

Biology and Health Education: Design, Implementation and Evaluation of a Course on Environmental Health Education aiming at the Scientific Literacy of Future Teachers

Kyriacos Athanasiou* 

National and Kapodestrian University of
Athens, GREECE

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Abstract: The aim of this paper is to highlight issues of scientific literacy that characterize the Greek society in environmental and health issues, and the need to integrate the Teaching of Science and Biology with Health and Environmental Education. This is accomplished by the means of presentation of previous examples from the literature and through the presentation of studies of my own, as well. Thus, it is indicated that this and of course, other societies are characterized by a significant deficit in the familiarity with these matters. Next, I make a historical and personal appraisal on the evolution of the field of environmental health and genetics and try to make some review on its history, due to having the privilege of experiencing close correlation with it almost on its birth. Lastly, it is presented, a proposal for a university course adapted to the needs of present and future teachers combined to its evaluation. The latter was made through a questionnaire and the response of 153 students of education that highly rated the course as it was shown on the Likert scale. All this reveals emphatically the need for integrating the field of Environmental Health Education to Science and Biology teaching.

Keywords: *Course, environmental health, health education, scientific literacy.*

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Introduction

By means of the use of an accumulated experience gained by our previous involvement during the genesis of the field of Environmental Genetics (Heddl & Athanasiou, 1975), and, after a long tenure in environmental and health research, and after teaching Health Education for several years, as well, we tried to organize a series of courses aiming to the improvement of the Scientific Literacy (SL) on Environmental Health Education issues. The design of the present course, combined with the way the course was implemented, led to the situation that the course was attended by an audience of many university students from different years of study, and was widely accepted by them. This is a fact showing, on the one hand, the demand of future teachers for courses that have to do with their everyday life and the lives of their future pupils, as well. On the other hand, the interest that this subject presents to contemporary young people must lead us to think positively for integrating such courses in the curriculum. The very positive evaluation of the course by the students, gave us the impetus to describe the experience. This experience is reflected in this paper, which, primarily examines the need to improve their SL. More specifically, we discuss: the deficit that seems to exist in societies like the Greek one (and not only), in environmental health issues; also, we argue for the need for instruction aiming to present and future teachers' acquaintance on issues related to SL, particularly, those related to issues of Environmental Health.

Some examples of the deficit that exists in Greek society in matters of Scientific Literacy

A. Views of Greek students and teachers on the Nature of Science

It is known in the circles of experts dealing with the Didactics of Natural Sciences (NoS) and not only, that an indicator of Scientific Literacy and Scientific Competence is the familiarity with the Nature of Science (NoS) (McComas, 2008). For this reason, we examined in a research (quantitative and qualitative) that we conducted among Greek teachers and students their views on the Nature of Science (NoS). As far as the students are concerned, the questionnaire consisted of twenty-nine (21) closed-type, graded five-point Likert-type questions with a grade of 1-5. The results of the study

* Correspondence:

Kyriacos Athanasiou, Faculty of Pre-school Education, The National and Kapodestrian University of Athens, GREECE. ✉ kathanas@ecd.uoa.gr

showed an understanding of the NoS quite low (Average = 3.74 (\pm 0.40)).

As far as teachers are concerned, their views on the nature of science vary. Most Greek teachers stated that they have not been taught anything about the Nature of Science (Table 1). Any information about the NoS, the *Scientific Method*, and the *History of Science*, was obtained indirectly within the framework of the respective scientific subjects. Interviews with them revealed a positive attitude towards the scientific method which is not necessarily based on knowledge of methodology and history of science but on a pervading academic atmosphere and expressed the desire for more familiarity with the subject during their basic studies (Katakos & Athanasiou, 2020).

Table 1: Degree of Education Students' understanding the Nature of Science (NoS) before and after the application of a course (N=153).

Students' understanding of the NoS	Average \pm Mean	α -Cronbach
Before the teaching of the course	3.74 \pm 0.40	0.64
After the Course	3.85 \pm 0.37	0.58

B. About the deficit in Greek society in matters of Scientific Literacy, as shown by the degree of acceptance of the Theory of Evolution through Natural Selection

In a series of recent publications concerning the acceptance of Evolutionary Theory (THES) in the Greek territory, we argue that the fact that our society holds one of the last positions in the world is not due to religious reasons, but to the elimination of the teaching of the Theory of Evolution through Natural Selection for several years from our educational system, resulting in a low index of faithful nominal Literacy on the issues of Evolution. Indeed, in this series of works, it appeared that the kind of religiosity of the Greeks does not exclude in any way a not literal interpretation of Scripture (Athanasiou & Papadopoulou, 2011).

