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Short Communication

Attitudes of Prospective Forest Engineers and Primary School Teachers Toward a Sustainable Environment

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Abstract

This study aims to determine the attitudes of prospective forest engineers and primary school teachers toward sustainable development, and the impact of an "Environmental Training" course on these attitudes. The research was conducted in two faculties of Artvin Coruh University during the spring term of the academic year 2011-12. The study groups consist of first- and second-year students (N=104) enrolled in the Primary Education Department of the Faculty of Education, and first- and second-year students (N=74) studying in the Forest Engineering Department of the Faculty of Forestry. The findings of the study that followed a case study were obtained from interviews and an "Attitude Scale toward Sustainable Environment". The data were analyzed both quantitatively and qualitatively. After the interviews, it was concluded that the majority of the participants had knowledge about sustainable development in environmental terms only and that they did not know the other dimensions.

Keywords: sustainable development, primary school student teacher, prospective forest engineers, attitude

Introduction

Nature used to have the capacity to revitalize itself, but this has changed dramatically in a negative way. With the industrial revolution, in particular, the changes observable in almost all the elements of the environment brought about one of today's biggest environmental problems. Humans, who are part of nature and without which cannot exist, have long desired to control nature with the help of technology and knowledge of the world. Unfortunately, this has accelerated the rise of a selfish society. Selfish ideas and attitudes are the result of irresponsibility and lack of knowledge. The prevention of the emergence of environmental problems and finding solutions to them greatly depend on sustainability [1].

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Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It consists of two key concepts:

- the concept of 'needs,' in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs" [2].

The concept of sustainability consists of three constituent parts: environmental, sociopolitical and economic sustainability. More recently, it has been suggested that the main parts of sustainable development are ecological, political, cultural, and economic [3].

It is a fact that development cannot be ensured completely in societies composed of individuals who lack knowledge of the environment and who have low levels of positive attitude [4]. In order to prevent this, there is a need for us to accept sustainability as an integral part of our lives. For instance, students must be given education on the environment so that they are equipped with the appropriate knowledge, attitude, and sense of values [4]. Individuals who are academically educated and who have positive attitudes will understand the concept of sustainability as a way out of environmental problems; in other words, the role of teachers is undoubtedly essential. Prospective teachers who have positive attitudes toward nature are important for these attitudes to turn into actual behaviours [4, 5].

The fact that the number of studies about sustainable development in our country, Turkey, is relatively lower than the ones in other countries implies that there is a need for more detailed and extensive studies related to the problem. The purpose of this study is to compare the attitudes of primary education and forest engineering students who have and have not been offered instruction on the environment and to investigate their awareness levels toward sustainable development.

Methodology

This research makes use of the case study method and purposive sampling. Case study research allows the exploration and understanding of complex issues. It can be considered as a steady method, particularly when in-depth research is required. One of the reasons for accepting case study as a research method is that researchers were becoming more concerned about the limitations of quantitative methods in providing holistic and in-depth explanations of the social and behavioural problems in question. Through case study methods, a researcher is able to go beyond the quantitative statistical results and understand the behavioural conditions through the actor's perspective. By including both quantitative and qualitative data, case study helps explain both the process and outcome of a phenomenon through complete observation, reconstruction, and analysis of the cases under investigation [6].

The samples of the study are first- and second-year students (N=104) studying in the Primary Education Department of the Education Faculty of Artvin Coruh University, and first- and second-year students (N=74) pursuing their studies in the Forest Engineering Department (N=74) of the Forestry Faculty. The study was conducted in the spring term of the 2011-12 academic year. The Environmental Education course was given to students of both departments during the fall term.

The samples were administered an "Attitude Scale toward Sustainable Environment," which was developed by Yıldız [4] (Table 1). The findings were analyzed with an SPSS 15.00 statistical package. Seventeen of the participants (7 from forest engineering and, 10 from primary education) were interviewed through a semi-structured interview and their ideas toward sustainable development were examined. All of these students were volunteers. The interview questions are enclosed in Table 2.

Findings

The results of the attitude scale and the interviews are given seperately below.

The Findings of the Attitude Scale for Sustainable Environment

The results of the attitude scale for sustainable environment, which was administered to first- and second-year students of the Primary Education Department, were compared to check whether there was a significant difference between the two grades. The results given in Table 3 were obtained by using the t-test in the SPSS program.

