

INQUIRY-BASED SCIENCE TEACHING IN OUTDOOR EDUCATION-A CASE STUDY IN MAGNA GRECIA OF APUGLIA AND CALABRIA

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ABSTRACT

The Field Conference in the Traces of Ancient Greek Rationalistic and Naturalistic Philosophers of Magna Grecia is a Peer Learning Activity which is developing in the framework of the Educational-Training Project 'Mesogeios-Isalos Grammi-Mediterranean Sea-Waterline' and more focused in the Project 'Teaching Science Notions with Ancient Greek Natural Philosophers', training projects that are materialized for Science Teachers in West Crete, Greece during the last three years. It was addressed to executives and teachers of School Education who were interesting in collaborating and sharing knowledge and experience in the field of Sustainable School Leadership. They tried to introduce philosophy in teaching and learning Sciences in schools of Primary and Secondary Education. The Conference was an Educational Pathway which intends to unwrap the "waterline"(Isalos Grammi) from Crete to the Mediterranean Sea, to the Europe, to the world, bearing in mind the words of Socrates "I am not an Athenian or a Greek citizen, but a citizen of the world", to expand the boundaries of the mind, the horizons of thought and the criticisms in most untrodden paths of investigation and discovery, promoting the values of Education for Sustainable Development. The journey is the goal and we are aiming to it (Breiting S. et al, 2005). [Regarding the title of the Project, the term 'waterline' – ίσαλος γραμμή- is shipbuilding and technical term which is taken seriously into account in ship loading. Although it is called line, actually is defined as the level of the horizontal section of the surface of the sea with the ship to the point where it balances and floats when the ship is fully and properly loaded (Wikipedia)].

INTRODUCTION

Teacher education has been greatly affected by the economic and financial crisis, but the importance of investing in teachers, trainers and educators and supplying them with new skills and teaching techniques in line with technological and social developments is a top priority for Europe's future. Strengthening innovative teaching and learning practices and facilitating mobility and the exchange of best practices could be a step forward in tackling the economic crisis. Large investments in lifelong learning of teachers, including practical experience abroad, are needed to ensure their continued professional development and to develop new ICT skills and entrepreneurial skills and know-how in inclusive education (EP, 2017). In Europe, and around the world, many discussions are taking place, on whether 'traditional' methods of teaching, with the transmission of knowledge from teachers to students, are still in place or whether the teaching of older students, who have developed sufficiently skills and competences, can function autonomously and participate in more learner-centered teachings, where students and the teachers actively develop knowledge and skills (COM, 2007). Contributing to this, ICTs offer great opportunities and possibilities for autonomous learning and collective building of knowledge and development of skills (SEC, 2007). Thanks to educational research, our perceptions of learning continue to evolve, but still remains a long way till the results to assimilate fully into teaching methods and school organization.

Commission of the European Communities promotes many initiatives and changes in the framework of the program Education and Training 2010. These changes require teachers not only to acquire new knowledge and skills but also to constantly develop their knowledge and skills. In order to provide the training body with skills and abilities adapted to the new roles that are required to undertake, it is necessary to combine high quality in initial teacher education with a coherent continuous professional development process to ensure that teachers are kept informed about skills (SEC, 2007). Leadership is dealing with the complexity

every time in schools, so directors and advisors need to escape from the everyday workload in order to protect themselves not to discourage and interrupt their carriers, as they have additionally to overcome family obligations and limited professional development. Participative planning of jointed outdoor educational activities encourage and ensure the commitment to the work and personal life's purposes, enhancing also the ability of decision making, feeling safe with the offering transparency. The taken feedback feeds and empower the teaching and learning willing.

With distributed leadership, learners are assisted to work together and share experiences and ideas. Concerning the motivation and commitment, in co-operative learning, people are enabled to work together and share ideas, experience, information and knowledge and it becomes the most effective form of learning when it is organized well. Staff and students are more enthusiastic and committed to the school and activities undertaken to achieve its core purpose (Kikis-Papadakis, 2015).

