

Developing Environmental Awareness Through Physical Education - Views Of Physical Education Teachers

Mantziouka Alexandra¹,

PhD candidate

Zaragas Harilaos¹,

Associate Professor

Plakitsi Katerina¹,

Professor

Bekiari Alexandra²,

Associate Professor

¹(Pedagogical Department of Early Childhood Education, University of Ioannina)

²(Department of Physical Education and Sport Science, Aristotle University of Thessaly)

Abstract:

Background: Cultivating Environmental awareness is an educational challenge of prime importance. Physical Education course practiced in natural environment provides numerous alternative opportunities for Environmental Education to shape students committed to environment. The objective of this study to investigate the view of physical education teachers on the development of environmental awareness through Physical Education.

Materials and Methods: 457 physical education teachers in primary schools in rural, semi-urban and urban areas of Greece participated in the survey. A questionnaire of five subscales was formed for the purpose of this study. The normality of the data was checked by the Kolmogorov - Smirnov test. The a-Cronbach reliability test is 0.906. Pearson's correlation analysis was used to determine the relationship between variables.

Results: The results obtained show that in accordance with PE teachers' views Physical Education contribute to the development of environmentally and socially responsible people and to the formation of values for the environment, while PE teachers consider that experiential learning displays a minimum to Environmental awareness cultivated in students through Physical Education course. In addition, the results show differences between female and male Physical Education teachers on the contribution of Physical Education to environmental education, social values and experiential learning.

Conclusion: Physical Education course display essential opportunities for the development of environmental awareness and socio-moral development.

Key Word: Physical Education, Environmental awareness, teachers, social values, experiential learning

Date of Submission: 03-10-2023

Date of Acceptance: 13-10-2023

I. Introduction

In recent decades, Environment has aroused worldwide interest, as constant evolution brings humanity into a delicate balance with natural environment¹. Economic growth in modern societies through industrial and technological progress, reckless pursuit of profit, rapid growth and the demands of modern consumer society are still present in this decade. The extensive use of current resources jeopardies the needs of future generation. Therefore, these worldwide problems demand solutions that involve not only actions but also stimulation of environmental awareness.

As demonstrated, so as to achieve environmental awareness, planned and well-structured actions are required. In this context for action, education takes the lead and empowers future citizens to succeed in a holistic, transformative, and lifelong change^{2,3}. Only through education, present and future generation will be capable of achieving a more sustainable world. The school as the main body of socialization in an ever-changing society is called to transform the needs of modern society into teaching subjects. It is called upon to make changes to curricula and teaching strategies to cultivate the necessary skills so that students can live effectively and successfully in their environment⁴.

In particular, the holistic perspective of Physical Education course aims to equip students with the requisite knowledge, skills, and attitudes for an active and healthy lifestyle⁵. Physical education and ecological

orientation are key components of physical cultural identity by which people are capable of leading a healthy and socially active⁶. Physical Education expedites the creation of an ideal context to promote environmental care through physical activities in natural environments with environmental protection activities^{7,8,9,10}. Physical Education practice outdoors in natural environments ought to be led by the pretension of caring for the planet in a practical and disciplined way¹¹. Establishing practitioners' environmental awareness implies awareness of the importance of knowing, experiencing, feeling, and respecting the natural environment when engaging in a physical activity in nature^{12, 13}.

As can be seen, in order to achieve environmental awareness through education, well planned and structured action are required from educators. Educators training and awareness are of high importance as they constitute agents of change.

II. Literature Review

Reviewing the existing literature, studies were found on the contribution of Physical Education to Environmental Education^{14,15}, the contribution of Environmental Education to Physical Education^{9,16,17,18,19,20}, the integration of Environmental Education issues in Physical Education curriculum to achieve sustainable educational goals²¹. Moreover, studies were carried out about the connection between Physical activity and Environmental Education¹³ and between Physical activity and sustainability^{5,10,13,22,23,24,25,26,27,28,29,30,31,32,33}.

In response to the affiliation between the Physical Education and Environmental awareness, many studies have been published during the last decade. Several studies focus on the human contact with nature through physical activities outdoor leading to a better understanding of environmental problems and an increase of environmental interest^{34,35,36,37,38,39}. However, no studies were found which focus on Physical Education teachers' views on the contribution of Physical Education to environmental Awareness. The current study investigates the relationship of Physical Education and the development of Environmental Awareness through the views of Physical Education teachers. More specifically, the study aimed to answer the following research questions:

- (1) Do Physical Education teachers form a positive opinion about the connection of Physical Education with environmental awareness?
- (2) Do Physical Education teachers form a positive view of the contribution of the Physical Education in the development of social values related to the environment?
- (3) Do Physical Education teachers form a positive view of the contribution of experiential learning to the development of environmental awareness?
- (4) Does the gender of the teachers function as a differentiating factor in terms of the level of the mean values of the Scales of the Teachers' Questionnaire?

