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NETWORKING WITH NEW TECHNOLOGIES IN TRAINING OF SCIENCE TEACHERS: A CASE STUDY FROM THE LAYOUT TO THE REFLECTION

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ABSTRACT: The Major Teachers' Training Program (MTTP) implemented at pilot phase in 2009-2011 by the Greek Pedagogical Institute for teachers of Primary and Secondary Education in five regions of Greece, among them was Mytilene. The program was based on the findings of a survey of the teachers' training needs and focused on the development of flexible training models, such as e-learning, mixed in person and remotely communication, synchronous and asynchronous education etc., by involving new technologies in all school objects.

In this paper, the trainer describes the exploitation of New Technologies and Social Networking Web 2.0 in a target based, sustainable and integrative Major Teachers' Training Program (MTTP) at Mytilene. In the training process involved in person and remotely, synchronous and asynchronous encounters of trainees and trainers with Moodle platform for producing Internet-based courses, a blogspot for information, communication and exchange of views and ideas as well as two wikispaces websites for co-formulation of educational material concerning parallel of MTTP activities in local issues "Aristotle and Lesvos" and "Sappho the Educator". Additionally, in the communication contributed emails, skype and telephones.

Networking aimed at managing a large volume and consumption of variety of training materials, applying and practicing of innovative methodology for personal and professional development of teachers with consequent improvement of the education provided to their students. The whole project served the strategic objective of the Greek Ministry of Education "New School", with emphasis on the development of horizontal competences of teachers and students, which run across all school subjects and are required in everyday educational practice.

Key words: Science teachers' training, secondary science education, ınformation and communications technologies, Greek major teachers' training program

INTRODUCTION

Import of computers in school education and teacher training, as innovation, has brought many changes in the educational process, to the role of the teachers and to curricula which redesigned to meet the new needs and trends. Teachers who utilize Information and Communication Technologies (ICTs) become more active and interactive in society and learning (Kapsalis et al, 2010). The educational system no longer can be remain closed to the changes it has brought and augurs web 2.0, we can say that already has launched the Education 2.0.

To meet teachers their new, demanding role need to cultivate skills and gain new capabilities (CEU, 2007). The "New School", as all day, innovative, sustainable, inclusive, digital, designed in 2010 by the Greek PI, aiming to students and teachers with capabilities to learn autonomously and from different sources, with problem-solving skills, to cooperate and develop interpersonal relationships, to foster accountability , sincerity and confidence, be able to plan their personal future and societal belonging (PI, 2011). Because in Greece there is a lack of systematic training and practice in contemporary educational issues related to daily school didactic, pedagogical and administrative practice, GTP was designed to fill this gap (PI, 2011). The whole project served the strategic objective of the Greek Ministry of Education "New School", with emphasis on the development of horizontal competences of teachers and students, which run across all school subjects and are required in everyday educational practice. GTP carried out in 54 hours in person and 146 hours distance training. The Program piloted

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in 2011 in five regions of Greece, among them was Mytilene, on which is referred this work. Mytilene was eligible convergence geographical area for the Knowledge Society and Innovation in the National Strategic Reference Framework (NSRF) 2007-2015. In this paper, the trainer describes the exploitation of New Technologies and Social Networking Web 2.0 in a target based, sustainable and integrative 'Grand Training Program-3rd section of Science Teachers in Mytilene'. In the present study attempts a critical approach of the application of a digital learning community formed by 19 Science teachers of all specialties of Secondary Education, who, upon selection by the PI, had been the 3rd training section of GTP in Mytilene. In collaboration with their trainer, they applied the GTP as promoted by the PI and developed parallel, beyond the mandatory, educational activities in a digital learning community which is describing in this paper.

METHODS

In this paper there is presented the development of the social networking's framework of the 'Grand Training Program-3rd section of Science Teachers in Mytillene', as developed by the trainer and trainees. It is a reflection case study on the training process applied to Science teachers of Secondary schools with synthesis of personal narrative of trainer, the archival material of the Program and the written reflections of trainees. The discussion aims to highlight those characteristics of the training that made it an integral part of the education simultaneously happening in many schools of Lesbos and others of Greece, as rotated through constant reflections and feedbacks, since it was applying in the same time, in pilot phase, in teachers, their students and their colleagues, in small and large groups of trainers and trainees.

At each stage, trainees completed the training, were writing their reflections, concision in the working groups. For a fuller description of the training and the response of teachers, are presented below, by choice, excerpts of this reflection which were retrieved from the archival material of the training interventions kept by the trainer.

RESULTS AND FINDINGS

1. Networking Supports Teachers Learning

Learning is an adaptive process in which, one who learns organizes the world of his experiences because we do not find out the truth but build viable explanations of our experiences (Wheatley, 1991). Thus, knowledge is not transferred or accepted passively by the learner, but actively it built up (Olssen, 1996).

The research of the project archival material offered data about the training in person and remotely process, synchronous and asynchronous encounters of trainees and trainers with Moodle platform for preparing Internet-based courses supporting parallel the offered by GT. A BlogSpot was used for information, communication and exchange of views and ideas, additionally to the emails, Skype conferences and telephone discussions. Also, two Wikispaces built up for the co-formulation of educational material of the educational activities on local issues "Aristotle and Lesvos" and "Sappho the Educator". Networking aimed to handle a large volume and consumption of variety training materials, applying and practicing innovative methodology for personal and professional development of teachers with consequent improvement of the education provided to their students.

