

Using Media for Environmental Education in Nursery School

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ABSTRACT

Our era is threatened by environmental decline. The future of the planet is in danger and its protection is a right and at the same time an obligation of all citizens. From whatever position and property man possesses in life, the modern man owes to the coming generations within which his biological continuity is integrated, to use the appropriate tools that the technology of his time possesses. Among these tools, the media have great power and have demonstrated their evolution over time, while they are influential and play an educational role. Media fall within the framework of non-formal and informal education. Several International Meetings and Declarations have, from time to time, highlighted their role in Environmental Education and, in particular, the role they play as environmental educators. Media are models for their audience and within this audience, teachers of every level of Education are included. The present study aims at exploring the views of the preschool teachers of the Prefecture of Evros on the use of the media as an educational tool for environmental protection and their contribution in shaping environmental consciousness and environmentally responsible behavior. Preschool age is the basis for the formation of future citizens and it has an autonomous and decisive value. The researcher is one of the preschoolers who consisted the research sample. In conclusion, the research objectives were achieved since the research answered the questions which prompted the conduct of the study; that is, teachers' attitudes and behaviors regarding a series of environmental issues were identified. Moreover, it was indicated that educators use mostly the Internet in their educational work as an environmental education tool, while for their information on environmental issues they prefer Social Media Networks and scientific journals/books.

Keywords: media, environmental education, environmental educators, pre-school age, primary education

INTRODUCTION

In the recent years due to the grave dangers threatening our planet which were caused by the imprudent exploitation of natural energy sources and the destruction of the natural environment, a new area within the science of journalism has been developed; that is Environmental Journalism. Apart from providing rational information and raising awareness among citizens about environmental issues, international conventions, European directives and policies, national legislation on matters regarding the Environment and life quality, Environmental Journalism aims through journalistic investigation to expose scandals over conflicts of economic, political and other interests which operate to the detriment of the environment (Pavlidis, 2017).

Through their development, mass media have now reached a point where they affect the public opinion on matters of ecology, environment and life quality. They have achieved this by familiarizing the general public

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with scientific evidence and by presenting more and more information about these matters through television, radio, the press and the Internet. Hence, while the man-nature relationship undergoes a crisis and while the increasing environmental issues become threatening to the viability of our planet and human health, apprehension about the efficient use of the media by educators for environmental protection is created. This apprehension is reinforced by the knowledge that like media, educators -through their professional capacity- play the role of environmental educator on the ground that environmental educators are the parties who undertake the application of procedures of formal, non-formal and informal Environmental Education. What is more, the Tbilisi Declaration (1977) states clearly that “Environmental education should be provided to all ages and at the levels of formal as well as informal education. Mass media hold the great responsibility to place their huge resources in the disposal of this educational task (UNESCO, 1978). Moreover, the Declaration of Thessaloniki noted that “mass media are asked to become aware, mobilize their expertise and information dissemination channels in order to communicate the main messages and help to transform the complexity of the relevant matters into substantial and comprehensible information for the public (source: National Centre for Social Research).

Within the framework of an awareness campaign for the Reduction, Reuse and Recycle of waste in Cyprus (Reduce-Reuse-Recycle), educators and media representatives were among the target-groups who were considered intermediaries and multipliers of messages, while relevant manuals were written for their training (Zachariou et al., 2017). Hence, environmental awareness can be achieved also by the presence of aware educators. Mass media fall within the scope of non-formal and informal Environmental Education and the presence of environmentally aware media experts and educators contributes to raising public environmental awareness, which is in line with the development of Environmental Journalism. Additionally, mass media consist models for their audience within which educators of all levels are included.

