

# A SMALL TOWN'S STREET AS AN EDUCATIONAL PROJECT

## *A Case Study: Asynchronous Interdisciplinary Education between a Greek University and Two Secondary Schools*

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**Keywords:** Synchronous and asynchronous learning, Collaborative learning served by ICT, Secondary and higher education, Interdisciplinary education, Virtual learning environment, Supervising and managing students projects.

**Abstract:** The increasing demand of distance education and the growing degree of diversity of learner groups have created the practice of e-learning which takes place in virtual learning environments (VLEs). The present case study has joined a Greek university of periphery (University of Peloponnese, School of philology) with two private secondary schools (Psychico College of the Hellenic American Educational Foundation and Geitonas School) of the capital. The cognitive material is the history and profile of a commercial street in a historic town of Peloponnese (Kalamata): Aristomenous street. A group of secondary students attending courses of mathematics or sociology do team work in order to visualize the complete "image" of the street, its' shops and houses, the architecture of the buildings serving the commercial needs in the 19<sup>th</sup> century, their cultural remainings, etc. A group of university students, undertaking their role of future educators, collaborate with them as tutors in order to provide material from their inhabited town, Kalamata, to search and propose references, to give advice, etc. The project has adopted several pedagogical theories of education and respects late tendencies in ICT educational practice. It is questioned how students of different ages and educational levels can work together in order to find more meaningful and efficient type of learning. The nature of their communication, their roles during the learning process and their commitment are being studied. A pilot project is being discussed during the academic year 2010-2011 before launching the application of the project for the three following academic years; a mixed evaluation method is planned.

## 1 INTRODUCTION

ICT activities in education are lately widely applied in order to enhance the development of cognitive and social skills, by changing the curriculum and the models of teaching (Hargreaves, 2005). In addition, interdisciplinary and collaborative theories of learning are well served by ICT-centered teaching. Most universities use discussion boards supporting long-distance collaboration among learners. Further more secondary schools get technologically equipped and apply ICT courses.

Is it possible for the computer communication between different ages and backgrounds to offer

cognitive and meta-cognitive goals? How can social skills and life aspects be cultivated between some teams of complete strangers? The present case study has joined a Greek university of periphery (University of Peloponnese, School of philology) with two private secondary schools (Psychico College of Hellenic American Educational Foundation and Geitonas School) of the capital. The cognitive material is the history and the profile of a commercial street in a historic town of Peloponnese (Kalamata), Aristomenous street. A group of secondary students taking courses of mathematics or sociology do team work in order to visualize the street: the special architecture of the buildings, the

commercial history of the street in 19<sup>th</sup> century, it's current role in modern Kalamata. A group of university students, exercising their role of future educators, collaborate with them as tutors in order to provide material from their inhabited town, Kalamata, to search and propose references, to give advice, etc. A Blended Learning initiative will take place between persons of different age and background.

Will it enable the learning procedure? Can social skills and teaching abilities be cultivated via long-distance communication between strangers? Can some tackling gender issues concerning female teachers of philology and their skills in new technologies, be reviewed? What are the motivating elements for each group and is it possible for them to evaluate their work?

## 2 PEDAGOGICAL APPLICATIONS IN ONLINE EDUCATION

The advantages of internet in education are of unique significance. It allows the use and the combination of a variety of Media in interaction, it joins people world wide supporting synchronous and a-synchronous communication, it can also be used to provide education with material as a huge, modifiable source (Federico, 2000). Lately the possibilities of internet communication such as e-mail, discussion forums, mailing lists and chat, support the collaboration and human communication in a frame of virtual class (Papanikolaou, Grigoriadou, Gouli, 2005). In addition, school population, as member of the information society, "needs to get furnished not only with the basic but the higher-order skills required to our digital culture" (Pachler, 2001:15-23). ICT capability therefore "involves an interaction between technical facts and processes, strategic knowledge, meta-cognitive self-knowledge and affective aspects of mind including self-confidence and a disposition to use technology" (Kennewell & als, 2000:19). All these particularities of the internet use can be considered as educational tasks. Loveless has precised four aspects of ICT capability that should be developed within the "wider context of a critical evaluation of the impact of ICT on their own and others lives: a. find things out from a variety of sources, selecting and synthetising the information to meet their needs, b. develop their ideas using ICT tools to amend and refine their work and enhance its

quality and accuracy, c. exchange and share information, both directly and through electronic media, d. review, modify and evaluate their work, reflecting critically on its quality, as it progresses" (Loveless & als, 2001:68).

