EVALUATION OF THE STATE OF KNOWLEDGE AND ATTITUDES OF SECONDARY SCHOOL TEACHERS IN THE ENVIRONMENTAL EDUCATION (EE) AND EDUCATION FOR SUSTAINABILITY (EfS)

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Abstract
In recent years, the scientific community has documented the necessity of connecting Environmental Education (E.E) and Education for Sustainability (EfS) in high school. The research on the teachers' state of knowledge, attitude and perception regarding E.E./ EfS along with the evaluation of the programs implemented in secondary schools are the key components both in designing and implementing the Programs that aim to improve education, information and awareness on environmental issues.

The purpose of this research is to bring out, on the one hand, the problems of the educational process regarding the E.E./EfS on the other hand, to promote and educate environmentally responsible citizens who will actively protect the planet. The research is conducted with the method of questionnaires that have been sent to teaching staff all over the Greek state, collecting a sample (100 questionnaires) from all areas of the country. The questionnaire includes questions of closed and open type (opinions).

The present research is a preparatory part of a doctorate thesis and the first analytical results of the questionnaires will be presented. We hope the results of this research will contribute to the adequate education of the young people on the E.E./EfS and the updating on the sustainable education and on the designing of programs that will fill the gap of knowledge that the international bibliography records. An important finding is the recording of the necessity of educating the teaching staff on issues related to E.E./EfS.

Keywords: *Environmental Education, Education for Sustainability, Awareness, Teacher, Education*

Introduction

Environmental Education (E.E) and Education for Sustainability (EfS) are the most important innovations at all educational levels at the international and European level in recent years. There are quite a few educational programs that evolve on the very nature of E.E/EfS. However, there are still many concerns to be taken into consideration regarding the actual effectiveness of these programs in the end (Dimitropoulos, 2005).

It is generally believed that formal education in these types of programs does not effectively support "the immediate need to try to learn to live as members of this natural system and with respect for it" plus "we have not yet reached an appreciable level of sustainable development in our way of life not yet and some environmental education courses have been added to schools and universities". One could ask the following question which would trouble quite a few: "What does it really mean to include E.E./ EfS?"The last question comes to the table from several teachers, professors and educators in general who deal with this kind of environmental programs. (Daskolia, 1998, 2006)

There is a need to form a "common language" from and to all those involved in these programs whose goal will be to establish a "general theory" with a clear objective of what is environmental and what is education for sustainable development and which the human nature relationship. Worthy of note is the confusion that exists and has been observed among the immediate training teachers in what is the difference between E.E./ EfS. According to Konstantinidis' interpretative dictionary, the words "education" and "education" are classified as synonyms. We can also confirm this in the foreign language interpretation through the international literature of the term "environmental education" which is interpreted as "environmental education or education".

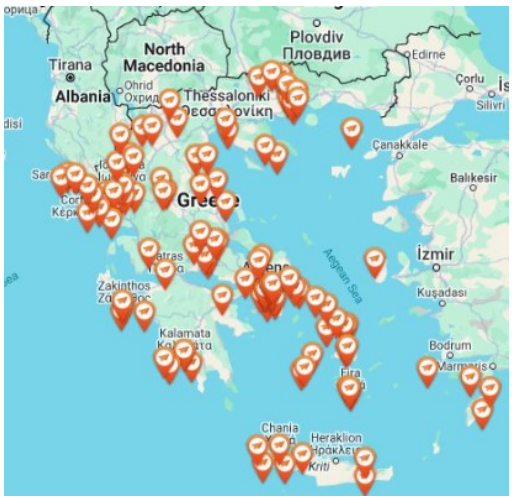
As it is believed that there is no implication in our research without of course undermining that one concept is adopted more than the other. We could not fail to note that the University of the Aegean and specifically the Department of Environment combines these two terms of Education and Training in an undergraduate level course entitled Environmental Education and Training (Tsamboukou, 2004).