III. Material And Methods

After written informed consent was obtained, a well-designed questionnaire was used to collect the data of the sample retrospectively. The questionnaire included socio-demographic characteristics such as age, gender, place, teaching experience, and five (5) scales. A total sample of 457 PE teachers (48% female) were included in the study. Of the 457 participants, all were teaching at primary school (for students aged 7-12 years old). The participants were from different places, from rural areas of Greece (13.3%), from semi – urban areas (18.6%) and from urban areas (68.1%). In terms of years of teaching experience, 8.5% had between 1 – 10 years of teaching experience, 19.0% had between 11 – 15 years of teaching experience, 40.3% had between 16 – 20 years of teaching experience, 12.5% had between 21 – 25 years of teaching experience, 16.6% had between 26 – 30 years of teaching experience and 3.1% had between 31 – 35 years of teaching experience (Table 1).

Table no1: Distribution of gender, age, teaching area and teaching experience.		N	%
Gender	Male	237	51.90%
	Female	220	48.10%
	Total	457	100.00%
Age	30-35	11	2.40%
	36-40	14	3.10%
	41-45	68	14.90%
	46-50	157	34.40%
	51-55	170	37.20%
	56-65	37	8.10%
	Total	457	100.00%
Place	Rural	61	13.30%
	Semi- urban	85	18.60%
	Urban	311	68.10%
	Total	457	100.00%
Teaching experience	1-10	39	8.50%
	11-15	87	19.00%
	16-20	184	40.30%

	21-25	57	12.50%
	26-30	76	16.60%
	31-35	14	3.10%
	Total	457	100.00%

The questionnaire used in the present survey was distributed in printed and electronic form via e-mail. It consists of 5 subscales: Q1. Information about Environmental Education (4 items), Q2. Connection of Physical Education and environment (11 items), Q3: Environmental awareness and Physical education (9 items), Q4: Social values and Physical Education (16 items) and Q5: Experiential learning, Environment and Physical Education (6 items).

The Information about Environmental Education (Q1) was used to evaluate participants' information of Environmental Education and participation in projects of Environmental Education. The Connection of Physical Education and environment scale (Q2) was used to assess participants' perception about Physical Education and environment and the converging points between them. The Environmental Awareness scale (Q3) was used to evaluate participants' perception about environmental awareness and the development of it through Physical Education. The social values scale (Q4) was used to evaluate the extent to which participants consider that social values are cultivated through Physical Education. The Experiential learning scale (Q5) was used to assess participants' perception about the impact of experiential learning in Physical Education on raising environmental awareness.

The processing of the descriptive and inductive statistic of the data was done with the help of the statistical package IBM SPSSv21 and for 95% confidence intervals ($p_{value} = 0.05$). The regularity check was done with the Kolmogorov Smirnov test and showed that there is not a normal distribution ($Sig. = 0,000 > 0,05$). Therefore, the test of the differentiation of the mean values between variables is carried out with the non-parametric t-test of Mann – Whitney – Wilcoxon, at a level of statistical significance $\alpha = 5\%$ and the linear correlation test of the variables is carried out with the non-parametric linear correlation test and the extraction of the Spearman linear correlation coefficient index (-1, +1), at a statistical significance level of $\alpha = 5\%$.

The Cronbach reliability test showed that there is internal consistency in the questionnaire both in the individual questions of the stakeholders and in its entirety, as shown in Table 2.

	Cronbach's Alpha	N of Items
1. Information about Environmental Education	0,664	4
2. Connection of Physical Education and environment	0,558	11
3. Environmental awareness and Physical Education	0,835	9
4. Social values and Physical education	0,936	16
5. Experiential learning, Environment and Physical Education	0,663	6
Total	0,906	46

Factor analysis of key components for the correlations of the correlations of the 46 variable questions of the questionnaire was performed (Kaiser–Meyer–Olkin (KMO) index = 0.886 > 0.007). Table 3 presents the results of the "Rotated Component Matrix" of the Teachers' Questionnaire and presents the five (5) Scales and the corresponding questions included in each of them according to the loadings they show. It is useful to clarify that a lower acceptable loading limit of 0.300 is specified and loadings below this are rejected.