2. Structuring A Network For Knowledge And Information Sharing

Regarding the process of organization of the GTP, the PI followed the procedure: in the beginning posted the proclamation in the homonymous site of the PI, which was specially constructed to serve the communication needs of trainers, trainees and secretary. Were given the opportunity to teachers from all over Greece, at their choice, to join Special Register of Trainers A1 (on particular cognitive objects), A2 (on group cooperation teaching), B (on particular cognitive objects with group cooperation teaching), ICT (in digitization of the educational materials) και Transversal Actions (TA) (on the interdisciplinary approach for the cultivation of the environmentally literate active citizen). Trainers A1, A2, ICT and TA designed educational materials for each teachers' specialty and trained the trainers B who, in their turn, offered training to teachers from schools in five prefectures of the pilot implementation of the Program. The communication of all participants in GTP was done directly with the PI, through the dedicated website and emails. Thus distributed, hierarchically, the announcements and instructions from the project manager to the secretaries, trainers and trainees who, finally, received all the feedback to the retrograde. Teachers, what they learned during their four-month training, they applied slowly to the classes in an organized and consulted manner, going punctual in schools, planning teaching interventions applying in the classrooms and writing the feedback to the trainer. Then, all trainers B summarized the experience and conclusions to the PI from which again come feedback.

In a separate section of the platform Moodle were set two Wikispaces, headed "Aristotle and Lesvos' and" Sappho the Educator ". Wikis are websites that help the co-construction of knowledge by creating and editing a number of related websites, via a web browser such as Internet Explorer and the HTML language.

The Blogspot mpe04mytil.blogspot.com posted on the e-Google blogger website, utilizing ready BlogSpot's creating forms. It operated alongside the Moodle platform to meet the direct communication and understanding needs of trainees, of sharing and annotation of current information of school lives and any educational and informational questioning-answering.

3. Connectivity For The Professional Development Of Teachers

Because modern learning theories attach great importance to social networking for collective learning through collaborative social interaction, the describing asynchronous distance training of the 'Grand Training Program-3rd section of Science Teachers in Mytillene' was an important supporter process because it offered the advantage of education regardless of time and place. Teachers generally work alone, they work in their schools as a closed circuit, as system does not exchange enough information on the environment (Vasilou & Haramis, 2005). Many factors have contributed long to restrict the joint work of teachers, such as the traditional syllabus and curriculums, timetables, the suffocating time of teaching hours, split into 45 minutes, the varied and multiple demanding reality of each school community and each class and generally the prevailing mentality in schools. "We need collaboration among team members", "collaboration and interaction with the instructor offer equal membership", "The evolution of a teacher does not stop with the nomination". "We must constantly be developed and cultivated with new teaching methods, new school, teamwork, use PCs and interactive whiteboards, new curriculums".

4. Delivery of Digital Educational Material and Methodologyfor Teaching Sciences

The possibilities that computers offer to modeling, visualization and simulation of physical phenomena and processes help to create powerful learning environments that provide unique opportunities for users to observe phenomena, materials and processes which are often difficult or impossible or even dangerous to observe them actually. They give opportunities to perform virtual experiments and to intervene in the processes in order to control affairs and study of matter changes in both the real and into alternative worlds (Stavridou, 2011).

For the design and implementation requirements of all the materialized teachings during the Program produced huge quantity of great variety and specialization teaching material which combined, on multiple levels, with methods, techniques and ICTs applications in a sophisticated dimension and vision of teaching Science in Secondary Education. Through the created electronic infrastructure circulated the training material of GTP, posted plans and scenarios of Science courses, offered books and internet addresses with helpful educational material of already practitioners, handed out photos, videos, music, texts, educational applications available for use in future, when the need will come. Teachers were informed about the websites that preserve their colleagues trainees of the same group that did not know of their existence or had not paid attention until now: "You never know what dynamics have each your colleague", "In the beginning (of the training seminars) you say that all the same and the same will be, but in the process often you changes your mind ....".

CONCLUSION

The described training intervention of the 'Grand Training Program-3rd section of Science Teachers in Mytillene' simultaneously addressed to teachers and students, giving them the possibility of applying and integration teaching and learning innovations directly from the training seminars to the classroom education. Based on the objectives of the 'New School', emphasizing the development of horizontal skills of trainees and their students, that run transversely all school subjects. Teachers participating in virtual and real encounters of synchronous and asynchronous training, without geographic and economic boundaries, with texts, sound and images, used Internet and in person teaching tools, in joint information, sharing and editing teaching materials in Science. All together designed and built the new knowledge in schools that daily change rapidly.

RECOMMENDATIONS

The products of this co-construction of knowledge on modern teaching of school Science objects are uploaded on the websites up mentioned and can be basis for discussion and new partnerships of teachers to scientific and technological progress and cohesion of school communities, they can be used in any educational processes anywhere in Mytilene, near or far.

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