As research was done in the relevant curriculum of the Department, its ultimate purpose is the promotion of responsible environmental behavior, i.e. the active participation of students and by extension citizens and decision-making in matters related to the quality and protection of the environment. So the goal of each E.E./ EfS programs should be the creation of an education model aimed at developing critical thinking, attitude and behavior towards social and ecological reality. There were many concerns and limitations of the present thesis from the beginning. A pilot survey was conducted among teachers for E.E./ EfS programs. and E.E/ EfS of recent years. Educators who have participated in them were interviewed and respectively evaluated both themselves and the effectiveness of the programs that took place in the respective schools or universities where they are employed (Flogaiti E, 1998).

There are questions regarding the topics of the programs, the motivations for the participation of environmental educators, the teaching standards, the educational methodologies followed during the implementation of these environmental education programs so that we can reach a series of results. Additionally, a concern and limitation that was studied throughout the literature review and worth noting is the difficulty of choosing outdoor environmental activities for the implementation of these programs and possible obstacles which can sometimes be of a bureaucratic nature or broader planning. Finally, it is worth noting the investigation of experience, the cognitive and teaching competence of teachers in matters of environmental education, as well as the evaluation of environmental education by state agencies, teachers and students (U.N.E.S.C.O. 1978, U.N.E.S.C.O. 1984)

Environmental Education & Education for Sustainability

The scientific research supports the debate on the promotion of the principles of sustainability is constantly developing and focuses on the search for commonly accepted epistemological considerations and good practices regarding the various aspects in which the concept and values of sustainability can be integrated into education (Brandt, Barth, Merritt & Hale, 2020).



However, in relevant discussion, a lack of correlation between theory and practice regarding the integration of the principles of sustainability in education is found, with the consequence, on the one hand, of the non-holistic - and often marginal - presence of sustainability, as a relative field, in the detailed study programs. On the other hand, the difficulty of teachers and students to adopt the principles of sustainable perception and action at all levels of school life is an important thing that we have care about it (Wals & Blewitt, 2010).

Scientists from the disciplines of Engineering, Technology and Natural Sciences, as well as Economics and 'Business', seem to agree that the absence of a commonly accepted view of sustainability, with the possibility of global and general application, is accompanied by a lack of skills, skills and qualifications that can contribute to sustainable development (de Jong & Vijge, 2021 · Hillebrand et al., 2020 · Hajer et al., 2015).

Methodology

The tool used to conduct this research was the questionnaire. The questionnaire consisted of three sections. The first part asked for the demographic data of the respondents such as: age, gender, marital status, studies and educational level and the related. The second part consisted of open and closed questions about their knowledge of E.E./ EfS, how many programs they have implemented in their school if they have been prepared and how much success they had. The third part of the questionnaire investigated the knowledge, attitudes and behaviors of teachers and how much they believe that environmental education and education for sustainable development affects the wider awareness of students. The research started in 2022 and ended in 2023.

The questionnaires were distributed to secondary school teachers throughout the country. Before starting the main survey, a pilot survey was conducted, distributing randomly six questionnaires, without filter selection, to teachers from different regions of the country such as rural, semi-rural and urban. The purpose was to clarify possible points of ambiguity or ignorance or misunderstanding in the questionnaire so that we can be sure of the correctness and confidence index of the questionnaire.

The results of the pilot study showed that there was no need for any correction of the questionnaire. Afterwards, the questionnaires were distributed in person or online to various groups of secondary school teachers. The total number of samples we have is 100 secondary school teachers from various faculties. This is something we desire as we are interested in an interdisciplinary and multidisciplinary subject.

For the needs of the present work, research was conducted regarding teachers from secondary education level. The aim was to write the behavior, postures and knowledge about environmental education, communication and awareness. The questionnaire included multiple-choice questions and was anonymous and answered by 100 teachers. The survey was conducted in December 2022- December 2023.

Survey Results

According to the demographic results, 28.9% of the respondents were men and 71.1% women. In terms of age, 1.2% were 18 years old, 1.2% were 19 years old, 0.6% were 20 years old, 0.6% were years old, 22-30 were 13,3%, 19.1% were 31-40 years old, 30.6% were 41-50 years old, > 51 years old were 32.9 %.

In the question about the marital status of the respondents we had the following results: 58.1% were married with children, 36% were single and 5.8% were married without children. To the question of the employment status of the respondents, they answered: 59.5% that they were permanent, 27.2% substitutes and only 13.3% were hourly workers.

