

Sustainable Development Training Oriented Thoughts and Applications of Geography Teachers

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ABSTRACT This study dwelled on sustainable development training oriented studies of geography teachers, and the problems they encounter about this subject. The research has an action research pattern as a part of qualitative research method. Tests subject of the research consisted of seventeen geography teachers, who worked in Gaziantep. The data obtained through the interview were evaluated with descriptive analysis method. According to the findings, which were obtained as a result of the research, all of the teachers were like-minded about the necessity of the sustainable development training. A large part of teachers found the sustainable development training study books insufficient. Differences of experience and knowledge of the teachers led them to give place to different applications about making their students gain skills for the sustainable development training. Also it was aimed to reach the problems encountered in improvement of the sustainable development training oriented skills.

INTRODUCTION

Mankind, finding himself in an environment and interacting with it since the very beginning of his birth, has not only formed that environment according to his own needs but also been affected by the conditions imposed by that surrounding environment. The changing needs as a result of the developing technology day by day has been resulting in an increasing interference of human being to the environment causing harmful effects.

Environmental problems became one of the most important subjects of humanity by the end of 20th century. Although many countries had applied some laws to prevent environmental pollution, unfortunately, the world itself had not realized that it was about to face an environmental crisis until the beginning of 1970s. Environmental problems had been felt as an increasing pressure especially since 1970s just before Stockholm Conference held in 1972. Erosion has been threatening the habitat of natural creatures and human health as a result of the air pollution in our big cities, the increasing pollution in our shores and domestic water sources, turning of the qualitative agricultural lands into industry and resorts, the diverse effects of plant protecting chemicals, the destruction of green lands (Soran et al. 2000; Erdogan et al. 2011). Upon realizing the fact that the result of any harmful effect to the environment can or of course affect the rest of the whole world, it has led to taking of important precautions, and as a result, sustain-

ability has come to agenda recently. As the word itself suggests sustainability includes development. However, it does not necessarily mean stability or growing up, or protection or change. The term suggests the importance of sustainable usage developments of all systems in global living environments, and thus determining some criteria henceforth, maintenance the sustainability (Rost 2002).

The term sustainability was first used by Georg Ludwig Haritg in 18th century as a political and economic term. The term was describes as "the sustainable usage of sources" by The Summit of United Nations on Environment held in Rio de Janeiro in 1992 (Brinkman 2006). By the given description it was pointed out that a number serious problems occur when unsustainable natural sources lessen. During that meeting held in Rio De Janeiro 180 countries declared the term sustainability as a world model upon signing "The Action Plan for 21st century" and "and "Agenda 21" (Stoltenberg and Adomssent 2004). Sustainable development is the method of increasing the economic growth and wealth, the realization and protection of environment and all humanity living conditions. Thanks to the finite world sources, providing the sustainability in terms of economical development requires sensible consumption of those sources. As for the social development, sustainability means the transformation of mere consuming societies to the ones sensitive to the environment and thus consuming the sources accordingly. Sustainability, as for the protection of environment, may

indicate behaving in a most appropriate way keeping the environment naturally while interacting with it and take part in environmentally regaining activities saving the ecological environment damaged by human misusages (Yavuz 2010).

UNESCO is quite willing to use the term sustainability in almost all areas, to improve the quality of education increasingly and renovate the already existing sustainability programs by revising them (Linder 2007). As for the acquisition of sustainability competence there come three functions (Kaufmann-Holz et al. 2007):

- ♦ The use of cultural techniques for sustainable development: The cultural techniques such as writing and reading skills are prerequisites to ensure peoples involvement in the process of sustainable development.
- ♦ The precautions towards achieving determined targets to ensure sustainable development: In order to achieve the determined targets on sustainable development, education can be used as a means to enable certain parts of population acquire some desired knowledge and ability.
- ♦ Special competences for sustainable development: Thanks to the education it is possible to make the individuals internalize the term sustainability and thus to achieve the pre-determined targets, to acquire individuals with the need and conscious of sustainable development, and ensure their involvement for the sustainable development.

While evaluating the literature review on sustainable development training in Turkey, it is stated that the students in Turkey have positive attitudes towards the term but unfortunately have lack of practical abilities (Gurbuz et al. 2007; Erdogan and Ok 2008; Sahin et al. 2009; Aydin 2010; Kisoglu et al. 2010;).

Teachers' opinions and applications are some of vital and effective variables in providing sustainable development training. Considering this fact, in the current study is aimed to analyze the thoughts and applications of geography teachers on sustainable development training.

The Purpose of the Study

The purpose of the present study is to analyze the teachers' views about how the applica-

tions on sustainable development training are carried out in Geography classes in high schools. For the purpose of sustainable development training in Geography classes, teachers' background knowledge and experiences and accordingly their applications have a crucial importance. Thus, in our study we investigate such elements that how the Geography teachers carry out their studies, what methods and techniques they use to enrich their application about sustainable development training.