It is therefore necessary to know the characteristics of educators who serve in schools and are engaged in the ‘pedagogical relationship’ between teacher and student. The term was coined by Hermann Nohl to describe the mutual pedagogical and educational interactions taking place between the pedagogue and the students during the procedures of edification and learning (Metochianakis, 2000). Pre-school age is divided into smaller periods, such as infancy (up to 2 years of age) and early childhood (3-6 years of age) (Gavalas, 1976). For the ages between 4-6 years there were several bodies, both public and private, but according to Paragraph 3 of Article 33 of Law No 4521/2018 (Greek Government Gazette 38/02-03-2018) a two-year pre-school education in nurseries of municipalities began, where the relevant Principal is in agreement with the compulsory attendance of prekindergarten-students. Thus, the Nursery tends to become the main body for Pre-school Education.

As an educational institution, Pre-school Education is integrated into the Greek education system since 1929 and consists part of the General Education. Moreover, as a social institution it complements the work of the family and facilitates the toddler’s transition from family to school and integration in the community in comfort and safety (Bakas, 2014). Specifically, it aims at a rounded development of the child including mental, emotional, social and psychosomatic aspects, while it helps the child to develop an autonomous and responsible personality capable of living creatively within an ever-evolving society (Palyvos, 1980).

From a historical point of view, it is worth recalling the first legislative text of the Greek state which refers to the establishment and operation of the Nurseries. In specific, this was Law BTMTH’ of 1985, (EtK. 37/5-10-1895, t.A’), where the first three Articles established the institution of Pre-school Education. Article 1 regulated the age of attending nursery school which was defined “from the soft age until the 6th full year of age”, while Article 3 provided that the teaching staff in the nurseries would consist of female teachers and stated particularly that “teachers in the nurseries are female teachers with degree qualification” (Bakas, 2014).

In view of the above, it is imperative that we know the characteristics of educators in the first education level and specifically in Pre-school Education. Additionally, since Law No 1892/90 and the relevant circulars state that Environmental Education is part of school programs and of Primary Education, teachers of Primary Education are required to perform also the important role of environmental educators. Thus, having in mind that mass media consist tools for both non-formal (extra-curricular but also organized educational program) and informal education (in the form of diffuse and disorganized information), it becomes apparent that media also play the role of environmental educators. As international conferences recommend, it is considered important to examine and evaluate this role. In addition, it is deemed substantial to assess the functioning of the media as an educational tool because the use of this tool is decisive for the protection of the environment. Undeniably, mass media bear responsibility for educating citizens environmentally including educators who

in turn bear the same responsibility due to their professional capacity. The present study aims to investigate and reflect the perceptions of pre-school teachers in the Prefecture of Evros regarding the way they use mass media as an educational tool for the protection of the environment. At the same time, it examines whether the education provided by the first education level, that is Nursery, but also the education provided by the media can contribute to the shaping of desired environmental behaviors.

ENVIRONMENTAL EDUCATION-EDUCATION IN NURSERY

The terms 'education' and 'edification' in nursery school are interlinked and complement each other during educational practice, with the edification percentage being higher for younger ages. Particularly, education is the systematic, regular and methodical procedure of disseminating knowledge and developing skills, whereas edification aims at developing and practicing the mental, physical and moral abilities so that solid values are acquired, which will lead to attitudes and behaviors that are intertwined with the circumstances, ethics and standards of the community of each era (Tsilidou, 2005).

The first school period (3-6 years of age), that is, the pre-school age, constitutes the basis for shaping the future citizens and holds an independent value. It is structured in socio-cultural terms by and for children, through the active negotiation of social relations within frameworks (e.g. of time, location, culture, gender). Namely, the educators and the child make use of the child's previously existing experiences (past), focus on his/her emerging skills (present) and make plans for his/her potential skills (future) (Loizou et al., 2016).