On the question of previous employment, we would have the following statistical answers on statistical evidence: 0 - 5 years 38.7%, 6 -12 12.1%, followed by 13 -25 years with a percentage of 35.3% then 26 -35 with a percentage of 13.3% and finally with over 36 years of seniority only 0.6%.

We asked the respondents to tell us what region of Greece they are from: They had to answer whether they were rural, semi-rural or urban. Here follows a map with the parts answered by the respondents.

In the question of respondents' education, we had the following results: 34.7% had an undergraduate degree, 56.1% had a master's degree, 10.4% had a doctorate, 1.7% had a master's degree on E.E./ EfS, 1.7% were PhDs on E.E./ EfS, 4.6% had a Special Education diploma, 12.7% Humanities & Social Sciences, 14.5% Natural Sciences, only 1.8% were post doctorates or something like that.

We asked respondents to list the first five words that come to mind when they hear the term Environmental Issues. This question was quite interesting as we got many answers but quite the same as they already knew the serious and basic environmental problems and they listed the following for us: Environmental Pollution, Environmental Contamination, Acid Rain, Ozone Layer Depletion, Climate Change, Renewable Energy Sources, Extinction of Biodiversity, extinction, desertification, energy crisis, unequal distribution of natural resources, globalization, Greenhouse Effect, etc.

We asked them to list the first five words that came to their mind when they hear the term E.E./EfS and if this question was of any interest to them. We collected the following responses: Environmental Communication, Environmental Behavior, Awareness, School, Field Actions, Utilization of Natural Resources, Sustainable Development Goals, Climate, Change, Economy etc.

Next, the respondents had to answer the question whether the subject they teach at school is related to E.E./ EfS (Sustainable Development): 52.3% have nothing to do with the subject and 47.7% combine the concept of E.E./ EfS with their course.

To the question ¨Have you attended seminars or training programs regarding E.E./ EfS they answered accordingly: 43.4% that they had not attended while there was an impressive percentage of 56.6% who had attended a program or seminar.

The questionnaire continues at this point with the second part consisting of questions using the Linkert scale. Respondents were asked to indicate the degree of agreement or disagreement with a series of statements and situations. Following are, both the proposals and the percentagewise answers of the respondents. E.E./ EfS contribute to improving the quality of life: 9% answered that they strongly disagree, 1% that they disagree, 10% that neither disagree nor agree, 30% agree and a 50% strongly agree.

Next state, E.E./ EfS is a key pillar of sustainable development. 1% answered that they strongly disagree, 1% that they disagree, 10% that neither disagree nor agree, 38% agree and a 50% strongly agree.

The next situation followed on whether E.E./ EfS should be gradually integrated into all subjects of school programs in both primary and secondary education: 4% answered that they strongly disagree, 6% that they disagree, 5 % that neither disagree nor agree, 40% agree and a 45% completely agree. Then, E.E./ EfS is a separate compulsory subject in Grade A and Grade B education. 4% answered that they strongly disagree, 7% that they disagree, 18% that they neither disagree nor agree, 30% agree and a 34% strongly agree.

Does E.E./ EfS contribute to the creation of environmentally conscious citizens? 2% answered that they strongly disagree, 2% that they disagree, 10% that neither disagree nor agree, 30% agree and a 56% strongly agree. The penultimate situation where they had to answer whether they agreed or disagreed was the following: E.E./ EfS at school improves students' lives as adults. 2% answered that they strongly disagree, 1% that they disagree, 10% that neither disagree nor agree, 38% agree and a 49% strongly agree. Finally, E.E./ EfS increases environmental knowledge and contributes to the collection of attitudes, knowledge and behaviors regarding environmental protection: 1% answered that they strongly disagree, 2% that they disagree, 10% that neither disagree nor agree, 37% agree and 50% strongly agree.

We found it important to ask respondents how many E.E./ EfS programs they have participated in. The answers we received because it was a question where the respondent could write they wrote to us a minimum of 0, that they have not yet participated, and this is reasonable because they may have just started their educational career up to 25 which seems to be an experienced staff.