MATERIAL AND METHODS

The present study has an action research pattern as a part of qualitative research method. The action research means presenting a situation, event or phenomenon within the framework of their own lives (Yildirim and Simsek 2006). The data were obtained through the interviews. The interview technique is one of data collection tools searching out what individuals think and why, what emotions, attitudes and feeling they have, what factors lead them behave in certain directions etc. (Ekiz 2009). The obtained data were encoded and interpreted in compliance with content analysis. During the content analysis, similar data are put together according to certain terms and themes, and they are interpreted in a way so that a reader can understand (Yildirim and Simsek 2006).

The Characteristics of the Study Population

Because of the fact that the qualitative methods are used in the current study, the 17 member populations were selected randomly. The sample group of the research consisted of 17 Geography teachers currently interviewed through the study. The teachers in the sample group have different professional experience. Out of the interviewed teachers, 5 have more than 20, 8 of them 15-20, 3 have 10-15 and the remaining one has 5-10 year experience. The interview is said to be more effective if the group leader Geography classes in those schools are consulted. The interviewed group of the study consisted of 13 males and 4 females.

Certain appointments were made before the interview with the teachers.

Data Collection

Firstly, using a semi-structured interview questionnaire a pilot scheme was conducted by

interviewing 4 teachers. The required changes were done on the questionnaire and the questions were restructured after evaluating obtained data from that pilot scheme. The number of the questions was decided to be 11 which were 7 beforehand to the interview. Prior to the interview all of the teachers in the sample group were informed about "Sustainable Development Training" and a two paged study paper "What is Sustainable Development Training?" prepared by the researcher was sent out to them. Thus, it was aimed to obtain valid and reliable data throughout the interview process. At the end of the interview different opinions about the subject were stated as well and as it was intended to get much more data as possible, the interview phases were tackled long enough. The most appropriate time for the interview was pursued that the teachers could spare the desired time and give sincere answers to the questions.

Identification of the Data

The data obtained through the interview with the teachers were coded as written forms. Certain sub-categories were derived from those codes. In the qualitative data analysis stage, for the validity and reliability studies two interview samples were selected randomly and they were read and coded by the experts. Later, the codes formed concerning these samples were compared and inconsistent codes were taken out from the study.

RESULTS

Point of Views

The Necessity of Sustainable Development Training

According to the findings obtained through the research, all of the teachers are like-minded about the necessity of the sustainable development training. It is significantly interesting that all of the teachers gave the same answer to the question "Why is the sustainable development training necessary?" All of them share the point of view that the sustainable development training can contribute to the transition of the natural environment without getting any harm to the next generations.

The teachers stated the following comments about the sustainable development training:

"It is possible to bring up students as more conscious individuals towards the nature and thus to transfer the natural environment to the next generations by sustainable development training." (7 interviewees)

"We witnessed an irresponsible intervention to the environment with the increased industrialization in the last century. Keeping this fact in mind, in educational institutions where especially next generations are grown up, it is quite important to bring up individuals that are conscious towards the nature." (3 interviewees)

"It can help us comprehend the fact that giving harm to the environment is indeed the harm the humanity gives to itself." (3 interviewees)

"The thought that our children and grandchildren have rights on the environment can be acquired by sustainable development training." (2 interviewees)

"The essence that nature needs a long time to renew itself and thus we ought to behave in a responsible way to the environment is possible to be acquired by sustainable development training, as well." (2 interviewees)

Bearing in mind these facts, sustainable development training is an utmost necessity to guarantee the protection and transition of the environment to the next generations healthily.

Applications

The fact that the interviewed teachers share the same opinions about sustainable development training, bring their studies about acquiring the students with the required abilities on sustainable development training into the forefront.

The teachers' views on applications are given as sub-headings below:

Kinds of Activities

All of the teachers in the study group think that certain activities are quite important in the process of providing the students with the abilities concerning sustainable development training. It is significantly remarkable that the teachers gave different answers to the question: "What kind of activities are you carrying out

about sustainable development training?" 8 of the teachers stated that in addition to the classroom applications, they organize a number of extracurricular environmental; 7 teachers affirmed that they make certain explanations while handling these subjects, and finally 2 of them confirmed that they carry out the activities suggested by the course book, but that they especially choose environmentally ones as for homework.

The teachers who give extracurricular environmental activities in addition to the classroom applications stated that:

"Depending on the nature of the subject, I want the students especially to search the topic outside the classroom and share their views in the classroom." (2 interviewees)

"I bring authentic materials derived from newspapers and magazines to the classroom and share them with my students. I want the students to present their views on the topic." (2 interviewees)

"I want my students to realize different points of views on the subject via using some techniques such as brainstorming and question-answer." (2 interviewees)

"I aim to ascertain their caution by hanging notice papers on the screen boards in every classroom." (1 interviewee)

"Because of the fact that 9th classes have lack of enough time and 12th classes prepare for the university entrance exam, I can only form two groups in 10th and 11th classes at least once a month. I hold the opinion of enabling the students to come up with and discuss different views on the topics that I give as research subjects such wind energy, nuclear energy, dams, geothermal energy etc." (1 interviewee)

The points of view of the teachers stating that they make certain explanations while tackling the subjects:

"When studying on the subjects related to environment, I make certain explanations concerning the authentic topics such as the importance of protection of the surrounding nature and its transition to next generations, the undesired results of the intensive human intervention to the environment, and global warming and its inevitable consequences." (4 interviewees)

"I try to draw my students' attention by giving examples from authentic subjects during the classes." (3 interviewees)

The views of the teachers giving especially environment related research topics as homework in addition to the activities suggested by the course books:

"As for project papers, I pay attention to give environment related topics." (2 interviewees)

It can be inferred from the studies and explanations of the teachers that they are more concerned about environment. Thus, considering the fact that the sustainable development training is much more comprehensive than that of environment, it is not difficult to say that their studies about the subject are not enough.