Table no3: Confirmatory factor Analysis (F= 457 100%) Rotated Component Matrix

Information about Environmental Education		Connection of Physical Education and environment		Environmental awareness and Physical Education		Social values and Physical education		Experiential learning, Environment and Physical Education				
Questions	Q actor 1	Questions	Q actor 2	Questions	Q actor 3	Questions	Q actor 4	Questions	Q actor 5			
1	474	5	322	6	1	695	5	2	727	1	4	726
2	457	6	356	7	1	744	6	2	762	2	4	532
3	580	7	545	8	1	717	7	2	822	3	4	525
4	499	8	614	9	1	611	8	2	855	4	4	674
		9	746	0	2	750	9	2	785	5	4	596

	0	1	794	1	2	714	0	3	770	6	4	766
	1	1	656	2	2	504	1	3	605			
	2	1	709	3	2	383	2	3	631			
	3	1	324	4	2	407	3	3	383			
	4	1	308				4	3	424			
	5	1	324				5	3	378			
							6	3	389			
							7	3	324			
							8	3	340			
							9	3	300			
							0	4	352			

Extraction Method: Principal Component Analysis, Rotation Method: Varimax with Kaiser Normalization.

IV. Result

The Mann – Whitney U Test (see Table 4) for the two independent samples (males /females) showed that there is a statistically significant difference between men and women in the sample for the variables “Environmental awareness and Physical Education” (Sig. (2-tailed) 0,019 (U = 22757,5, Asymp. Sig. (2-tailed) = 0,019 < 0,05), “Social values and Physical education” (Sig. (2-tailed) 0,001 (U = 21542,5, Asymp. Sig. (2-tailed) = 0,001 < 0,05), and “Experiential learning, Environment and Physical Education” (Sig. (2-tailed) 0,049 (U = 24509,5 Asymp. Sig. (2-tailed) = 0,048 < 0,05). In the variables “Environmental awareness and Physical Education” (3,91 ± 0,585) and “Social values and Physical education” (3,86 ± 0,578) the highest mean value was collected by women, while in the variable “Experiential learning, Environment and Physical Education” (1,03 ± 0,093) men were the ones who collected the highest mean value.

Table no4: Analysis of Physical Education teachers’ Responses based on Gender

	Gender	Group Statistics			Test Statistics			
		N	Mean	Std. D.	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Information about Environmental Education	Male	235	1,52	0,318	24286,000	48596,000	-1,143	,253
	Female	220	1,48	0,336				
Connection of Physical Education and environment	Male	237	1,41	0,344	24188,000	48498,000	-1,342	,180
	Female	220	1,36	0,319				
Environmental awareness and Physical Education	Male	237	3,78	0,577	22757,500	50960,500	-2,353	,019
	Female	220	3,91	0,585				
Social values and Physical education	Male	237	3,86	0,578	21542,500	49745,500	-3,212	,001
	Female	220	4,04	0,585				
Experiential learning, Environment and Physical Education	Male	235	1,03	0,093	24509,500	48819,500	-1,971	,048
	Female	220	1,02	0,081				

From the results listed in Table 5 below, it emerged that there are statistically significant correlations between Physical Education course and the environmental awareness, in particular (r ,477, Sig. (2-tailed) ,000 < 0,05).

Table no5: Correlation of Physical Education and the environmental Awareness

Correlations	Spearman's rho	Environmental Awareness through P.E.
Connection of Physical Education and environment	Correlation Coefficient	,477**
	Sig. (2-tailed)	,000
	N	457
**Correlation is significant at the 0.01 level (2-tailed)		

There are statistically significant correlations between Physical Education course and social values, in particular (r ,418, Sig. (2-tailed) ,000 < 0,05) (see Table 6).

Table no6: Correlation of Physical Education and the Social values

Correlations	Spearman's rho	Physical Education course
Social values and Physical education	Correlation Coefficient	,418**
	Sig. (2-tailed)	,000
	N	457
**Correlation is significant at the 0.01 level (2-tailed)		

From the results listed in Table 7 below, it emerged that there is a statistically significant negative correlation between experiential learning and the development of environmental awareness that is fostered in students though Physical Education course. with an r coefficient of -0.112, Sig. (2-tailed) 0.017 < 0.05.

Table no7: Correlation of experiential learning and the development of environmental awareness cultivated in students through Physical Education course.

Correlations		Spearman's rho
		Experiential learning
Environmental awareness cultivated in students through Physical Education course.	Correlation Coefficient	-0.112*
	Sig. (2-tailed)	0.017
	N	457
*. Correlation is significant at the 0.05 level (2-tailed).		