Young children seem to know what consists the natural and anthropogenic environment and this is indicated by their first drawings in which they depict soil, sky, grass, houses, animals and plants (Dikopoulou et al., 2011). However, they are unaware that all these "admirable forms that differ so much from one another and depend on each other in complex ways, are the products of laws governing our surroundings". In other words, children comprehend that they are part of the environment since in their drawings they include themselves in it, but they are not able to understand the influence of our lifestyle on it (Tsilidou, 2005). At this point it is useful to note that the environment is defined as "the set of natural and anthropogenic factors and elements interacting with each other and affecting the ecological balance, the quality of life, the historical and cultural tradition and aesthetic values" (Law No 1650/86, Greek Government Gazette 160 A/18-10-86, Article 2).

As regards the Nursery, the Cross-thematic Common Framework for Study Programs (CCFSP) was established in 2003 (Greek Government Gazette 303 & 304/13-3-2003) and comprised the directions 1. Child and language, 2. Child and mathematics, 3. Child and environment (anthropogenic environment and interaction, and natural environment and interaction), 4. Child and creative expression (visual art, theatre, physical education, music), 5. Child and informatics. This replaced the Analytical Program of 1989 (P.D. 486/1989-Greek Government Gazette 208 A), which included the following development areas: 1. Psychokinetic, 2. Socioemotional, moral and religious, 3. Mental, 5. Skills (pre-writing, pre-reading and pre-mathematical levels). With this replacement, the objectives of the new Cross-thematic Common Framework of Study Programs involve knowing the environment, understanding the interdependent relationships between the natural and anthropogenic environment, and the acquisition of positive attitudes and behaviors (Ministry of Education, Research and Religious Affairs, 2001). These objectives are included in the Analytical Program of the Nursery within the study of the environment where relevant environmental activities are recommended.

A study on Environmental Education in Nursery school conducted in the year 2004-2005, noted that the application of Environmental Education at pre-school education is orientated mainly towards acquainting children with the environment as teachers choose subjects concerning mainly the natural rather than the anthropogenic environment. Nursery school teachers who implement Environmental Education Programs (EEP) tend to connect them to the rest of the school's program attempting to develop cross-disciplinarity. Despite the fact that the project method is popular in implementing Environmental Education Programs (EEP), the comments of the nursery teachers show that the basic values and structure of this method are not clearly defined. Moreover, it is worrying that most thematic areas of the EEP at nursery focus on matters concerning the natural environment (Dimitriou et al., 2008). On the one hand, this is due to the emerging transformation of Environmental Education into Education for sustainability which focuses on the anthropogenic environment and the enhancement of the social, political and cultural aspects of environmental problems. On the other hand, it is due to the contradiction where people living in today's 'problematic' cities 'overlook the relevant problems and deal with nature (Nikolaou, 1998).

Similar findings were indicated by Flogaitis et al. (2005). Both studies show that nursery school teachers place more emphasis on the biophysical dimension of the environment and this could reinforce the view that most nursery teachers perceive the environment as 'natural environment', while they often identify nature with the environment (Dimitriou, 2005; Flogaitis & Agelidou, 2003). This tendency can be observed not only in Greece but also worldwide. A typical example is US where the directives addressed to pre-school educators totally lack subjects regarding energy, rational use of natural resources, structured environment and sociopolitical correlations, while they equate Environmental Education with the teaching about nature (Wilson, 1994). To meet the objectives of Education for sustainability and the environment, it is necessary to approach the environmental issues holistically as well as to investigate the interdependences and interactions between natural, biological, social, political, economic and cultural factors consisting them (Flogaitis, 2006; Gomez & De Puig, 2003; UNESCO, 2006).