The Open Conference in the Traces of Ancient Greek Rationalistic and Naturalistic Philosophers of Magna Grecia organized by the School Advisor of Science Teachers of the Regional Administration of Primary & Secondary Education of Crete in collaboration with the Mayor of Platanias Municipality, Chania, the Associate Professor Sedat Ucar of Faculty of Education, Department of Elementary Science Education of Cukurova University, Adana Turkey and Rosella Mastodonti retired Philosophy High School Teacher, Responsible for European partnerships of the Cultural Association 'La Pagina' and the homonymous European Magazine edited in Terni, Italy we organize the Field Conference 'In the Traces of Ancient Greek Rationalistic and Naturalistic Philosophers of Magna Grecia' 24-29 October 2017, in Apulia and Calabria, as preparatory meeting for the a new Erasmus KA2 European Project. All the organizers had coexisted for many times in the past as participants in European Congresses and Educational Actions in Greece, Turkey and Italy.

The educational/training pathway in geography, culture, history and philosophy, was organized with local communities, in the traces of ancient Greek pre-Socratic Philosophers, realizing philosophy as much more than simply talking together and sharing ideas, but as a certain kind of thinking about certain kinds of topics which can be applied to almost any subject, playing crucial role in creating independent learners in students (Worley, 2011). Transnational mobility to acquire new skills is now one of the key ways in which young people can enhance their future employability and personal development. Education and Training ought to promote and support the new ways of learning and teaching promoted also in the Report on a new skills agenda for Europe (EP, 2017).

METHOD

The research question was about the philosophical inquiry based science teaching and learning in outdoor education. In order to be answered and clarified many sides and parameters with a thoughtful way, it was carried out a content analysis of the archival material of the Conference and discussed with documents of European union's strategies.

The explored digital material was concentrated in folders and text documents, websites, photos and videos which had concentrated during the preparation of the Conference, during and after it. The observations in the studied archive were recorded in a structural way in the related fields which were defined in the beginning. These fields correspond to the research objectives: 1. the content of the inquiry, 2. cross-thematic approach, 3. peer learning methodology, 4. learning mobility, 5. linguistic pluralism of Europe. The recording unit was the sentence and the phrase.

The fact that the researcher was member of the organizational team and participant to the educational/training pathway facilitated a lot the inquiry, even it was at the expense of the impartiality of the investigation.

RESULTS AND DISCUSSION

The content of the Inquiry

In the training pathway in Calabria and Apulia of Magna Grecia in South Italy, the organizers chose to study philosophers who are fundamental for the history of Western thinking, ascribed in a pedagogical horizon and located in places geographically beautiful and rich of historical memories. They are: a. Archita mathematical, founder of the scientific mechanic in Taranto, an important historical city of Puglia, b. Tommaso Campanella important philosopher for the history of the pedagogical thinking from Stilo in Calabria, c. Pithagoras had founded in Crotona, on the Ionian coast of Calabria, a very important School, the 'Pythagorean School'. He is the great father of mathematical and philosophical doctrines of our civilization and famous for the 'fair cup' that he used to teach the respect to the limits, to give the citizens of Samos the measure of maintain standard, equality and justice.

Practicing in teaching with philosophy, improve the teaching strategies and give more confidence with questioning and discourse skills, engendering a more collaborative relationship with the class and an atmosphere of active learning and enquiry. Worley interfaces enquiry as a collective endeavor to explore and investigate a particular idea together in a focused way, and more specific, philosophical enquiry as a method for exploring philosophical ideas together using questions and reasoning. The important goal, in the years of pre-Socratic Philosophers and in modern era, was 'Thinking Changes'. To this direction, the main idea of the Conference and preparing European Project is the Inquiry based way of learning, inside and outside the classrooms, to get students thinking philosophically with provocations of Philosophy in Primary and Secondary Education. The goal was also to expertise teachers to establish and answer philosophic queries based on the school and academic curricula, linked with pedagogical issues and problems in interdisciplinary ways with elements of cultural education.