Internet courses usually apply four main education models, -transmission model of teaching and learning, constructivist model, socio-cultural model, metacognitive model-, described by Rumble (2001) who underlines that distance education technology can influence in a serious way the development of constructivist and socio-cultural model. In fact the project described in this paper was built to serve constructivist and social-cultural models as learners follow interesting and important work, not limited in the schoolbook, and interact between the material and themselves in order to establish knowledge. The "Aristomenous teaching project", by using educational material in on line courses that are based in collaborative activities, learning sources and group projects, follows the type of the "Integrated Model", among three categories of distance education models (Content and Support Model, Wrap Around Model, Integrated Model) as described by Mason (1998). Online education is mainly based in collaboration between tutors and learners. Collaborative learning is an "umbrella term" for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together (Smith & MacGregor,1992) and it is considered to achieve several goals for education, such as social and intellectual involvements, cooperation and teamwork as well as civic responsibility. Such an educational method enhances reposition from the typical teacher-centered or lectured-centered classroom to a profound research and cooperation between tutors and learners who take responsibility of their personal learning. Not only students receive information or ideas but they are creating something new with information ideas. In fact, on one hand, technology in active learning allows the learner to be in control of the learning by investigating information and problems and on the other hand, technology in interactive learning is mediating the interactions of learners and allows learning to emerge (USDOE, 2009).

According to the above principles, students participating in "Aristomenous project" are evolved in a multiple research in order to represent the history, the commercial value, the architecture of the buildings of the street, serving to special commercial and every day needs. Asynchronous communication that strongly supports long-distance collaboration

among learners (Thurlow & als, 2004) is used in the present project. In addition, advice e-mails exchanging between group members, students of school, of university in situ and tutors, provide the personalized support that is needed.

The goals and processes of collaborative activities vary widely. Hernández-Leo et als (2005) propose the formalization of representative structuring techniques in collaborative learning in such a way that Computer Supported Collaborative Learning (CSCL) systems could reuse the best practices according to the requirements of a concrete learning situation. Among several Collaborative Learning Flow Patterns (CLFPs) proposed, our particular learning scenario was based on two popular techniques: *Pyramid* and *Jigsaw*.

- *Jigsaw*: An assessment is divided into parts and given to students, firstly in an "individual phase". Then comes next "the expert phase" with all students from each learning team volunteering to become "experts" on one of the parts. They work together in a team to master the part of the material and also to discover the best way to help others learn. All experts then reassemble in their home learning teams where they teach the other group members ("jigsaw phase"). In our learning scenario this role was engaged by the faculty students who firstly searched the right sources (references, photos or others) to answer to each topic and then they worked together in order to support the school pupils in mastering the material.

- *Pyramid*: Pupils work in couples in order to share their responses to the instructor's question. During the next step they share their opinions within a four-person team, within a larger group and with the entire class during a follow-up discussion. The learning scenario of mathematics and sociology secondary school courses follows this technique. Some members have as a task to answer specific questions others have to produce a product or participate in a process of responding to each other (Jonassen, 1996 & 2000). Students work together in groups with the simultaneous help of their student tutor described above (jigsaw) who answers their questions, gives them material, directs and motivates them. Their group is enlarged in a second phase and it ends by containing the entire class.

The benefits are significant. As learners are assigned issues and positions to argue and they are encouraged to business simulation or role plays, they are seriously involved. Jonassen (2000: 195) explains that the most effective computer conferences must have a specific purpose. Harasim (1990) found that learners perceive themselves as

reflecting more on their thoughts while participating in a computer conference than when engaging in face-to-face or telephone conversation. Discussion boards provide a communication space where the members of the learning team can contribute ideas. Since talk occupies a crucial position in the classroom "in any consideration of principal agents of learning" (Cohen, 1996:220) and is considered as the "only readily available manifestation of the extent and process by which mutual understandings of what counts as knowledge in any context are transacted" (Adelman and Walker, 1974), the communication between members of different education levels (highschool-university), ages (8<sup>th</sup> and 11<sup>th</sup> grade- second year students) and socio-geographic areas (Athens-Kalamata) that makes that "talk" rather interesting.

## 2.1 Description of the Learning Scenario

Students of philology lack of educational experience and practice. Teaching skills, as we know, grow by communicating with learners. On the other hand, teenage learners need to be fed with information in order to cultivate their critical mind and with encouragement for a more positive working attitude. In order to answer to this *problem*, the instructors have chosen a combination of physical presence and asynchronus tools communication that found useful to the educational tasks of the project. Their approach took under consideration the best practices, the specific student group to be served, the way the learning should best emerge "using technology as a tool to foster deep learning and critical thinking skills" (Fink, 2003; Garrison, Anderson & Archer, 2000; Majeski & Stover, 2007).

There are three large groups of participants:

- Group A: about 26 volunteering students of the University of Peloponnese, Kalamata. They are second year students of philology attending an introductory course of ICT.
- Group B: about 25 students, 8<sup>th</sup> grade, of the Psychico College of the Hellenic American Educational Foundation, a private secondary school, attending a special mathematics course in the frame of a curriculum of learning activities that includes diversity of practices in math teaching to respond to the diverse needs of students: problem based inquiry process, hands-on activities, minds-on activities, team work, independent work on open-ended questions, trans-disciplinary

activities, showing relevance of science content.

- Group C: about 14 students, 11<sup>th</sup> grade, of Geitonas School, private secondary school of Athens, attending a chosen course of sociology.