A few years later in 2011, the Analytical Study Program of 2003 was replaced by the new Analytical Study Program for Nursery school (ASP, 2011) which included the learning-section area "Environment and Education for sustainable development". The other involved "Personal and Social Development", "Natural Sciences", "Information and Communication Technologies (ICT)", "Mathematics", "Language", "Physical Education" and "Arts". In particular, the Analytical Study Program of 2011 specifies that the section "Environment and Education for sustainable development" "aims at enhancing the role of education for addressing environmental issues through raising awareness and mobilizing citizens around the adoption of environmental ethics and practices of a sustainable way of life". The modern perspective of Environment Education is recognized as Education for sustainability where the environment is not regarded as a source of knowledge, but it becomes understood as a system of balance and relationships. Furthermore, it mentions that early education can facilitate the development of positive attitudes and values, the familiarization of children with issues concerning the planet's natural capital, behaviors and actions on preserving the natural capital and natural balance, and the cultivation of the perception that every human being is part of the environment. In the revised version of the Study Program for the Nursery (Institute of Educational Policy, 2014), the section "Education for sustainable development" is integrated into the learning area "Social Sciences". Thus, the difference Environmental Education can bring to the Nursery concerns the thematic areas since it always stems from experiences and children's wider environment, however the perspective becomes such that it induces ecological problems and concerns (Tsilidou, 2005).

STUDY AREA - METHODOLOGY

The area of research are the geographical bounds of the Primary Education of the Prefecture of Evros. The Prefecture of Evros is situated in the extreme north-western part and simultaneously it is the border area, while it constitutes the most extensive prefecture in Thrace. Additionally, the Prefecture of Evros is divided into five municipalities and the total number of Nurseries is 73, while the number of preschool educators (PE60) teaching in these nurseries is 172. More analytically, in the year 2017-2018 when the present study was conducted, 96 nursery teachers served in 35 nurseries in the municipality of Alexandroupoli, 5 nursery teachers in 3 nurseries in the municipality of Samothrace, 19 nursery teachers in 9 nurseries in the municipality of Didymoteicho, 14 nursery teachers in 9 nurseries in the municipality of Soufli and 38 nursery teachers in 17 nurseries in the municipality of Orestiada (source: Directorate of Primary Education, P. Evros/24-04-2018). To perform the study, the chosen research instrument was the questionnaire, which was structured with closed-ended questions and respondents were required to choose on a scale the answer which mostly expressed their views.

After applying simple random sampling, it was indicated that the sample consisted of 102 respondents. The research received authorization with File Number F15/94246/136769/D1/20-08-2018 from the Ministry of Education, Research and Religious Affairs after the Institute of Educational Policy gave a positive opinion (Act 32/19-07-2018 of the Management Board). Then, the decision was notified to the P.E. A.M.TH. and was promoted to the Directorate of Primary Education of the Prefecture of Evros, while the researcher submitted an application to the Directorate to conduct the study. The questionnaires were then sent in electronic format through the platform Google forms, while the electronic mail of the Directorate of Primary Education was used to send them to the electronic addresses of the schools. The collection of the data was completed in the first week of October. Then, the data were analyzed with descriptive statistics and the non-parametric Friedman test (Lupton, 1993; Jolliffe, 2002). The non-parametric Friedman test enables us to compare the values of three or more correlated groups of a variable and to rank their characteristics. The distribution of the Friedman criterion is χ^2 with degrees of freedom $df=k-1$, where k stands for the number of groups or samples. This

criterion ranks the values of the variables for every subject separately and estimates the mean rank of the ranked values for every variable (Makrakis, 1997).

RESULTS

Results provide information on the individual characteristics of the pre-school teachers as well as their views and behaviors regarding the functioning and efficiency of the media and their use as an educational tool for Environmental Education but also for environmental protection. In terms of respondents' gender, it was indicated that 100% were female. Regarding participants' age, most of them, by 35.6%, were between 41-50 years of age, 32.4% were 31-40 and 31.4% were 51-60. Respondents aged between 21 and 30 presented the smallest participation (1%). Additionally, the fact that in the sample only few educators are up to 30 years old is accounted for by the financial weakness of the Greek state to carry out mass appointments. As to respondents' years of service, 43.1% have nine to 15 years of service, 43.1% have 16-25, 7.8% have more than 26 years of service, while 4.9% have four to eight and 1% have only one to three years of service. Regarding their family situation, the analysis of the data showed that 87.3% of the pre-school teachers were married, 7.8% were single, 3.9% were divorced and 1% were widows. At the same time, most participants, by 43.1%, have two children, 21.6% have one child, 17.6% have no children, 13.7% have three children and 3.9% have four children. As for their educational level, the frequency tables indicated that 1% of respondents are doctorate holders, whereas 16.7% are master holders and 82.4% are bachelor holders. Regarding the distribution of participants in terms of employment, most educators, by 78.4%, were officials and 21.6% were alternate teachers.