Science and Philosophy are two activities of our minds with different orientations so that different information can be given by each one. The Scientists explore the reality, the Philosophers try to show what could be true in reality, they do not live up to being the established as true and valid in general, but by overthrowing it, they seek to examine other possible ways of its existence (Pelegrinis, 1998). In this philosophical Conference, we tried to negotiate the perception of 'BEING' and 'IS', from the point of view of Ontology and Epistemology in a sociocultural environment, looking for similarities in the way of life and dialects. The thematic fields of the Conference were: a. Approaching Science Notions in Schools with the Ancient Greek Natural Philosophers in Magna Grecia, b. Sociocultural Elements of the Life in South Italy, from the past to nowadays, c. Teaching Science with Philosophy in Schools, d. Collaborations and Partnerships of Schools in Mediterranean Area, e. School Activities in an Interdisciplinary Framework.

The negotiated topics were about to open the Greek schools in Mediterranean area and undertaking initiatives to connect Schools of Magna Grecia with Greek Schools. An interesting issue was also to find out ways of introducing in Primary and Secondary schools the teaching notions of Ancient Greek Natural Philosophers with New Technologies through the school Curricula as a teaching proposal for outdoor Education.

Cross-Thematic Approach

The Educational Path of Philosophy and the search for correlations of the East Mediterranean's cultural heritage to ancestors' of Magna Grecia is a case of exploratory learning in Science with cross-thematic approaches. The Conference targeted to the personal and professional development of Science Teachers, to the opening and interaction of the school communities of the West Crete to the neighboring educational societies, by

approaching scientific and pedagogical issues related to Science and Philosophy, improving the quality of daily school life.

During the educational reforming in Greece, under the title of 'The New School-First the Student' which carried out in 2010 by the Greek Ministry of Education, Lifelong Learning and Religious Affairs, were developed new Curricula in order to be adopted new principles of the New School organization and implementation (YPTH, 2010). The 'New Curricula' are open and flexible to the teacher and students who, jointly, co-format the content of learning, having the possibility of intervention and self-action in the method of teaching. They integrate elements of modern life to cultivate acceptance and understanding through collegiality, promote new methodologies that cultivate the experiential and collaborative learning through interdisciplinary approaches.

In the Antalya Declaration on Interdisciplinary Practices in Science and Technology Education, the participants declared that interdisciplinary practices in science and technology require teachers to be equipped with quality teacher education and teaching materials for both learning in and out of the classroom (AD, 2016). However, parents, industry, government officials, and the wider community need to recognize that education has changed from when they were students. Science and technology are a part of everyone's life and therefore necessitates functional literacy.

An extended and deep biographical research was carried out by the organizers and participants in the historical and geographical references linked to the content of the training pathway. More specific, the lectures referred to Pythagoras Life and his School in Magna Grecia, to the certain Science notions in the philosophical works of the Ancient Greek Natural Philosophers, the Transformation of Medicine from the Magic and Superstition to Science, the home and social economy in the years of colonies at Magna Grecia and nowadays, the interdisciplinary approaches through the school projects of sociocultural issues-from the local, to national and international level, the dialects of South Italy and their connections to the Greeks, etc. The experiential learning with inquiry and discovery in the traces of the ancient Greek Rationalistic and Naturalistic Philosophers of Magna Grecia improved the skills of 21st century of the participants through their active involving into the whole preparation and implementation of the Conference, with many discussions and reflections.