C. On the deficit in Greek society in matters of Scientific Literacy related to familiarization in Environmental Health issues

There are several examples from both personal and other studies that reveal very clearly the gap that exists in Greek society in education on issues of Scientific Literacy in environmental health issues. For use, how can we explain why such a high percentage of 25% of Greeks believe that "invisible forces are spraying us"? (Lifo, 2017).

Studies on smoking

Studies we did among students of Greek Universities and among parents- smokers and non-smokers, showed that a percentage of 83% believe that the main factor responsible for lung cancer (1st Greece in % of smokers in the EU), is air pollution (Makris et al., 1994). Of course, the latter is a clear misunderstanding, since smoking is the most important cause of cancer and is responsible for about 30% of all cancer deaths, while it is responsible for a percentage of 70-90% of deaths from lung cancer (American Cancer Society, 2008). The latter is likely to have a direct consequence on the behavior of Greek parents who in percentages of 75.1% and 54.8% (mother smokers) smoke in the presence of their children (Athanasiou, 1995; Charalabopoulos et al., 2011) (See Tables 2 and 3). This demonstrates the ignorance of Greek parents about the dangers that their smoking behavior entails for the health of their children.

Some other conclusions that have emerged from our respective studies relate to some other misunderstandings about smoking and health that exist in our society and, possibly, elsewhere:

Passive smoking: When students were asked to assess the risks of passive smoking, a significant percentage responded that these risks are twice as high as the effects on normal smokers. Of course, the correct answer is that passive smokers have twice the risk compared to non-smokers who, at the same time, are non-passive smokers (Makris, et al., 1994).

Table 2: Views on Lung Cancer risks, by gender (total sample). (From Makris et al., 1994).

Atmospheric pollution as the main lung cancer causing factor	Male		Female		Total	
	n	%	n	%	n	%
Yes	390	82.1	549	83.0	939	82.7
No	23	4.8	9	1.4	32	2.8
Don't know	62	13.1	103	15.6	165	14.5
Total	475	100.0	661	100.0	1136	100.0

Smoking habits of Greek teenagers: Even authoritative experts on smoking, when commenting on the results on smoking among adolescents, state that Greece has the worst problem among EU countries, stating that Greek teenagers start smoking at the age of ten. The truth is that teenagers around the world tend to experiment with smoking around the

age of ten. At the same time, although Greece occupies the highest position in terms of smokers' percentages in the total population, it holds one of the lowest positions in the studies for 13-year-old smokers (Currie, et al., 2012). Probably, this is linked to the fact that Greece does not nevertheless hold the first place in the rates of deaths from lung cancer in the EU. Because, according to Peto (Doll, 1998), those who start smoking at later ages are probably 2 to 3 times less likely to develop lung cancer, compared to those who start at an earlier age.

Table 3: Greek parents' self-reported smoking practices (From Charalabopoulos et al., 2011).

Smoking in front of their children (%)	Fathers (n = 205)	Mothers (n = 168)	Total (n = 373)
Yes	75.1	54.8	66.0
No	11.2	12.5	11.8
Occasionally	13.7	32.7	22.2

Citizens' Confusions about the Formaldehyde in e-cigarettes: Studies that appeared in the Greek press on formaldehyde in e-cigarettes were declaring that e-cigarettes are more carcinogenic than the conventional ones. Indeed, some of the local newspapers had as their title: "e-cigarettes contain ten times higher carcinogens" (Lifo, 2017). The truth, of course, is that even if e-cigarettes had, in fact, ten times higher concentrations of formaldehyde (which turned out to be completely wrong), they would not have a risk for lung-cancer of ten times more, since the main factors in tobacco and tar of conventional cigarettes, that are the focus of our serious concern, are the high concentrations of PHS (Polycyclic Aromatic Hydrocarbons). The latter are known to be some of the most dangerous carcinogenic factors that have been detected in the human environment.

These and many more demonstrate the urgent need to integrate the methods of Didactics of NoS in areas such as Health Education and Environmental Education. This concern led to the design of the Health Education course aimed at educators of all categories and orientation to Environmental Health topics, with particular emphasis on issues that concern the teachers themselves, as well as the students.

About the genesis and development of the Environmental Genetics and Health sector: Some history.