As it can be seen in the following table the results of the Friedman test show that the respondents use mass media in their private life mostly to acquire information (mean rank 3.27) and then to acquire knowledge (mean rank 2.46). The use of media as a means to keep them company was ranked fourth (mean rank 2.34) while the recreational use of media was ranked last (mean rank 1.93) (**Table 1**).

Table 1. The application of the Friedman test for ranking participants' views regarding the use of media in private life

	Mean rank
Information	3.27
Company	2.34
Recreation	1.93
Knowledge acquisition	2.46

N=102 Chi-Square=78.552 df=3 p<0.001

Table 2. Hierarchy of the media educators use in educational work after the application of the Friedman test

	Mean rank
Television	2.70
Radio	1.81
Books	5.38
Newspapers	2.71
Magazines	3.01
Internet	5.39

N=102 Chi-Square=389.360 df=5 p<0.001

Regarding the use of different types of media in educational work, the application of the Friedman test showed that the Internet is mostly preferred by the nursery teachers with mean rank 5.39, followed by books with mean rank 5.38. As for the remaining media, magazines received the third ranking with mean rank 3.01, followed by newspapers (mean rank 2.71), television (mean rank 2.70) and radio (mean rank 1.81) (**Table 2**).

Then, the non-parametric Friedman test was performed to detect educators' preferences regarding the topics they are interested in searching on the Internet. According to the following table, respondents are mostly interested in searching on the Internet for topics concerning Education (school classes). With a mean rank 7.42 Education is first in their preference. Environmental topics (Nature and its issues) are participants' second preference with mean rank 5.64 and social issues consist the third preference with mean rank 5.27. Other topics which educators search on the Internet involve beauty (mean rank 4.83), recreational (mean rank

Table 3. Hierarchy of topics which educators search on the Internet after the application of the Friedman test

	Mean rank
Educational (school classes)	7.42
Social	5.27
Sports	1.64
Economic	2.44
Recreational	4.39
Personal (relationships)	4.37
Beauty	4.83
Environmental (nature and its issues)	5.64

N=102 Chi-Square=422.018 df=7 p<0.001

Table 4. Hierarchy of educators' preferences regarding the TV shows/programs they prefer to watch after applying the Friedman test

	Mean rank
News	6.09
Sports shows	1.51
Game or quiz shows	4.10
Documentaries	4.62
Environmental shows	5.13
Ecological news program (Eco news)	4.97
Talk shows	3.85
Historical/comedies/police/social/dramatic series	6.87
Movies	7.86

N=102 Chi-Square=411.702 df=8 p<0.001

4.39) and personal topics (relationships) (mean rank 4.37). Economic topics are lower in the hierarchy (mean rank 2.44) ranking in the second lowest position whereas sports topics ranked in the last position (mean rank 1.64) (**Table 3**).

Regarding the shows/programs respondents prefer to watch on television daily, the application of the Friedman test indicated that they prefer mostly to watch movies with mean rank 7.86, followed by TV series (historical/comedies/police/social/dramatic) with mean rank 6.87. At the same time, news occupies the third position in the sample's preference with mean rank 6.09, while environmental shows occupy the fourth with mean rank 5.13. These are followed by ecological news programs with mean rank 4.97, documentaries with mean rank 4.62, game or quiz shows with mean rank 4.10 and talk shows with mean rank 3.85. Sports shows received the last ranking with mean rank 1.51 (**Table 4**).