There was a strong need to map the unknown, or half-known future, by building up a Map containing all the selected information of the places, emerging from the history, the philosophy and the beauty of each inch of Magna Grecia in Calabria and Apulia, as a follow-up of the Training Pathway in Sicilia in 2015 (<https://magnagreciasicilia.wordpress.com/2018/01/05/about/>). In this way, our itinerary could be published to all people who may had the wish in the future to trace these kilometers in Calabria and Apulia of South Italy.

Peer Learning Methodology

The philosophical, historical, cultural pathway promoted the Inquiry Based Learning among peers since it was experiential, team-centralized, and the knowledge was co-constructed by the participants. In general, the open-air educational pathways are socially constructivist because the educational activities and actions are developed mostly in teams, with local communities, in the society. The knowledge was co-constructed in the small community of the participants from Greece, Italy and Turkey and shared among them, also to others through the communications that developed. Through discussions, suggestions, tours, field work, teachers from all three levels of Education, seek ways how to ask questions in teachings, how to engage the interest in searching for and discovering interlocutors, how to build curricula in future schools.

The Conference was a Peer Learning Activity developed in the framework of the Educational-Training Project 'Mesogeios-Isalos Grammi-Mediterranean Sea-Waterline' (doc

with protocol number 726/13-9-2015 of the School Advisors' Office in Chania, Crete, Greece) and more focused in the Project 'Teaching Science Notions with Ancient Greek Natural Philosophers' (doc with protocol number 1134/02-11-2015 of the School Advisors' Office in Chania, Crete, Greece) which were addressed to executives and teachers of School Education who are interesting in collaborating and sharing knowledge and experience in the field of Sustainable School Leadership. A variety of peer learning activities took place, such are presentations, discussions, field works and trails with teachers of various disciplines, inquired in experiential way on philosophical and practical issues in the labyrinthine of scientific notions, shared opinions and knowledge with local people, enlighten primitive semi-structured ideas on places, things, facts and people.

Learning Mobility

Studies confirm that learning mobility adds to human capital as learners have access to new knowledge and develop new language skills and intercultural competencies. Learning mobility has many positive features. It can, for example, help to combat the risks of isolationism, protectionism and xenophobia, which arise in times of economic crisis. It can develop a deeper awareness of European identity and citizenship among young people. It also accelerates the dissemination of knowledge, which is a key element in the knowledge-based Europe's future, includes voluntary work and informal learning, and promotes transnational mobility at a "peer-to-peer level" (COM, 2009).

In 2014, Greece and Italy who had the Presidency of the Council of the European Union declared 2014 "Year of the Mediterranean" so as to work together in the framework of the Integrated Maritime Policy to promote activities in the southern neighborhood of Europe (www.gr2014.eu). Sea is the key element of the Greek identity and European history. It can be a horizontal priority for the Mediterranean populations and a factor of growth and collaboration in Europe, of common search, a vehicle for Education, Science and Culture to support meaningful learning for a hopeful future of Europe.

Learning mobility, the transnational mobility, with a view to acquiring new ones skills, is one of the key ways in which a person, especially young people, can enhance his future employability and personal development. The field covered is broad, it concerns of all young people in different learning contexts, graduate and postgraduate studies, university studies, as well as in the context of internships, apprenticeships, youth exchanges, voluntary work or vocational training, within and / or outside the country. European Union considers that the issue of mobility is relevant to all categories and sectors, such as culture, science, technology, the arts, sport and entrepreneurship of young people (COM, 2009).

Mobility can be integrated into all relevant policy areas, from education, culture and training to research, enterprise and innovation. Civil society organizations can be encouraged in twinning, following the example of town twinning, and in creating dialogues through existing European programs, like the regions of Tuscany, Catalonia and Västra Götaland did. They have signed bilateral agreements to promote mobility amongst themselves in various fields, such as schools, apprenticeships, post-secondary education, new graduates or entrepreneurs (<http://www.mob-reg.eu>).