V. Discussion

Sports in nature constitute curricular component of Physical Education that shall cope with body practices associated in the field of leisure, body care and health promotion^{5,40}. Considering the rapid changes and metamorphosis of current society, Physical Education teachers should schedule classes offering practices and experiences in natural spaces⁴¹. The aim of this study was to investigate the conceptions of Physical Education teachers on Physical Education and environmental awareness.

The literature shows that the role of teacher is to mediate between curriculum and learning and to contribute to students' acquisition of environmental awareness^{42,43}. Teacher should possess the essential knowledge for the development of skills and the formation of values. More particularly, teacher should possess knowledge and environmental attitudes, that will generate more environmentally conscious students⁴⁴.

In this context, and according to the report of the subjects participating in the research, environmental awareness should be developed in Physical Education class, since Physical Education constitutes a component of school curriculum, and it is imperative need to develop issues of the environmental degradation. In a study conducted with Physical Education teachers, it was found that Physical Education should incorporates in curriculum Environmental Education, since physical activity and motor skills are essential for the development of skills and the holistic development of students⁴³. However, the lack of environmental knowledge and the limited government support restrict them to incorporate Environmental education in Physical Education. Physical Education teachers assert that while the curriculum includes objectives and activities for physical activity in nature, they remain optional and without government support. It is of high importance the connection between Environmental Education and Physical Education in school curriculum, since beneficial activities that cover environmental knowledge can be carried out⁴⁵.

Teachers of Physical Education in the study believed that Physical Education contributes to an individual's acquisition of values. Within the realm of possibilities of practice in nature educational initiatives concentrate on enhancing values such as self – confidence, establishing skills for leadership and teamwork,

reforming relation between human and nature, advocating environmental values, developing gratitude for natural, cultural, and historical heritage, and increasing levels of social cohesion. Practice in nature is not limited to the environmental knowledge but displays the revolution of way of being and presents a facilitator of the increase of critical consciousness^{41,46}.

Practice nature through Physical Education generates students' personal and social evolution and by extension their environmental Awareness. According to Physical Education teachers' conception, contact with nature through practice and witnessing the deterioration of planet contributes to the acknowledgement of the problem, comprehension of the inseparable unit of human and nature and adoption of environmental behavior⁴¹. Teachers stated the experiences collected by students in natural environment far from the environmental of traditional school led to an alternation of behavior and by extension to develop respect for the environment⁴¹. Sports in nature provides recreation activities that not only are an aid to learning but also extensive training of values⁴¹. In this context, the literature indicates that practice in nature highlights the value of environmental awareness, collaborative work, and the development of values of Physical Education^{41,47,48,49,50}. However, part of these findings is supported by this research.

There is the belief that Physical Education not only should incorporate Environmental Education in curriculum but leads a privileged role for its development since both the content of Physical Education and the course based mainly on practical experiences and personal experiences⁴⁵. It is a privilege of Physical Education course that it can be developed by practice and experience that leads in meaningful learning⁵¹. What has been learned by doing and experiencing is permanent and can be transferred more easily to life^{52,53}.

Raising environmental awareness deals with "turning ecological ethics into life practice" or convert ecological principles into mind, body, and heart habits⁵⁴. Shaping individual's lifestyle can be associated with experiential learning. Experiential learning or learning by experience is expressed as one of the most important elements of personal development⁵⁵. Physical Education can provide students with a numerous opportunity to interact with nature, learn by experience and raise environmental awareness.

Although the teachers stressed the importance of the importance of raising awareness of environmental issues, there was disagreement between men and women. Specifically, we found that environmental awareness differed between male and female teachers. In addition, they disagreed on the association between Experiential Learning and Environmental awareness cultivated in students through Physical Education course as well as the extent to which social values are fostered in the context of physical education.

There are studies showing that women are more concerned, have more positive attitudes and behavior towards the environment than men^{56,57,58,59}. In contrast to the predominance of women over men, some other studies revealed that men had better rates than women in terms of environmental literacy and activism^{60,61,62}.

In a study on teachers, gender is the only independent variable causing significant differences in the 3 dependent variables: environmental knowledge, environmental concern and environmental attitude. Female teacher candidates (students) have a higher level of environmental awareness and environmental concern about the environment⁶³. According to studies^{64,65,66,67,68}, students are more likely to be more environmentally literate if their teachers are also more environmentally literate. The results of a recurrent research highlight the importance of Environmental Literacy education and the educational system is called upon to review Environmental Education, to introduce Education for Sustainable Development at all educational levels, calling students in the systematic adoption of good practices and actions from preschool age and not in individual actions⁶⁹.