As mentioned above, these groups follow collaborative activities and Computer Supported Collaborative Learning systems such as “pyramid” and “jigsaw”. At the same time, students get familiarized to asynchronous learning and asynchronous communicating, through a V.L.E., Course Management System, platform. Their teachers appreciate the opportunity to manage their course, therefore a set of teaching and learning tools designed to enhance a student's learning experience is used in order to create the virtual learning environment such as curriculum mapping, electronic communication and Internet links to outside curriculum resources as principal components of V.L.E.

Group C, divided in smaller groups, is assigned to answer to special questions about Aristomenous Street:

- i. What is the social and financial importance of Aristomenous street (1871) joining the port with the centre of the town of Kalamata?
- ii. Street's development: could it be related to the development of urbanism?
- iii. Form a catalogue of well known buildings of the street and relate them to financial and social powerful families of the Kalamata society.
- iv. Relate the special architecture of neoclassic buildings to the inhabitants needs.
- v. Describe the active commercial value of the street nowadays.

Group B, also divided in smaller groups, explore areas of mathematics such as statistics and stereometry and is assigned to address special issues as:

- i. applying mathematical knowledge in representing the characteristics of neo-classic buildings of Aristomenous st., using 3d designing software,
- ii. applying mathematical knowledge in elaborating statistics on group B's research findings.
- iii forming links between classroom and the real world
- iv. tackling gendered patterns.

Realistic maths is considered as a human activity and therefore a human value. They should try to be

connected with reality, with society and with childhood (Freudenthal, 1973). Students get interested in what they study since they easily can see the direct relation with their societies and their lives. They have the feeling they contribute to community by applying their knowledge.

Group A is also divided in smaller groups who, sometimes, as mentioned above, get the role of future educator:

- i. They exercise the educational material of the course attended such as, using word processors, typing, sending e-mails, elaborate slideshow presentations, etc.
- ii. They support as tutors the two other large groups through their research by stimulating, by giving advice, references and multimedia material of their town, since many departments are now starting to see the possibilities in linking fieldwork and ICT and turn fieldwork into a learning package (Walsh, 2004: 126).

## 2.2 Evaluation Design

As described above, our *position* is that general and special tasks are served by the present project: in addition to the fact that a group in situ could provide useful and creditable information to others, communication between different ages and backgrounds for educational purposes is the demanding area.

The applied project is based on *hypothesis* that i. the students will elaborate their teaching skills by the contact of teenagers in a more relaxing environment than classroom. ii. Learners of different age and cognitive level and object will have a more clear view about collaboration possibilities and age “gaps”. iii. Prejudice items concerning the “bad relations” between female teachers and new technologies could also be reviewed by the application of a blended learning project. iv. A motivation air could be detected in the university course and in the two secondary level classes of mathematics and sociology. v. Being evaluated by others, not face to face but via distant computer communication, will rather provide learners in a “more softly” way with criteria and evaluating skills of self evaluation.

J. Walther (1992) has noted that “given sufficient time and message exchanges for interpersonal impression formation and relational development to accrue, and all other things being equal, relational [quality] in later periods of CMC and FtF communication will be the same (1992:69); “given sufficient time, however, people get used to CMC

and develop ways of compensating for the loss of non-verbal cues" (1992:51).

*Evaluating tools:* The application of Aristomenous project is a rather interesting field in searching the use of language between learners and tutors of different age, level and areas, as it develops during their asynchronous communication in the VLE platform: it will be examined, for example the type of the language, formal or not, phrases indicating teaching or learning attitude, etc.

It is also interesting to see whether the cognitive material for each large group has been sufficiently acquired via interdisciplinary objects and if further tasks such as higher-order skills in digital culture and metacognitive self knowledge have been gained. In similar cases, is adapted an application of a mixed-evaluation method in order to combine social network analysis with quantitative and qualitative analysis in order to study participatory aspects of learning in computer supported collaborative learning (Martínez & als, 2006). The project will be applied for three school years in order to get the maximum information and a satisfactory number of research elements and will be based on the information provided by the VLE platform.

Moreover, information provided by the VLE platform will be helpful in the procedure of self assessment:

- to maintain collaboration and social interaction between students
- to promote a self-reflective environment
- to include current or immediate applications (On line tests, On line queries).

Personal interviews, rubriques of self assessment and quantitative and qualitative analysis of the textual communication among groups during each stage of the planned learning procedure is hoped to give several answers. During the academic year 2010-11, a pilot project is taking place in order to prepare the three years' project.

### 3 CONCLUSIONS

Asynchronous communication supports long-distance collaboration among learners. As communication via internet supports the collaboration and human communication in a frame of virtual class, a project of interdisciplinary (realistic maths, sociology and education) e-learning is designed between learners of different ages, education levels and socio-geographic areas. The present learning scenario was based on two popular techniques of Collaborative Learning Flow Patterns:

*Pyramid and Jigsaw*, applied in an a-synchronous communication environment and designed to be evaluated in order to get quantitative and qualitative analysis. The case study analysed suggests optimistic results to the educational needs of students. We must be cautious however, before launching the 3year project. For example, technical difficulties have appeared in everyday use of internet in classroom that affect the counts of frequency of the users of the platform. The questionnaire given and the personal interview have already suggested small corrections in the form of the assignments given. Finally, the language used between users indicates teaching evolution.

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