The 70s decade in terms of our knowledge of the relationship between Environment and Health, was marked by four important events (Heddle & Athanasiou, 1975):

1. Rise of the field of Environmental Carcinogenesis through important Epidemiological Studies (Doll, 1998).
2. Emergence of the field of Environmental Genetics and Mutagenesis: This was done, firstly of all, through the development by Bruce Ames, Professor of the University of California, Berkeley, and his colleagues, of a fast and effective *in-vitro* technique (*Ames/Salmonella technique*) (Figure 1).

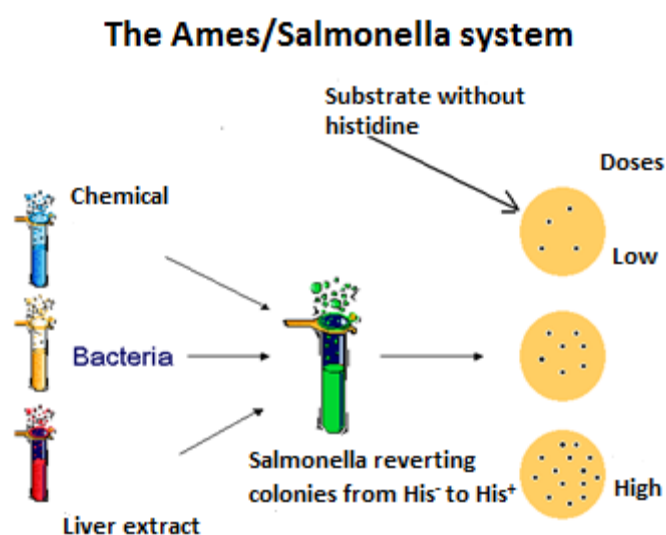


Figure 1. Schematic representation of the Ames/Salmonella *in-vitro* test (McCann et al., 1975; Mortelmans & Zeiger, 2000).

3. Synchronism of the two sectors: When all the previously known carcinogenic substances, as well as several non-carcinogenic ones, were identified with this system, it was found that almost 90% of the carcinogenic substances were also mutagenic, while more than 90% of non-carcinogenic substances were found to be negative in terms of their mutagenicity. The fact that such a high proportion of carcinogens have proved to be powerful mutagenic was a strong

indication that most cancers are due, at least to some extent, to alterations in DNA due to the action of environmental factors.

4. Explosion in the development of rapid bio-testing techniques and their application in the study of innumerable chemical environmental factors (Figure 2). This was followed by an explosion in the development of similar *in-vitro* techniques such as the *induction of Chromosomal Aberrations* in mammalian cells, *Induction of Exchanges in Sister Chromatids (SCE)*. A detailed description can be found by the reader in the publication (Athanasίου, 1983).

The author had the good fortune to attend and get involved in the field of Environmental Mutagenesis and Carcinogenesis, almost from the birth of the latter, and had the privilege to publish, as a postgraduate student, one of the first publications of a Greek researcher in the prestigious journal *Nature*, at least in matters of Environmental Genetics (Heddle & Athanasίου, 1975).

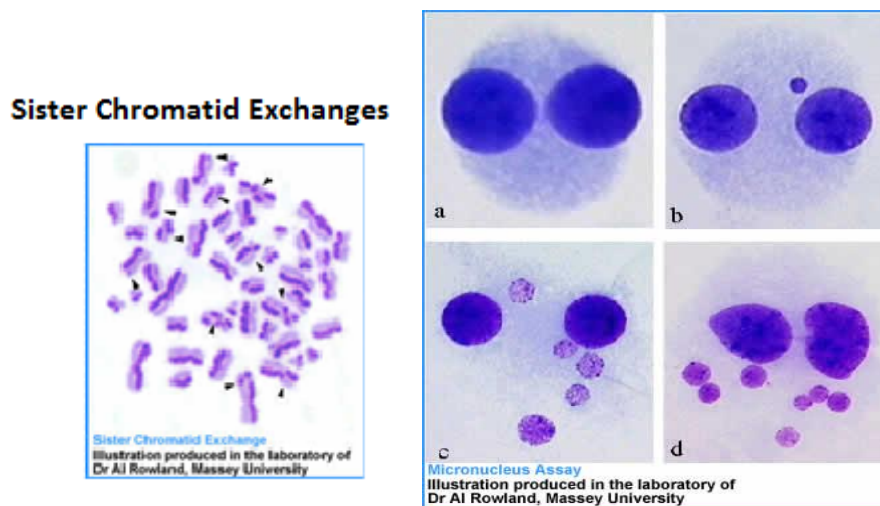


Figure 2: Some of the various *in-vitro* techniques developed for the study of the environmental substances (From Rowland et al., 2007).