VI. Conclusion

The national curriculum of Greece recognizes the practice in nature as a content of Physical Education with a vast range of possibilities for motor expression and opportunities of connectedness with nature⁵. Teacher is the mediator between national curriculum and learning as well as the stimulator for acquisition of environmental awareness by the students⁴¹. The nature of Physical Education course provides the privilege to Physical Education teachers to implement physical activities in nature that not merely improve motor skills but also enhance students' environmental awareness.

Physical Education classes display essential opportunities for the socio-moral development of students⁷⁰. Through Physical Education many values can be transferred to students. According to Physical Education teachers' statements, Physical education classes are more compelling in values education since they incorporate behaviors such as acting together, motivating the peers, fair play, helping each other, taking responsibility, respecting equality and the rights of others⁷¹. Physical Education cultivates both personal and social responsibility behaviours^{53,71}.

These findings provide new knowledge within the Physical Education and Environmental Awareness, serving as a link for future research that aims to harness the benefits of Physical education for Environmental Awareness and further on sustainability. One worth mentioning is the importance of Physical Education teachers' awareness and training. It is also emphasized that it is not enough to train PE teachers, but that Physical Education teachers' beliefs and practices are fundamental to ensuring the progress and sustainability of the planet.

References

- [1]. Unesco. (2017). Education For Sustainable Development Goals. Learning Objectives. 2022. Access Address: <https://unesdoc.unesco.org/ark:/48223/pf0000247444>.
- [2]. Sachs, J., Schmidt-Traub, G., Kroll, C., Durand-Delacre, D., & Teksoz, K. Sdg Index And Dashboards Report 2017. In Bertelsmann Stiftung And Sustainable Development Solutions Network (Sdsn). 2017. Access Address: <https://www.sdgindex.org/reports/sdg-index-and-dashboards-2017/>.
- [3]. Unesco. Educación Para El Desarrollo Sostenible: Hoja De Ruta. 64. 2020. Access Address: <https://unesdoc.unesco.org/ark:/48223/pf0000374896.locale=en>.
- [4]. Steffe, L.P., & Gale, J.E. Constructivism In Education. Hillsdale, Nj: Lawrence Erlbaum Associates. 1995.
- [5]. Iep. Curriculum For Physical Education In Primary School, 2nd Ed., Athens. 2022.
- [6]. Andryukhina, L. & Fadeeva, N. & Negri, Gérard. Development Of Ecological Culture Of Students In The Process Of Intercultural Communication In Foreign Language. The Education And Science Journal. 2017; 19, 47- 74.
- [7]. Olive, R., & Enright, E. Sustainability In The Australian Health And Physical Education Curriculum: An Ecofeminist Analysis. Sport, Education And Society. 2021; 26(4), 389–402.
- [8]. Thorpe, H., Brice, J., & Clark, M. New Materialisms, Sport And The Environment: Imagining New Lines Of Flight. Sport, Education And Society. 2021; 26(4), 363–377.
- [9]. Welch, R., Taylor, N., & Gard, M. Environmental Attunement In Health, Sport And Physical Education. Sport, Education And Society. 2021; 26(4), 339–348.
- [10]. Baena-Morales, S., Prieto-Ayuso, A., Merma-Molina, G. & González-Villora, S. Exploring Physical Education Teachers' Perceptions Of Sustainable Development Goals And Education For Sustainable Development, Sport, Education And Society, 2022.
- [11]. Smith, S. Swimming In Flow Motion: An Eco-Pedagogy For Health And Physical Education. Sport Education And Society. 2021; 26, 417–428.
- [12]. Guillén-Correas, R., & Santos-Pastor, M. L. El Medio Natural Como Eje Pedagógico. Una Visión Integrada: La Motricidad Y La Educación Ambiental. En A. Fraile (Coord.), Didáctica De La Educación Física: Una Perspectiva Crítica Y Transversal (Pp. 197-216). Madrid: Biblioteca Nueva. 2004.
- [13]. Santos-Pastor, M. L., Ruiz-Montero, P. J., Chiva-Bartoll, O., Baena-Extremera, A. & Martínez-Muñoz, L. F. Environmental Education In Initial Training: Effects Of A Physical Activities And Sports In The Natural Environment Program For Sustainable Development. Front Psychol. 2022; 13:867899.