In the next question we posed propositions of situations and collected the respondents' degree of disagreement and agreement. As in the first question for example which read: The evaluation process of E.E./ EfS programs is an important stage of implementation of EfS programs.: 2% answered that strongly disagree, 0% disagree, 19% neither disagree nor agree, 60% agree and a 20% strongly agree. The Planning of an E.E./ EfS program should also include the final evaluation of the achievement of the objectives: 1% answered that they completely disagree, 2% that they disagree, 10% that they neither disagree nor agree, 60% agree and a 27% strongly agree.

The evaluation of an E.E./ EfS program aims exclusively at improving learning outcomes: 10% answered that they strongly disagree, 30% that they disagree, 15% that neither disagree nor agree, 17% agree and 28% strongly agree. In the next question Can teachers create reliable evaluation tools for E.E./ EfS programs: 3% answered that they strongly disagree, 17% that they disagree, 20% that they neither disagree nor agree, 40% agree and 20% strongly agree. Next state: Environmental Education seminars improve environmental knowledge: 2% responded that they strongly disagree, 1% that they disagree, 7% that neither disagree nor agree, 60% agree and a 30% strongly agree. E.E./ EfS 3% answered that they strongly disagree, 1% that they disagree, 16% that neither disagree nor agree, 50% agree and a 30% strongly agree.

The evaluation of an E.E. EfS program includes the achievement of the cognitive/learning/psychomotor as well as emotional goals of the program. : 1% answered that they completely disagree, 3% that they disagree, 30% that neither disagree nor agree, 16% agree and a 50% completely agree.

Finally, the respondents were asked to answer the last sub-question of this question as to whether you believe that the evaluation process of an E.E./ EfS program aims exclusively at forming a cooperative spirit: 5% answered that they strongly disagree, 25 % disagree, 25% neither disagree nor agree, 27% agree and 18% strongly agree. As for the question of whether you think it is difficult to build reliable evaluation tools for E.E./ EfS programs by teachers: 5% answered that they strongly disagree, 15% that they disagree, 40% that they neither disagree neither agree, 25% agree and a 15% strongly agree.

When asked what percentage achieved their goal(s), we got the following answers: 0-20% answered 30.1%, 21-40% 12.1%, 41-60% success rate was spoken by 22%, for 61-80 success we have 26.6% and finally for 81-100 we have only 9.2% target success.

In the question´´ Mark what you consider to be an independent program of E.E./ EfS , one of the three options, in case you do not know, state, I do not know, the respondents answered: That Environmental Tours with a positive rate of 90% negative 8 % and neutral 2% as they probably do not know it is or should be part of a stand-alone environmental education and sustainable development program?

The visits to Environmental Education Center with a percentage of 82% positive, 8% negative and only 10% did not know can they be considered a necessary element of an independent program of environmental education and sustainable development? Actions on global days with a positive percentage of 70% negative 25% and neutral 15% is or should it be part of an independent program of environmental education and sustainable development? The workshops of environmental thematic units with a positive percentage of 90% negative 8% and neutral 2% as they probably do not know is or should be part of an independent program of environmental education and sustainable development?

And the last sentence they were asked to mark whether they agreed or not was whether an environmental education and sustainable development program needs to be equal to one school year in length to be a feature of a stand-alone program? They answered 60% yes, 20% no and a 20% don't know.

In the last question of the questionnaire, the respondents had to answer an open-ended question on how many and titled environmental education and sustainable development programs they have noted as a school. We were registered by the following programs: Life in Water, Life on Land, I Care for the Environment, Less Inequalities, Sustainable Waste Management, Sustainable School, Sustainable Utilization of ICT Tools, Environment and Communication, School Garden, Solar Radiation, Human rights.

Conclusions

The purpose of this work was to record the attitudes and knowledge and even the behaviors of the interviewees, who were secondary school teachers from urban, semi-urban and even rural areas of Greece. It is worth noting at this point that drawing correlations on the questions among the teachers in rural and urban areas, the teachers who are in rural areas have implemented more environmental education programs than the teachers in the urban area, such as the capital.

It is also interesting that all the teachers who completed this questionnaire, whether their background was related to the subject or not, wanted to include and combine the subject of E.E./ EfS in their course. The contribution of education to the promotion of the principles of education for sustainability has been of major concern in the international bibliography resulting to form an area of special scientific interest that focuses both on initial education and on the continuing professional development of teachers in the subjects of E.E./ EfS.

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