Applications of the in vitro-toxicology techniques in the study of the effects of air pollution

Following this period, myself, and colleagues were involved in a series of studies using *in-vitro* systems. For example, we studied samples of suspended particles from various cities in Greece for their potential toxicity and possible long-term effects on human health. These studies showed for the first time that the atmosphere of the two large urban centers of the Greek area contains factors that may be responsible for potential carcinogenicity. At the same time, the % of neoplasia that could be associated with air pollution (estimated as 3.5%) was calculated for the first time. Meanwhile, it was suggested, that air pollution is not the main factor contributing to the annual mortality of lung cancer of the inhabitants of Athens, (as it was believed by many), but it falls far short of cigarette smoking (Athanasίου & Kyrtopoulos, 1983; Athanasίου et al., 1987).

Methodology

Course planning and preparation

In the previous paragraphs, a series of examples were given from both personal and other studies which attempted to demonstrate more clearly the gap that exists in Greek society in education on HE issues. These and many more demonstrate the urgent need to integrate the methods of Didactics of NoS (Scientific Method) in areas such as Health Education and Environmental Education. This concern led to the design of the health education course with the aim that educators of all categories and orientations become familiar with environmental health topics.

All the previously accumulated experience was used, forming the backbone on which the didactic intervention was based. This experience consisted of the organization and planning for the first time in a Greek High Education Institute and specifically in the Department of Primary Education of the Aristotle University of Thessaloniki, for ten successive academic years of a corresponding course named "Health Education". This was combined with the publication of the first textbook on Health Education that was published and distributed to students as a University Textbook (Athanasίου, 1995).

Structure of the Course

Unit 1 - General part: The aim of this module is to bring the student into contact with the logic of Prevention. Today, in developed countries, the main causes of mortality and morbidity are mostly due to modern or life-style diseases, or otherwise the non-communicable diseases (N.C.D.s.). Such are:

- cardiovascular diseases,
- malignant neoplasms,
- asthma and COPD (Chronic Obstructive Pulmonary Disease),
- diabetes mellitus,
- neuropsychic disorders, etc.

The second part of the Introduction was dedicated to the "European Charter for a Minimum Education of Teachers in Health Education" as it was shown on a European Communities Biologists Association document (1984).

Section 2 and 3: Introduction to human nutrition. Prevention of cardiovascular diseases. Since Nutrition is an important factor for the existence of good or poor health, we considered it important to bring together the teacher and the future teacher with basic concepts of nutrition. The section was enriched with concepts such as Basal Metabolism and energy units of measurement, the concepts of good and bad cholesterol, Lipids good and bad, Arteriosclerosis, Polyunsaturated / Monounsaturated Lipids and their importance for Health, etc. furthermore, it was enriched with modern concepts, such as the *Omega-3* and *Omega-6* Unsaturated Lipids, Role of Vitamin B12, Modern Sweeteners (Stevia, Aspartame), Nutritional Supplements such as Spirulina and Sea Buckthorn, Antioxidant Compounds, etc. and their role for good or bad health.

Unit 4: A' Health Education in cancer prevention, and B' Nutrition and cancer. The students encountered the logic of environmental causes of cancer, as reflected in the classic epidemiological studies of Doll, Peto, Cairns, etc. (Doll, 1998). A Particular emphasis was given to the presentation of the studies that took place during these decades on closed populations of Jews and Japanese who migrated to Europe, the USA and Israel. More specifically, the students encountered the way of thinking of the scientists of the 70s and 80s and their research that showed:

1. An 85% of carcinogenesis can be due to the environment and lifestyle and therefore, might be potentially preventable.
2. They learned a few things about the most important environmental and lifestyle factors that seem to be responsible for carcinogenesis.
3. They became familiar with the role and importance of childhood for all this.