- [14]. Betrán, J. O. Escenaris I Ambients De L'educació Física. / Scenarios And Environments For Physical Education. Apunts: Educació Física I Esports. 2011; 5-8.
- [15]. Hernandez, C. R. A. Social Representations Of Environmental Education In Physical Education Classes Of Students And Teachers Of Educational Establishments Of The IX Region Of Araucania, Chile. Retos-Nuevas Tendencias En Educacion Fisica Deporte Y Recreacion. 2022; 485-495.
- [16]. Santos, R. M. Dos., Keim, E. J., & Domingues, S. C. Educação Ambiental Uma Proposta Emancipatória Na Educação Física Escolar/ Environmental Education An Emancipatory Proposal In School Physical Education. Dialogia. 2021; 38, 1-16,
- [17]. Huang, Y. & Reynoso, L. C. Based On Physical Self-Concept To Discuss The Effect Of Environmental Education On Health Related Physical Education. Ekoloji. 2018; 27, 1645-1651.
- [18]. Neto, J. D. S. & Rocha, A. M. Environmental Education Practices In The Training Of Physical Education Teachers. Educacion Fisica Y Deporte, 2018; 37, 121-154.
- [19]. De Paula Figueiredo, J. & Schwartz, G. M. Adventure Activities And Environmental Education In Physical Education Journals. Motriz. Revista De Educacao Fisica. 2013; 19, 467-479.
- [20]. Futornyi, S., Maslova, O., Shmatova, O., Osadcha, O., Rychok, T., Hopey, M. & Tarnavskiy, A. Modern Aspects Of The Ecological Culture Implementation In The Physical Education Process Of Different Population Groups. Journal Of Physical Education And Sport. 2020; 1(20), 348-353.
- [21]. Yuan, W., Shih, K. T. & Lin, C. J. Research On The Integration Of Inquiry-Based Approach Into The Environmental Education Of Sustainable Development. In Proceedings Of Iop Conference Series: Earth And Environmental Science, 576, Bangkok, Thailand. 2020.
- [22]. Baena-Morales, S., Ferriz-Valero, A., Campillo-Sánchez, J. & González-Villora, S. Sustainability Awareness Of In-Service Physical Education Teachers. Education Sciences. 2021a; 11.
- [23]. Baena-Morales, S., Merma-Molina, G. & Gavilán-Martín, D. What Do Physical Education Teachers Know About The Sustainable Development Goals? A Qualitative-Exploratory Study. Retos. 2021b; 42, 452-463.
- [24]. Puciato, D. & Rozpara, M. Physical Activity Of Male And Female University Students As A Manifestation Of Sustainable Development. In World Sustainability Series. 2021; 10, 1.
- [25]. Posso Pacheco, R. J., Córdor Chicaiza, M.G., Córdor Chicaiza, J.R. & Núñez Sotomayor, L.F.X. Sustainable Environmental Development: A New Approach To Physical Education For Post-Pandemic In Ecuador. Revista Venezolana De Gerencia. 2022; 27, 464-478.
- [26]. Macassa, G. (2021) Can Sustainable Health Behaviour Contribute To Ensure Healthy Lives And Wellbeing For All At All Ages (Sdg 3)? A Viewpoint. Journal Of Public Health Research. 2021; 10.
- [27]. Baena-Morales, S. & González-Villora, S. Physical Education For Sustainable Development Goals: Reflections And Comments For Contribution In The Educational Framework. Sport, Education And Society. 2022.
- [28]. Dudley, D. & Cairney, J. Physical Literacy: Answering The Call For Quality Education And Sustainable Development. Prospects. 2021; 50, 5-11.
- [29]. Fröberg, A. & Lundvall, S. The Distinct Role Of Physical Education In The Context Of Agenda 2030 And Sustainable Development Goals: An Explorative Review And Suggestions For Future Work. Sustainability (Switzerland). 2021; 13.
- [30]. García-Rico, L., Martínez-Muñoz, L. F., Santos-Pastor, M. L. & Chiva- Bartoll, O. Service-Learning In Physical Education Teacher Education: A Pedagogical Model Towards Sustainable Development Goals. International Journal Of Sustainability In Higher Education. 2021; 22, 747-765.
- [31]. Lohmann, J., Breithecker, J., Ohl, U., Giess-Stueber, P. & Brandl-Bredenbeck, H. P. Teachers' Professional Action Competence In Education For Sustainable Development: A Systematic Review From The Perspective Of Physical Education. Sustainability. 2021; 13. Doi:10.3390/Su132313343.
- [32]. Savelyeva, I. P., Danilova, I. V., Karpushkina, A. V. & Kilina, I. P. Physical Activity, Health And Environment Among The Priorities Of Sustainable Development Of The Regions. Human Sport Medicine. 2021; 21, 141-152.
- [33]. Yermilova, V. V. & Murtazina, G.H. Outreach Of Sustainable Development Principles In Physical Culture And Sports. Asia Life Sciences. 2019; 139-157.