Virtual mobility, with the use of the Internet and other electronic forms and communication, often act as a catalyst for the transition to a period of physical mobility, also can build up e-twinning. Virtual mobility can be a suitable and practical form of mobility for young people when it is not possible to move abroad. Electronic twinning can increase the quality of mobility initiatives, through better preparation, and make them more sustainable. Although it is not substitute for physical mobility, it enables young people to prepare for their stay abroad and can create the conditions for future physical mobility by facilitating the development of friendships, contacts and social networking. It also provides a means of maintaining contacts with the host country after the end of the mobility period. It can also give an international

dimension to learners who, for various reasons, cannot or do not wish to go abroad. In this context, ICTs can be exploited for 'e-learning twinning' and the creation of virtual platforms, for teachers, others "Multipliers", stakeholders, interactive communities, open initiatives, etc.

Linguistic Pluralism of Europe

The languages that used in the discussions and lectures of the Conference were the Greek, Italian, English, also in Cretan, Griko and Salentina, trying to approve that the main communication mean, the language, does not become obstacle when people want to negotiate with the with the spirits of ancestral wisdom study the principal science notions in their natural sociocultural environment. Moreover, Europe's linguistic diversity is a key element of its wealth and it is important to ensure that less-spoken languages are also promoted as mobility destinations The linkage between language skills and learning mobility has been addressed in the Strategic Communication on multilingualism since 2008 (COM, 2009). Wider language learning has facilitated mobility, which would otherwise be impossible. However, this progress is not the same everywhere and, for some youth groups, language remains a major obstacle, for example, in vocational education and training. Mobility contributes to the promotion of language learning and linguistic diversity in Europe, offers the opportunity to acquaint with the cultural characteristics of the EU languages, official and the lesser used and taught - while providing an incentive for learning of a second language. It also encourages the lifelong learning and the discovery of the common European cultural heritage through the exploiting of linguistic idioms and remains.

In the enquiry of the history, the place names functioned as live witnesses of the Greekness of the regions, as through the corruption of words that could trace some remaining elements referred to the meanings and the contents of the ancient Greeks in Magna Grecia. The participants of the Conference tried again and again to find out cultural elements to wake memories of what we had taught about those places and people. In the places that we planned to visit, are Griko language communities, where we heard people to speak and we tried much to understand what exactly they are saying. During the preparations of the Conference, the Greek linguistic minority of Calabria and Apulia, which is recognized by the Italian State, speaks 'Griko', 'Grecanica', Salentina' had exited their phantasy how it could be when they should start to discuss lively.

EPILOGUE

The Open Conference in South Italy in the Traces of Ancient Greek Philosophers of Magna Grecia was a field peer learning activity which is co-constructed by the participants. The goal was to promote the inquiry based learning by establishing and answering queries linked to the school and academic curriculum and syllabus. This educational and Training pathway, as open Conference, constitutes a proposal for outdoor Education and Training of primary and secondary teachers. Functioning, also, as preparatory meeting of teachers, professors, local municipalities, cultural associations, organizations and scientists, it will be useful for applying an Erasmus KA1 and/or KA2 proposals with this subject, or related with the planning and co-constructing Conference framework. The Conference was a training seminar where participants are both speakers and interlocutors, trainers and trainees. The result is coming out from the jointed efforts of the participants under the glance and guidance of the organization and scientific committee.

The results of assessing the Open Educational Conference in Magna Grecia, from the point of view of a training pathway can be exploited in philosophical inquiry teaching in the classrooms with the use of 'if' and deepening in the ideas and aspects of Ancient Greek Natural (Pre-Socratic) Philosophers. The teachers need to set questions, to design activities, and also to help their students to do the same, to get students thinking philosophically with provocations of philosophy in Primary and Secondary Education. In this way, they can make

varied transformations with the target to introduce ancient Greek philosophy to the modern Science curricula and not only. Educators, trainers, young workers and senior management can play an important role in encouraging and promoting mobility and in providing positive examples, recognizing the added value of learning mobility in their activities.

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