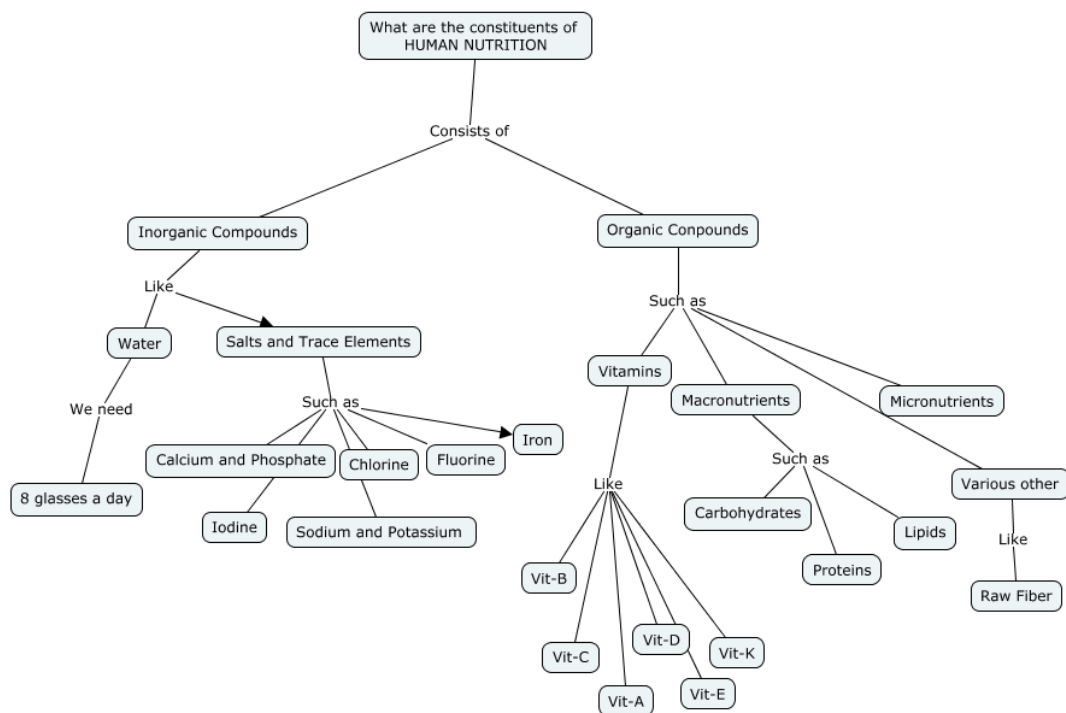


Figure 3: A Concept Map indicating the constituents of human nutrition that a contemporary educator should be familiar with, as it was illustrated on a corresponding chapter (Athanasiou, 2020, chapter 12th).

And, of course, the students understood in depth the social role of the teacher, especially they understood the role of the teacher for educational interventions aimed at adopting or changing attitudes and behaviors related to an effective Environmental Health Education, which was the subject of the last unit's engagement.

Modules 5 and 6: A' Smoking and Health. A Particular emphasis was given to this series of courses in the relationship between Smoking and Health, since Greece holds one of the world's leading positions in the consumption of cigarettes and the number of daily smokers. Individual issues that were raised, on the one hand, were the biological factors associated with smoking and, on the other hand, the Psychosocial factors that lead to it. An interesting aspect of the issue is the fact that while Greeks are one of the worst smokers in the world, our country ranks last in the % of daily smokers aged 15 years, something that is worth stressing to preserve the characteristic and strengthen it. The second part of this section concerned "Some critical elements concerning school smoking prevention programs" and was dedicated to the presentation of the Programs implemented in the European Union and elsewhere, to reduce smoking in the educational system (see Figure 4). The later, as we showed in a study with University students, contributes very much to increasing the possibility of someone becoming a smoker, as it is depicted in the smoking habits of freshmen and sophomores (Athanasiou, 2000).

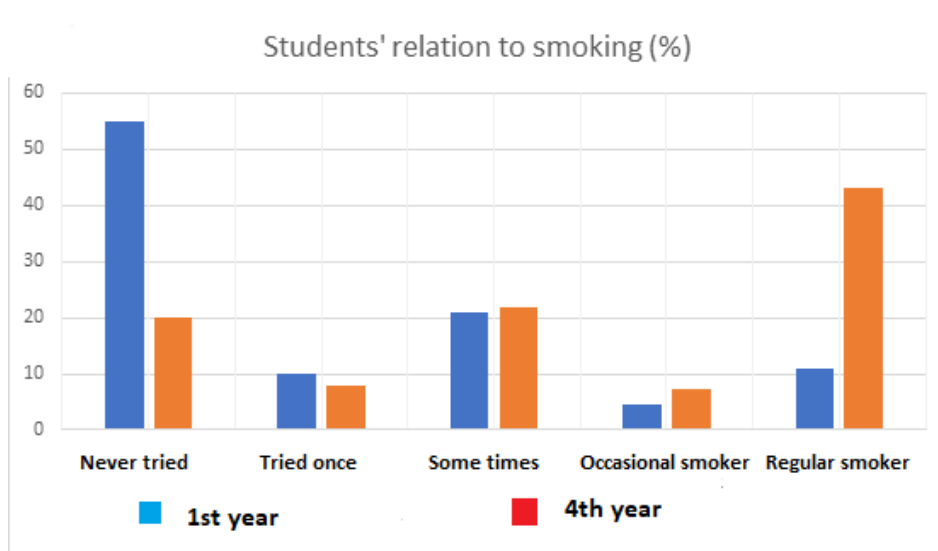


Figure 4. Modules 7-8: Health Education in the Prevention of Genetic Diseases (GD).