There is no statistically significant difference of the order of $p=.230>0.05$ among the scores according to the grades of the primary education students.

The attitude scale also was administered to first- and second-grade students enrolled in the Forest Engineering Program. The t-test was used in the SPSS program to determine differences according to grades. The results are indicated in Table 4.

The table shows that there is a considerable difference of the order of $p=.001<0.05$ between the grades of students studying Forest Engineering.

Table 5 shows the results of the attitude scale administered to second-grade students of each department after application of the t-test.

According to Table 5, there is no substantial difference of the order of $p=.109>0.05$ in the scores of second-grade students studying Primary School Education or Forest Engineering.

The Effect of Gender on Attitude

Of the 104 participants from the Primary Education Department who took part in the study, 31.7% were male and 68.3% female. Of the 74 sample students from the Forest Engineering Department who participated in the study, 62.2% were male and 37.8% female.

The relationship between gender and attitudes toward sustainable development was established for primary school education students after the t-test analysis. The findings are shown in Table 6.

Table 6 indicates that there is no significant difference ($p>0.05$) in the attitudes of the primary education preservice teachers toward sustainable development according to gender.

The relationship between the attitudes of the forest engineering students and the gender factor also has been researched. The results after application of the t-test are shown in Table 7.

Table 1. Attitude scale toward sustainable environment.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The idea of inventing a minimum level of air polluting vehicles excites me.					
2. The idea that harmful gases released to the environment may exceed the carrying capacity of nature scares me.					
3. It scares me to know that the cause of global climate change is increasing atmospheric pollution.					
4. The increasing human population is one of the reasons for lack of water in the future, which worries me.					
5. I prefer less use of pesticides, industrial products, and household cleaners that cause pollution to ensure the continuity of the water for future generations.					
6. Chemicals accumulated in products creates an adverse effect on the food chain.					
7. I'm not interested in the loss of soil in other parts of the world.					
8. It is not necessary to invest in renewable energy sources thinking about the future.					
9. The idea to use these resources carefully in order to ensure the sustainability of energy resources is unnecessary.					
10. To use resources carefully because one day we may run out of fosil energy sources is unnecessary.					
11. The idea that nature cannot renew rapidly consumed resources worries me.					
12. I'd appreciate seeing ads on recycling for a sustainable environment.					
13. I don’t pay attention to the recycling emblem on packaging.					
14. I think schools should give training on recycling.					
15. I prefer to use products in bottles with a deposit.					
16. I would not prefer to use brown, string bag, textile bags instead of using plastic bags.					
17. I don’t pay attention to getting reusable products rather than disposable products.					
18. It is sad enough not to see recycleing around.					
19. Rapidly increasing consumption is a significant obstacle to environmental sustainability.					
20. When we consume more than may giving of nature to us, to think of the future will be affected by this situation is unnecessary.					
21. I would be happy to participate in seminars on consumption habits for sustainability.					
22. The idea of as the human population will run out of resources is unnecessary.					
23. Obstacle to the sustainability of the natural balance of the increase in human population is none of my business.					
24. Things I’ve learned about sustainability to tell my family is a waste of time.					
25. I like it being sustainability is a philosophy of life in order to leave a good environment for our children.					
26. I'd like to reduce the pressure on nature by meeting people's need for raw material store cycling applications					
27. I find it extremely to be told people natural resources are not endless with applied recycling campaigns.					

Table 2. Interview questions.

1. What comes to your mind when you think of ‘sustainable development’?
2. Could you state which of the sustainable development indicators mentioned in the report by the United Nations’ Sustainable Development Commission are related to sustainable development?
The list of indicators: Poverty, governance, health, education, demographics, natural hazards, atmosphere, land, oceans and coasts, freshwater, bio-diversity, economic development, global economic partnership, consumption, and production patterns.

Table 3. A t-test attitude analysis of primary education students toward the sustainable environment according to the class level variable.

Class level	N	x	ss	p
First class	49	110.34	16.05	0.230
Second class	55	113.40	9.16	

Table 4. A t-test attitude analysis of the forest engineering students toward the sustainable environment according to the class level variable

Class level	N	x	ss	p
First class	44	108.77	9.77	0.001
Second class	30	117.16	11.95	

In Table 7, when the t-test results of the forest engineering students' attitudes toward sustainable environment are examined, it can be noted that there is no substantial difference ($p>0.05$) according to gender.

