Harmelen, 2007; Bawden et al., 2007; Hargadon, 2008; Dawson, 2008). The present paper reports a pre-study which attempts to explore the potential of Web 2.0 social networking tools to enhance geographical and environmental conceptions for sustainability through the sociocultural perspective of constructivism of Greek secondary
students. The next step of the pre-study is the collection, recording and analysis of the research data, the results of which will give the opportunity to understand the real implications of these technologies and their effectiveness in the teaching and learning in secondary education.

2. RESEARCH CONTEXT
The main area of research is the exploitation study of an educational and collaborative tool of Social Bookmarking Systems (SBS) by secondary students, according to socialcultural constructivist pedagogy, in Geographical and Environmental science -an important transdisciplinary field of education (Romero-Frias & Arquero Montaño, 2009). The authors designed two TdCSs for the secondary course of “Research Project” in the A Grade of general lyceum. As a basic design, organization and application tool of students’ transdisciplinary activities will be used Diigo (Diggest of Internet Information, Groups and Other stuff), a network of educational, research and collaborative opportunities (Diigo, 2006). The research activity will be carried out at the computer laboratory of school (age: 16 to 17 years) in Athens and Mytilene with a group of students (total number of members: 25), through their participation in the aforementioned course (duration: 1 school year/ 9 months). In this study, each group of students is invited to exploit the possibilities of a SBS, such as Diigo, in the frame of a collaborative working, with the purpose of the research geographical and environmental action. In the initial phase of collaborative activity, groups of students, in cooperation with the teacher, investigate and share their first editable bookmarks (with sticky notes and comments), on a geographical and environmental issue of their choice (Klopfer et al., 2009; Estellés et al., 2010).

3. THE TECHNOLOGY USED
The technological used tool in research is Diigo, which has become one of the most popular SBS and provides many features for its registered users. With the exploitation of aforementioned tool every user searches users or groups, investigates, collects, organizes, evaluates, categorizes, analyzes, utilizes, stores and shares out the new information and their processing (for instance, marked specific parts of a webpage or writing comments or sticky notes on them). Noting the effectiveness of collaborative action, the user undertakes not only personal but also collective responsibility and knowledge, new information becomes extremely valuable to him and his new knowledge is built through communication and cooperation. These offered possibilities of the Diigo, promote the research initiative, the configuration of new ways of communication, collaboration, interaction and reflection, the transdisciplinary approach to learning and the common contribution of knowledge and assistance (Estellés et al., 2010).

4. METHODOLOGY – PLANNING FOR RESEARCH
The study addresses five research questions: a) How can SBS be used to enhance the geographical and environmental learning of secondary students? b) How can SBS be used by secondary students to better understand the geographical and environmental issues that affect their lives? c) What are the students’ conceptions of the effectiveness of SBS to enhance their geographical and environmental learning? d) What role does sociocultural constructivism play in learning experiences that employ SBS? e) How can students interact among themselves, based on sociocultural constructivist principles?

Even the choice of an appropriate methodological approach gives the opportunity to investigate the above questions in order to develop methodological tools for collecting, processing and analyzing data. Proposed research methodology is two TdCSs with ethnographic and action research approaches. Students benefit on multiple levels with TdCS because of: a) the active participation of learning, b) research and collaborative actions based on the pre-existing experiences and thoughts, c) actions through the interactions of science with society (switching from science for society to science with
society) and d) enrichment of theoretical approach to an issue, contributing to the research community (Stauffacher et al., 2006; Steiner & Posch, 2006; Stauffacher, 2010; Exarchou & Klonari, 2012). Additionally, the available proposed sources to extract data are the students and the data resulting from their actions and the research tools that can be utilized in the research process are: a) questionnaire, b) social networking analysis and c) products of students’ actions. Also the authors propose two methods analysis and note some sample indicators of research: a) quantitative content analysis (geographical knowledge, spatial ability, environmental cognition, sharing information) (Gerber & Lidstone, 1996; Gunawardena et al., 1997; 2001; Stansfield, 2004; Houtsonen, 2004; Klonari & Koutsopoulos, 2005; De Wever et. al., 2006; Goodchild, 2006; Gersmehl & Gersmehl, 2007; Lochyer & Patterson, 2008; Klonari & Tzoura, 2011) and b) social networking analysis (cohesion, power, role analysis) (Isaac & Michael, 1990; Creswell, 2002; Aviv et al., 2003; Dawson, 2008).

According to Cohen & Manion (1994) this methodological pluralism (methodological triangulation and combined levels of triangulation) helps to achieve a possible all-round view and understanding of the research situation with the ability to surmount problems of methodological limitations, the intersection of collected data and to use more than one level of analysis (from the three main levels used in social sciences), that is the individual level, the level of interaction and level of collective activity, particularly useful in TdCSs (Cohen et al., 2007).

5. EXPECTED RESEARCH RESULTS
The systematic study of these basic questions will form the core of the research, the expected results that are mentioned below: The study is estimated that a) it will help students to "learn how to learn", constructing new ideas and using the pre-existing experience and knowledge, aiming at the resolution of experiential problems, b) it will stimulate students' interest in learning of geographical and environmental issues and problems that directly influence the quality of life in all areas (Klonari et al., 2011) and c) it will encourage students -with the application of SBS- to investigate the problem, to share their arguments, to discuss and to clarify personal attitudes and beliefs, to accept a positive alternative points of other students, to collaborate, to be in quest of solutions to other environmental and social issues which influence different areas of human activity (cultural, political, economic and social) (Li & Williams, 2006; Klopfer et al., 2009).

6. INNOVATIVE RESEARCH FACTS
Accordingly, the proposed scientific study is a distinct contribution to teaching and learning and it is characterized by the following innovative facts:

• The design and the application of transdisciplinary activities, aiming at the creation of more incentives learning, exchange opinions- ideas on the subject of investigation and collaboration of all interested to resolve geographical and environmental issues.

• The configuration of new ways of interaction -that will develop the students among themselves-, operation and configuration of social structures, in the frame of geographical and environmental action.

• The integration of geographical and environmental cognition in secondary Greek education and specifically in A Grade of general lyceum (the Geography lesson is taught only in compulsory education) (YPEPTH, 2003). Through the students’ action -that promote interaction with the natural and social environment- highlights the important role of geographical science and the need for geographical and environmental education.

• The exploitation of the new collaborative Diigo in the teaching practice of geographical and environmental education, which leads to new ways of processing, sharing and storing information.
• The application of transdisciplinary case study TdCS (with ethnographic and action research facts), which: a) is a new methodological approach in the research area, b) is a hybrid combination of learning, research and application and c) has not been used in similar research activities nationally.

7. CONCLUSION
Concluding, the support of educational reform and change through sociocultural constructive methods, promotes the social critical look at areas of research and action. In the new digital school the students develop, among other abilities for autonomous action and collective social spirit, spatial perception of the environment in which they operate, digital literacy and environmental awareness. The development of the aforementioned abilities is a priority of Geographical and Environmental Education and the application of digital technologies in this transdisciplinary area warrants further exploration and development of new practices (Klonari et al., 2011; Exarchou & Klonari, 2011; 2012).

REFERENCES