Afterwards, the Friedman test was applied to investigate whether there are statistical differences among respondents' views regarding the environmental topics on which the media should focus more. The analysis (**Table 5**) indicated that according to the participants' view the most important topic on which the media should concentrate more is water scarcity with mean rank 6.29, followed by the depletion of biodiversity (animals, plants and micro-organisms) with mean rank 5.93. At the same time, pollution (water/soil/air) was ranked third with mean rank 5.80, while the greenhouse effect was ranked fourth with mean rank 5.30. The other topics involve the electro-magnetic radiation with mean rank 5.02, forest destruction with mean rank 4.99, the depletion of the ozone layer with mean rank 4.75 and acid rain with mean rank 4.61. Overpopulation received the last ranking with mean rank 2.31 (**Table 5**).

The evaluation of the effectiveness of media's functioning by the participants was performed through the application of the Friedman test. The results of the test showed that the nursery teachers are not satisfied with the effectiveness of the media's functioning since they perceive that the media commercialize the news (mean rank 6.66), serve social/political interests (mean rank 6.32) and aim at presenting consumption habits (mean rank 5.35). In turn, this leads to the imposing of situations (mean rank 4.83) which contributes to information distortion (mean rank 4.03). The following answers show that the nursery teachers consider that the media contribute less to the promotion of pluralism and dialogue with mean rank 3.46, recreation and culture with mean rank 3.19 and much less to population education, which received the last ranking with a mean rank of 2.19 (**Table 6**).

Table 5. Hierarchy of respondents' views concerning the environmental topics on which the media should focus more after the application of the Friedman test

	Mean rank
Pollution (water/ soil/ air)	5.80
Overpopulation	2.31
Forest destruction	4.99
Depletion of the ozone layer	4.75
Acid rain	4.61
Water scarcity	6.29
Depletion of biodiversity (animals, plants & micro-organisms)	5.93
Electro-magnetic radiation	5.02
Greenhouse effect	5.30

N=102 Chi-Square=245.908 df=8 p<0.001

Table 6. Hierarchy of nursery teachers' views on media's effective functioning after applying the Friedman test

	Mean rank
Information distortion	4.03
Situations imposing	4.83
Serving social/political interests	6.32
News commercialization	6.66
Contribution to recreation and culture	3.19
Contribution to population education	2.16
Promotion of pluralism and dialogue	3.46
Presentation of consumption habits	5.35

N=102 Chi-Square=343.469 df=7 p<0.001

CONCLUSIONS

Educators prefer to use the media for their information and to acquire knowledge, however their answers show that they are not satisfied with the effectiveness of the media's functioning. This is because they perceive that the media mostly contribute to news commercialization, serve social/political interests, present consumption habits, impose situations and distort information. Conversely, in their view the media contribute less to the promotion of pluralism and dialogue, recreation and culture, and population education. Regarding the use of different media in teaching, of all media types the Internet is mostly preferred by the educators which they use as an educational tool to search topics on education (school classes). Books consist their second most favored option and from the remaining media, magazines occupy the third position in their preference, followed by newspapers, television and radio.

As regards the topics the respondents search on the Internet, their first preference involves educational topics which is followed by environmental (nature and its problems), social, beauty, recreational and personal topics (relationships). Economic topics are lower in the hierarchy, whereas sports-related topics are in the last position of the educators' preference and interest. In terms of TV shows and programs, in their daily life the pre-school teachers prefer mostly to watch movies and TV series (historical/comedies/police/social/dramatic series). Simultaneously, news is the participants' third choice, whereas environmental shows their fourth choice followed by ecological news programs, documentaries, game/quiz shows and talk shows. Sports programs are the least preferred choices and it can be inferred that sports topics do not concern the educators neither as a topic to search on the Internet nor as a program to watch on television. As for respondents' perceptions of the environmental topics on which the media should focus more, the relevant results correspond to those of the aforementioned question which referred to the topics the educators prefer to learn more about. The order of hierarchy is in both cases identical since they perceive that the media should concentrate more on water scarcity. The second position is occupied by the depletion of biodiversity (animals, plants & micro-organisms) and the third by pollution (water/soil/air). In the ranking these are followed by the greenhouse effect, electro-magnetic radiation, forest destruction, the depletion of the ozone layer and acid rain. In addition, overpopulation is in the last ranking position. Thus, the significance of the above environmental issues is shown in the hierarchy order of the results of both questions, especially in terms of their preferences in the