Results of the Semi-Structured Interviews Regarding Sustainable Development

Semi-structured interviews were carried out in order to investigate the awareness level of the primary education and forest engineering students toward sustainable development. The researchers started their interviews asking the question "What comes to your mind when you think of 'sustainable development?" It was found that 88% of the interviewees (N=15) interpreted the term as preserving a cleaner nature or protecting it and the remaining few associated it with economic development.

In the second part of the interview the students were asked to state which of the sustainable development indicators [7] mentioned in the report by the United Nations' Sustainable Development Commission could be linked to sustainable development (refer to Table 2 for the list of indicators). Ninety-four percent of the students (N=16) stated that recycling and re-use of the wastes were related to the term. Eighty-two percent of the participants (N=14) mentioned that unemployment rates, population growth rates, the intensity of energy use, and the production of dangerous waste had an impact on sustainable development. On the other hand, 88% of the interviewees (N=15) did not point out any relationship between sustainable development and the suggested indicators.

Discussion and Conclusion

When the attitude questionnaire results on a sustainable environment are analyzed and the scores of prospective primary school teachers are compared, it can be noted that there is no significant difference among them. When considering the arithmetic means, the very high scores of both grades hold the researchers' attention. One reason that could explain this phenomenon is first-grade primary education students' positive attitude toward sustainable environment before taking environmental education courses.

First-grade prospective forest engineers' arithmetic means are relatively lower than those of the students of the other program. On the other hand, the second-grade students' means rise significantly towards the end of the term, which reflects the gap between the freshmen and sophomores in the department of Forest Engineering. Given that the same faculty member instructed in both programs, it can be concluded that the attitudes of prospective forest engineers improved to a greater extent after taking the related course compared with the primary Education students. This probably stems from the fact that prospective forest engineers take more interdisciplinary courses on the environment. Studies show that, although students have positive attitudes toward a sustainable environment, they do not know how to transfer this attitude into their private lives [8]. Therefore, the high attitude scores of the students at the end of the study do not necessarily mean that the students master the subject at all. Effectively, the interviews reveal that the participants were not able to make connections among sustainable development indicators, which corroborates the view that they regard the issue mainly from one perspective.

This study shows that a difference in the attitudes of prospective students toward a sustainable environment is not statistically valid according to gender, whatever the studies they were pursuing at the time of the survey. Similar

Table 5. A t-test attitude analysis of forest engineering and primary education second-year students toward sustainable environment according to the class level variable.

Program	N	x	ss	p
Primary School Teachers	55	113.40	9.16	0.109
Forest Engineering	30	117.16	11.95	

Table 6. T-test results of the primary education students toward sustainable development according to the gender variable.

Gender	N	x	ss	p
Female	71	113.45	9.39	0.084
Male	33	108.75	18.09	

Table 7. T-test analysis of the forest engineering students toward sustainable development according to the gender variable.

Gender	N	x	ss	p
Female	30	112.92	11.70	0.661
Male	44	111.71	11.34	

findings in previous studies have confirmed the same trend [9-11]. The concept of a sustainable environment is a universal issue which interests all humanity. Thus, it is an acceptable result that the attitude does not change according to gender.

The results of the interviews indicate that the participants view sustainable development from an environmental perspective only.

Turer [20] has pointed out that when ranking the awareness of prospective teachers in the departments of Social Science Teaching and Science Teaching regarding the dimensions of sustainable development, the social dimension comes first, the environmental dimension second, and the economic dimension third. While all prospective forest engineers stress the environmental dimensions of the topic, it is worth noting that the two participants who mentioned the economic dimension were from the Department of Primary Education. The authors think that the program the prospective forest engineers study has an impact on these results. Türer's study [20] has proved that there is no significant difference in the sustainable development awareness of prospective teachers according to their departments in terms of social, environmental, and economic dimensions.

The literature has demonstrated that in spite of students' positive attitude towards a sustainable environment, they do not know how to transfer this attitude into their private lives [8]. Therefore, the high attitude scores of the students at the end of this survey should not be interpreted as an indicator of students' knowledge of the subject.

The results of this study show that, in order to make individuals adopt sustainability as a life philosophy, interdisciplinary cooperation is needed and this cooperation should be included in the curriculum of different fields of study [12-14]. Our educational system should be revised and updated within the framework of sustainable cultural values. Regarding sustainable development, there is a need for effective national and international projects that would raise awareness in society.

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