- [34]. Abell, R., & Harrison, I. J. A Boost For Freshwater Conservation. *Science*. 2020; 370(6512), 38-39.
- [35]. Bustam, T., Young, A. B., & Todd, S. L. Environmental Sensitivity And Youthful Participation In Outdoor Recreation. *Proceedings Of The 2003 Northeastern Recreation Research Symposium*. 2003; 270 - 275.
- [36]. Broom, C. Exploring The Relations Between Childhood Experiences In Nature And Young Adults' Environmental Attitudes And Behaviours. *Australian Journal Of Environmental Education*. 2017; 33(1), 34-47.
- [37]. Knight, K. W., & Hao, F. Is Outdoor Recreation Associated With Greater Climate Change Concern In The United States? *Sustainability*. 2022; 14(6), 3520.
- [38]. Mcginlay, J., Parsons, D. J., Morris, J., Graves, A., Hubatova, M., Bradbury, R. B., & Bullock, J. M. Leisure Activities And Social Factors Influence The Generation Of Cultural Ecosystem Service Benefits. *Ecosystem Services*. 2018; 31, 468-480.
- [39]. Ferreira, M. E., & Pitarna, R. Outdoor Learning Activities As Facilitators In The Construction Of Environmental Citizenship. In N. Llevot-Calvet, & O. B. Caverro (Eds.), *Advanced Learning And Teaching Environments - Innovation, Contents And Methods*. Intechopen. 2017.
- [40]. Boyero, R., Serna, C. & Valle, P. Taxonomic Approximation Of Physical Activities In Nature In Educational Centers. *Retos*. 2015; 1, 6-14.
- [41]. Almonacid Fierro, A., Castillo-Retamal, F., Souza De Carvalho, R., Vargas-Vitoria, R. & Arellano Saavedra, R. Teachers' Conceptions About Approaches Of Activities In Nature In The Physical Education Classroom. *Journal Of Physical Education*. 2022; 33, 1-13.
- [42]. Sureda-Negre, J., Oliver-Trobat, M., Catalan-Fernández, A., & Comas-Forgas, R. Environmental Education For Sustainability In The Curriculum Of Primary Teacher Training In Spain. *International Research In Geographical And Environmental Education*. 2014; 23(4), 281-293.
- [43]. Arriagada, C. R. Las Representaciones Sociales De La Educación Ambiental En Clases De Educación Física, De Los Estudiantes Y Profesores De Establecimientos Educacionales De La IX Región De La Araucanía, Chile (Social Representations Of Environmental Education In Physical. *Retos*. 2022; 44, 485-495.
- [44]. Torres, L., Benavides, J., Latoja, C., & Novoa, E. Presencia De Una Educación Ambiental Basada En Conocimiento, Actitudes Y Prácticas En La Enseñanza De Las Ciencias Naturales En Establecimientos Municipales De La Ciudad De Los Ángeles, Chile. *Estudios Pedagógicos (Valdivia)*. 2017; 43(3), 311-323.
- [45]. López, V., & López, E. Tratamiento De La Educación Ambiental Desde El Área De Educación Física. *Problemática Y Propuestas De Acción. Apuntes Educación Física Y Deportes*. 1997; 4(50), 76-83.
- [46]. Ried, A., Monteagudo, M.J., Benavides, P., Le Bon, A., Carmody, S., & Santos, R. Key Aspects Of Leisure Experiences In Protected Wilderness Areas: Notions Of Nature, Senses Of Place And Perceived Benefits. *Sustainability*. 2020; 12(8):3211
- [47]. Badau, D. The Educational Impact Of Implementation The Education Through Adventure Discipline In Physical Education And Sports Academic Curriculum. *Physical Education Studies*. 2017; 3, 108-115.
- [48]. Caballero, P., Hernández, E. & Reina Del Valle, M. Analysis Of The Universal Factors Of Physical Activities In The Natural Environment/Physical Activities Of Adventure In Nature: Preliminary Study. *Cuadernos Del Profesorado*. 2018; 11(22), 61-68.
- [49]. Deus Inácio, H. L., De Cauper, D. A. C., De Paula Silva, L.A. & De Moraes, G.G. Bodily Practice Of Adventure At School: Possibilities And Challenges-Reflections Beyond The National Curricular Bases. *Motrivivência*. 2016; 28(48), 168-187.
- [50]. Scrutton, R. A. Outdoor Adventure Education For Children In Scotland: Quantifying The Benefits. *J. Adventure Educ. Outdoor Lear.* 2015; 15(2), 123-137.