In this unit, an effort was made to familiarize students with gene- and Chromosome- type Genetic Diseases, focusing on those that are most related to the teacher. For example, when discussing the case of Alkaptonuria- PKU, it was emphasized that because of an autosomal mutation these children cannot produce an enzyme that breaks down the amino acid *Phenylalanine* and convert it into *Tyrosine*. Tyrosine, in turn, is a precursor of Dopamine (DOPA= L-3,4-dihydroxyphenylalanine) which is an important neurotransmitter and influences the Neurotransmission speed and Memory Work. Other cases of special interest to teachers are *Lactose Intolerance* and *Galactosemia*, *Thalassemia*, *Cystic Fibrosis*, *Duchenne Muscular Dystrophy*, etc.

In Greece, where 100,000 births are performed annually and 700 to 1000 children are diagnosed with autism every year, we consider Autism as an example of polygenic inheritance related to the environment and of course, it is the subject of Special Education.

As far as chromosomal type GD is concerned, particular emphasis was placed on the case of children with *Down Syndrome* and the mechanism of its formation. At the same time, students became familiar with other syndromes such as *Klinefelter*, the *Triplo-X* and *Turner syndrome*. Finally, we could not omit the familiarization of the future teacher with the cases of Blood Groups and the Rhesus factor, while the section was completed with an introduction to the themes of Prenatal Prevention.

In Sections 9-10 an attempt was made to introduce the education of the relationship between the sexes. With two subsections: the first was entitled "Family Planning and Sexual Education in the age of AIDS", while in the second were presented "Ways of intervention in kindergarten and primary school". This subsection 2 was directly related to the ways of implementing the OS Programme, which was the theme of Modules 11 and 12. The students became familiar with didactic interventions such as the "Project Method", while the second part was devoted to the design of Health Education Programs in class. In the latter, they were greatly helped by the manual of Kourmoussi and Koutras (2011).

Application of the Course

Although the courses began normally with lectures in the Auditorium the coronavirus due lock-down was imposed. This, all the lectures were converted into a "PowerPoint" format. Each slide was accompanied by sub-notes and had embedded audio explanations from the Professor. Groups of 2-3 individual Courses constituted one Module. Thus, at the end of each module students were able to answer an Exercise with 10-15 Multiple Choice Questions.

Results

Evaluation of the course by the students

After the end of the Spring Semester of the academic year 2019/20 and between the end of the lectures and the examination period, before the announcement of the exam-results, the students were asked to evaluate the Course, through the Evaluation Platform of the University of Athens (National and Kapodestrian University of Athens, 2021). A final number of 153 students took part in the anonymous evaluation process. The Questionnaire consisted of 25 Questions most of which the answers should be "Not at all" or Null, Little, Moderately, Much, Very Much or #1, #2, #3, #4, #5. The only Question to which the #1 answer corresponded to "A lot", the #2 to "Enough", the #3 to "Moderate", the #4 to "Little" and the #5 to Zero, was the Question #1: "How systematically did you attend the course?". The answers

to this question were as follows: Very much (1) 44.76%, Enough (2) 56.60%, Moderate (3) 33.57%, Little (4) 15.80% and None (5) 5.27%.

When the students were asked to evaluate the course, in general, their responses were “moderate” 7.19%, “Good” 46.41% and “Very Good” 45.75% of the answers. As to the question “*The course offered scientific instruments to help you in approaching and understanding the field of study*”, the 1.96% answered *Not at all*, a 6.54% answered “*Little*”, a 15.03% “*moderately*”, while the 33.44 % and 32.03% of the answers were respectively “*much*” and “*very much*”. Some of the rests of students' evaluations are illustrated in Figures 5 to 9. The conversion of students' answers to *Likert values*, gave results ranging from 0.84 (Question of degree of response to their expectations), to 0.92 to the question whether “*The course offers necessary scientific tools for approaching and understanding the subject of your studies in general*”.