major issue of water scarcity but also of biodiversity depletion (animals, plants & micro-organisms), pollution (water, soil, air) and overpopulation.

To alter the problematic situation of the environment, human conscience and environmental behavior also need to change. Human interest in nature and its protection must be increased (Zafeiroudi, 2013). Several researchers have from time to time dealt with the changes in basic human disciplines, values and environmental behaviors (Ewert et al., 2005). The acquisition of a responsible environmental behavior is reflected on individual daily habits, such as water and energy saving, application of recycling programs and resistance to overconsumption (Bun Lee, 2008). For this reason, the present study investigated the educators' daily habits, attitudes and behaviors in terms of energy saving, footprint reduction, recycling and food preferences.

There can be no doubt that educators expressing environmental awareness can lead to the shaping of environmentally aware students. Through the integration of environmental activities in schools, the foundations for the acquisition of environmental conscience by pre-school and school children are set, since they consist the animate material of the planet (Paraskevopoulos & Korfiatis, 2005). Additionally, through the planned environmental activities not only environmental knowledge can be passed on but also it is possible to develop new ways of thinking, problem solving, while children and adults are motivated to work individually or in a team for the environmental protection (Evans et al., 2007). The active observation of things, situations, natural phenomena, the practice of senses and the challenge to research and experiment encourage initiatives in the school community (Paraskevopoulos & Korfiatis, 2005). For these reasons and because Environmental Education programs combine theory and practice in nature (Zafeiroudi, 2013), educators are recommended to integrate in their teaching activities which involve experiencing nature and its products as well as to connect environmental programs to outdoor leisure activities.

According to worldwide literature, Environmental Education consists one of the two main areas of Outdoor Education (Kouthouris, 2009). The other area of Outdoor Education involves outdoor leisure kinetic activities or adventure education (Priest, 1986). In the Greek language the term Outdoor Education was introduced by Kouthouris (2004) and it expresses "every educational procedure which is related to the stay, activity and education of individuals outdoors and finally making them aware about the natural environment". The aim of Outdoor Education is the experiential involvement with kinetic sport activities, games/actions on developing and improving personal/group skills as well as actions on raising awareness about environmental issues (Kouthouris, 2009). According to Martin (1999), the participation in outdoor leisure kinetic activities helps students to become environmentally aware because they can develop an ethical care for the environment. Moreover, he believes that the participation in such activities activates experiential learning while developing knowledge about the environment. What is more, regarding environmental responsibility Matthews and Riley (1995) claimed that it is better to develop environmental conscience and behavior outdoors since taking part in outdoor kinetic activities stimulates the interest in the countryside which in turn prompts students to learn about the natural environment.

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No potential conflict of interest was reported by the authors.