- [51]. Castillo-Retamal, F., & Cordero-Tapia, F. La Educación Ambiental En La Formación De Profesores En Chile. *Uc Maule*. 2019; 56, 9-28.
- [52]. Çamlıyer, H. Ü., & Çamlıyer, H. A. *Eğitim BüTüNlüğÜ İçinde Çocuk Hareket Eğitimi Ve Oyun*. 6th Ed. Manisa: Celal Bayar Üniversitesi Matbaası. 2011.
- [53]. Balci, T., & Yanik, M. The Relationship Between Physical Education And Sport Values With Self-Reported Personal And Social Responsibility Behaviours. *African Educational Research Journal*. 2020; 8(4), 897-905.
- [54]. Bai, H., & Romanycia, S. Learning From Hermit Crabs, Mycelia And Banyan: Schools As Centers Of Critical Inquiry And Renormatization. In R. B. Stevenson, M. Brody, J. Dillon, & A. E. J. Wals (Eds.), *International Handbook Of Research On Environmental Education (101-107)*. New York: Aera Routledge. 2013.
- [55]. Breunig, M. The Historical Roots Of Experiential Education. In K. Warren, D. Mitten, & T. A. Loeffler (Eds.), *Theory And Practice Of Experiential Education (77-92)*. Boulder, Co: Association Of Experiential Education. 2008.
- [56]. Hunter, L. M., Hatch, A., & Johnson, A. Cross-National Gender Variation In Environmental Behaviors. *Social Science Quarterly*. 2004; 85, 677-694.
- [57]. Tuncer, G., Ertepinar, H., Tekkaya, C., & Sungur, S. Environmental Attitudes Of Young People In Turkey: Effect Of School Type And Gender. *Environmental Education Research*. 2005; 11(2), 215-233.
- [58]. Yilmaz, O., Boone, W. J., & Andersen, H. O. Views Of Elementary And Middle School Turkish Students Toward Environmental Issues. *International Journal Of Science Education*. 2004; 26(12), 1527-1546.
- [59]. Zelezny, L. C., & Schultz, P. W. Promoting Environmentalism. *Journal Of Social Issues*. 2000; 56(3), 365 - 371.
- [60]. McDonald, W. & Hara, N. Gender Differences In Environmental Concern Among College Students. *Sex Roles*. 1994; 31(5-6), 369-374.
- [61]. Tindall, D. B., Davies, S., & Mauboules, C. Activism And Conservation Behaviour In An Environmental Movement: The Contradictory Effect Of Gender. *Society And Natural Resources*. 2003; 16, 909-932.
- [62]. Blocker, T. & Eckberg, D. Gender And Environmentalism: Results From The 1993 General Social Survey. *Social Science Quarterly*. 1997; 78, 841-858.
- [63]. Öztürk, G., Tüzün, Ö.Y. & Teksöz, G. Exploring Environmental Literacy Through Demographic Variables. *Elementary Education Online*. 2013; 12, 926-937.
- [64]. Cheng, I. N. Y., & So, W. W. M. Teachers' Environmental Literacy And Teaching-Stories Of Three Hong Kong Primary School Teachers. *International Research In Geographical And Environmental Education*. 2015; 24(1), 58-79.
- [65]. National Environmental Education Advocacy Council (Neeac). *Setting The Standard, Measuring Results, Celebrating Success: A Report To Congress On The Status Of Environmental Education In The United States*. Washington, Dc: Autho. 2005.
- [66]. Spiropoulou, D., Antonakaki, T., Kontaxakaki, S., & Bouras, S. (2007). Primary Teachers' Literacy And Attitudes On Education For Sustainable Development. *Journal Of Science Education And Technology*. 2007; 16, 443-450.
- [67]. Yavetz, B., Goldman, D., & Pe'er, S. Environmental Literacy Of Pre-Service Teachers In Israel: A Comparison Between Students At The Onset And End Of Their Studies. *Environmental Education Research*. 2009; 15(4), 393-415.
- [68]. Yavetz, B., Goldman, D., & Pe'er, S. How Do Preservice Teachers Perceive 'Environment'and Its Relevance To Their Area Of Teaching? *Environmental Education Research*. 2014; 20(3), 354-371.

- [69]. Gavrilakis, C., Stylos, G., Kotsis, K. & Goulgouti, A. Environmental Literacy Assessment Of Greek University Pre-Service Teachers. 2017; 49-71.
- [70]. Shields, D., & Bredemeier, B. Character Development And Physical Activity. Champaign, Il: Human Kinetics. 1995.
- [71]. GöRgüt, İ., & Tutkun, E. Views Of Physical Education Teachers On Values Education. Universal Journal Of Educational Research. 2018; 6(2), 317-332.