Discussion-Conclusions

As it is mentioned earlier, the purpose of writing this paper is twofold: 1. It is targeting through the design and implementation of a HE Course, to the Scientific Literacy of future teachers on environmental health education issues and, 2. Analyse the factors that led to the warm acceptance of the course by the specific target population.

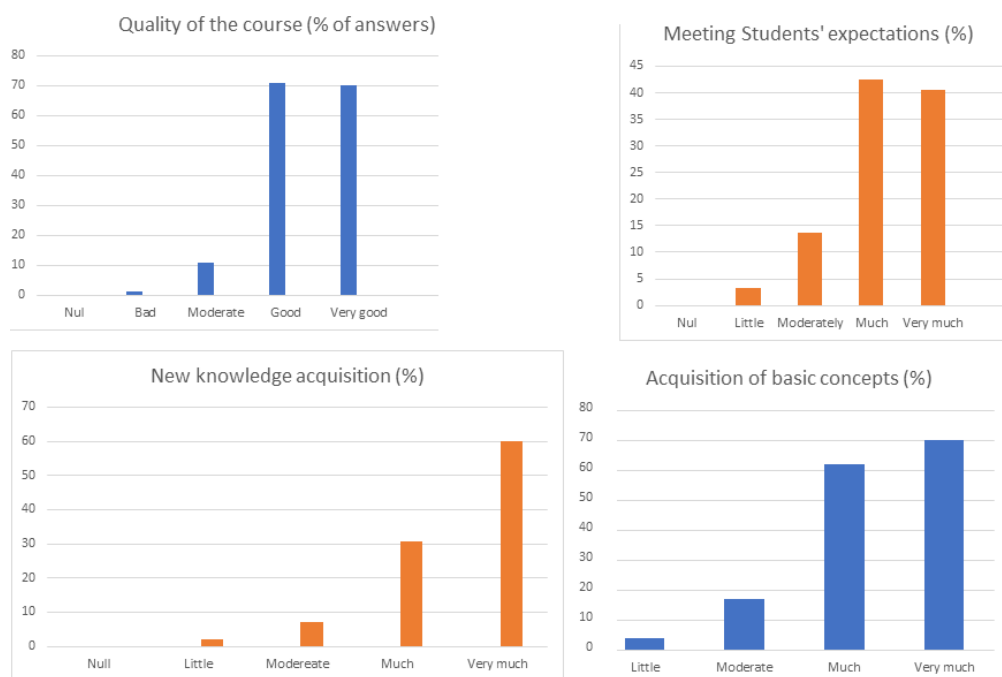


Figure 5: Students' evaluation of the course (%) (N=153). The questions from left to the right were: “Evaluate the quality of the course”, “To what degree the course met your expectations”, “To what degree the course added new knowledge?”, “Did the course helped you to get familiarized with new ideas and concepts?”.

About the Improvement of Scientific Literacy

It is, of course, quite reasonable to correlate the acceptance and success of a University course to the “Profile” and the skills of the teacher. This was the reason why we removed in this paper the (positive) criticism for the teacher as it was shown in the evaluation of students, and limited ourselves to the evaluation of the course itself. What is worthy to mention here is the fact that students, and not only, can easily distinguish and enjoy a presentation or a course that shows the characteristics of being “scientific” as it is the case of the present presentation (Figure 5).

In this course, a large part of the effort was devoted to the presentation of studies, such as those in chapter 3 of the Handbook (Athanasίου, 2007). Indeed, in the chapter “Smoking and Health”, the study of the well-known epidemiologist Peto (2001) was presented to students, to show the relationship that exists between the age of smoking initiation and the possibility of contracting lung cancer. This shows very dramatically the importance of childhood for someone's later cancer history. The teaching was supplemented by a virtual experiment in which it was shown that the faster the rate of cell proliferation (as it is the case of children), the higher the degree of incorporation of cancer lesions (Doll & Peto, 1981). Accordingly, much data on the relationship between cancer and nutrition were given with reference to known epidemiological studies, such as those with closed immigrant populations (Athanasίου, 2007).

Scientific literacy and some alternative conceptions on smoking and health.

As it was mentioned earlier, another aim of the present course was to improve the scientific literacy of the students as future teachers and educators. In fact, studies that we performed among students of Greek universities showed that a percentage of around 83% of the general population in this country believe that the main factor responsible for lung cancer (1st Greece in rank of daily smokers among EU countries), is the air pollution (Makris et al., 1994). The latter might have a direct consequence on the behaviors of Greek parents that in percentages of 75.1% and 54.8% (mother and father smokers, respectively) are smoking systematically in the presence of their children (Athanasidou & Macris, 2000). (See tables 1 and 2). For that reason, the course and the Textbook that we delivered had as one of its' goals to increase the scientific literacy of the future teachers in matters related to the prevention of smoking.