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REFERENCES

- Bakas, Th. (2014). *Organization and function of the Nursery*. Ioannina: University of Ioannina.
- Bun Lee, E. (2008). Environmental Attitudes and Information Sources among African American College Students. *Journal of Environmental Education*, 40(1), 2942.
- Dikopoulou, M., Zombolas, T., Mbampila, E., & Chatzimichail, M. (2011). *Environmental Education for young children*. Athens: Kaleidoskopio Publications.
- Dimitriou, A. (2005) Kindergarten and primary school student teachers' conceptions of environment. *3rd World Environmental Education congress*, 2-6 October, Torino-Italy.
- Dimitriou, A., Georgopoulos, A., & Mpirmili, M. (2008). Perceptions and Practices of nursery teachers on the application of Environmental Education. *Science and Technology Issues in Education*, 1(2). Retrieved from <http://earthlab.uoi.gr/thete/index.php/thete/article/view/15>
- Evans, G., Brauchle, G., Haq, A., Stecker, R., Wong, K., & Shapiro, E. (2007). Young Children's Environmental Attitudes and Behaviors. *Environment and Behavior*. <https://doi.org/10.1177/0013916506294252>
- Ewert, A., Place, G., & Sibthorp, J. (2005). Early- life Outdoor Experiences and an Individual's Environmental Attitudes. *Leisure Sciences*, 27, 225-239. <https://doi.org/10.1080/01490400590930853>
- Flogaitis, E., & Agelidou, E. (2003). Kindergarten teachers' conceptions about nature and the environment. *Environmental Education Research*, 9(4), 461-478. <https://doi.org/10.1080/1350462032000126113>
- Flogaitis, E., Daskolia, M., & Liarakou, G. (2005). Greek Kindergarten teachers' practice in environmental education. *Early Childhood Research*, 3(3), 299-320 10. <https://doi.org/10.1177/1476718X05056529>
- Gavalas, L. (1976). *The Greek Nursery, the first school of life*. The Greek female nursery teacher and her work, Athens: Diptycho Publications.
- Gomez, M., & De Puig, I. (2003). Ecodialogo, environmental education and philosophical dialogue. *Thinking: The journal of philosophy for children*, 16(4), 37-40 13.
- Kouthouris, Ch. (2009). *Outdoor Leisure Activities, Extreme Sports, Service Management & Executive Training*. Thessaloniki: Christodoulidi Publications.
- Manual of Environmental Journalism, edited by: Pavlides G., Cyprus: Green Dot Κύπρου.
- Matthews, B. E., & Riley, C. K. (1995). Teaching and evaluating outdoor ethics education programs. Vienna, VA: National Wildlife Federation. Retrieved from <http://www.ericdigests.org/1998-2/outdoor.htm>
- National Centre for Social Research (NCSR), International Conference UNESCO (Thessaloniki, 8-12 December 1997). Declaration of Thessaloniki. Retrieved on July 5th, 2018 from <http://www.ekke.gr/estia/Unesco/CONTENTS.htm>
- Nikolaou, K. (1998). The need for thematic orientation of P.E. for Environmental Education. 13-14, 9-12.
- Palyvos, D. (1980). *Education and edification in the pre-school age*, Athens.
- Paraskevopoulos S., & Korfiatis K. (2005). *Environmental Education. Theories and methods*. Thessaloniki: Christodoulidi Publications.
- Tsilidou, E. (2005). Environmental Education & Edification in the Nursery. 1st Conference of School Programs of Environmental Education. Corinth Canal, 23-25 September 2005. Retrieved from http://kpe-kastor.kas.sch.gr/kpe/yliko/sppe1/oral/PDFs/735-741_oral.pdf
- Wilson, R. A. (1994). Environmental Education at Early Childhood Level, in R. A. Wilson (ed.), *Environmental Education at Early Childhood Level*, 37-38, Washington, DC: North American Association for Environmental Education. <https://doi.org/10.1007/BF02361329>
- Zachariou, A., Iakovou, M., & Kounnamas, K. (2017). *Rethink it. The best waste is the one that was never produced*. Pedagogical Institute: Lefkosia.
- Zafeiroudi, A. (2013). *Shaping Environmental Conscience & Behavior in students of secondary education through participation in programs of outdoor leisure kinetic activities* (Doctoral dissertation), The inter-departmental Postgraduate Program "Exercise and Life Quality" of the Departments of Physical Education and Sports Science of the Democritus University of Thrace and University of Thessaly. Trikala.