Some other findings of our and other studies showed some other misapprehensions about smoking and health that exist in this society, and, probably, elsewhere:

1. Passive smoking: When students of the University of Athens were asked about the risks of passive smoking, they often answered that the risks are double compared to usual smoking.

-Of course, the right answer, presented in the course is, that passive smokers have a double risk to get lung cancer. compared to non-smokers that, at the same time, are non-passive smokers.

2. Even government representatives, when reading the results of studies with smoking among youngsters, declare that Greece has the worst problem among EE countries, since Greek youngsters start their smoking habit at the age of ten.

-The truth that we tried to deliver is, that youngsters all over the world tend to experiment with smoking around the age of ten. Although Greece occupies the highest in rank position as for the percentages of smokers in the total population, Greek youngsters occupy one of the lower positions in the studies with 13 years old smokers (Currie et al., 2012). This is probably associated with the fact that although Greece for many years was first in rank as for the percentages of smokers, is not first in rank as to the percentage of deaths from lung cancer. According to Peto (Peto et al., 1985, 2000), people that start smoking at later ages have probably two to three times less possibilities of developing lung cancer, compared to ones that start at an earlier age (Doll & Peto, 1981).

3. Studies appeared in the Greek press about Formaldehyde in the electronic cigarette: some of the newspapers had as their title "The electronic cigarettes contain ten times higher carcinogenic factors".

- The truth, of course is, that even if the electronic cigarettes had ten times higher formaldehyde concentrations (something that proved to be totally wrong), this would not mean ten times higher risk for someone of getting lung cancer, since the main carcinogenicity factors we worry about in cigarette smoke and tar is the PAH content, (Polycyclic Aromatic Hydrocarbons).

During the course in discussion, some other examples from personal and other studies were presented to show or fill the gap that exists in Greek society (and not only) in questions related to the scientific literacy in Environmental Health issues. For example, we tried to explain why so many Greeks believe that "unknown powers spray population-targets" to manipulate the human minds and spirits! Also, we dedicated pages in the Textbook and in the lectures to eliminate the widely occurring in our society's opinion, that all natural products in food are safe, while the artificial ones are all bad. This was done, among other things, through reminding the contribution of Bruce Ames in bringing down this fable idea through the publication of a millstone article published in "Science". Where he showed, among other things, that plants, occupy natural poisons and carcinogenic factors in much higher concentrations compared to the artificial ones! (Ames, 1983).

Degree of response of the course's topics to the daily lives of the students

It has been repeatedly stressed-out, especially by Educators working in the field of Constructivism in Education, the need to adapt the Curriculum to the needs and everyday life of pupils and students (Von Glasersfeld, 1998). Indeed, in a comprehensive and large-scale study carried out in Australian schools through the "Science in Schools (SiS)" programme (Tytler, 2001), several elements were identified that establish the framework for a meaningful learning and participation of students in natural sciences. Some of them are: Students should be encouraged to actively participate in the course with ideas and evidence, while the Natural Sciences should be linked to their lives and interests (Gough et al., 1998). At the same time, research in Cognitive Science shows that the interests of students and students are an important factor in their involvement with learning and creating new neurological connections from new information. The stronger the information and the more it is associated with the daily life of the student, the stronger the probability of storing it from working memory to long-term memory.

Based on the above scientific data and the responses of the students, as it was shown by their answers to the question "To what degree the course met your expectations" (Figure 5), it seems feasible to think that their response, explains to a large extent the impact of the course had on them. Thus, it seems, that the course met some of the needs of today's young and future teachers, as well, in relation to their needs. For example, it is now a well-known fact that some of the

most important health problems in contemporary societies are entangled with ecological problems. An idea indicating that it is a matter of imperative need to marry health and nutrition with ecology, by means of combining Health and Environmental Education. This fulfilment is of imperative need since it will help the planet, but, also, will contribute to a better health of our people. On the parallel, the need to find ways in which the Teaching of NoS and Biology might be combined with Environmental and Health Education has been stressed out (Athanasίου, 2007). Altogether, it seems, judging from students' responses, that along with the improvement of Scientific Literacy, the goal of combining Health Education and Environmental Education can be achieved through a course on Environmental Health Education, to achieve, to some extent, the goal of creating conscious citizens regarding Environment and Health.

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