The Use of Technology

All of the teachers shared the opinion that in sustainable development training technology has a vital importance. While 7 of them stated that they use technology, the other remaining 10 teachers share the view that they do not make use of it adequately while answering the question "To what extent do you use technology in sustainable development training?"

The teachers using technology in their classes had the following views:

"I share a great number of visual and written materials which I derived from a shared website used by my colleagues with my students during the classes." (3 interviewees)

"I share a number of visuals related to the topic with my students as power point slides in the classroom." (3 interviewees)

"Thanks to the internet, I have been sharing authentic materials such as photos, magazines, newspapers related to the subject in the classroom." (2 interviewees)

The views of the teacher stating not having made use of technology precisely:

"Because of the technologically poor classrooms, we teach Geography in normal classrooms. That tragic fact finds us from using technology in our classes." (4 interviewees)

"I cannot take the advantage of using the internet and computer laboratory having internet connectivity in our school when I want, as they are limited in numbers." (4 interviewees)

"The fact that I have lack of enough information and ability about computer hinders me from using technology in the classes." (2 interviewees)

It is a favorable and desired step in the teaching of Geography that a number of Geography teachers communicate with their colleagues via technology and share their documents with them and use these findings in the classes. However, it is a remarkable fact that the teachers cannot take the advantage of using technology because of some drawbacks resulted from the poor facilities of our schools and that of a great many of poorly computerized teachers.

The Applications of Water for Sustainable Development

All of the teachers agree with the idea that grasping the sustainable use of water is significantly important in teaching sustainable development. As for the related topic, the teachers mainly commented on the economically usage of water and on the fact that the pollution of fresh waters causes inevitable environmental problems.

The views of the teachers on the related subject were as follow:

"I make certain explanations about using water more carefully by giving the case in the countries having problems with water famine and by trying to draw their attention to the necessity of not having such problems in our own country." (4 interviewees)

"Upon giving water resulted problems and the related precautions taken in our big cities recently I make explanations on the fact that it is quite important to use our water sources more carefully." (4 interviewees)

"On the related topics, by drawing their attention to the importance of water cycle for life, the scarcity of fresh water sources, the contamination of waters and their harmful effects resulting from human activities on the habitat, I state that it is pretty important to use water economically to have a more comfortable and relaxing environment both for us and the next generations." (4 interviewees)

"I make explanations about the fact that because of some factors, while freshwater sources are decreasing, the population is increasing steadily and thus we should be more careful in consuming water." (3 interviewees)

"When studying on water circulation, I state that there has not been a change in the total amount of water around the world, but that fresh water has decreased and that situation

has hazardous effects on living creatures." (1 interviewees)

"I make statements during the classes that especially by individual savings in water consumption and by derivation from the entire population in the city about that saving, how serious figures are achieved and that they should be more careful and conscious about these facts." (1 interviewee)

The Applications about Use of Sustainable Energy

All of the teachers in the research group agreed with the idea that the use of sustainable energy is significantly important in sustainable development training. To clarify the significance of the subject, the teachers in general contrasted the finite energy sources with those of renewable.

The views of the teachers on the related subject were as follow:

"I state that the finite energy sources are finite as the name suggests and thus the use of alternative sources is remarkably important." (7 interviewees)

"When studying related topics, I make certain explanations on what facts we should be careful about." (4 interviewees)

"I make statements about the fact that we should be more careful about energy consumption by referring the energy sources of our country and energy related problems we face." (3 interviewees)

"Upon clarifying the relationship between the development level of countries and the energy consumption, I make explanations about the problems awaiting us in the future and how important is to use renewable or infinite energy sources." (2 interviewees)

"I state that the implementation of summer and winter time is regulated to save energy and draw their attention to the importance of consuming energy economically." (1 interviewee)

The Applications about Sustainable Soil Use

The teachers stated that consciously use of land is quite important in sustainable development training. In respect to the subject matter, while 12 teachers drew attention to the causes, results and solution suggestions for erosion;

the comprehension of factors affecting soil formation and the difference between physical disintegration and chemical decomposition, 5 of them stated that they make explanations about land types.

The views of teachers who draw attention to the causes, results and solution suggestions for erosion; the comprehension of factors affecting soil formation and the difference between physical disintegration and chemical decomposition were as follow:

"I explain the fact that a great deal of fertilized land relocates as a result of erosion in Turkey and express the precautions to be taken on the subject matter." (6 interviewees)

"By giving physical disintegration and chemical decomposition as examples, I explain that soil formation requires a long period and due to erosion especially the upper layer of fertilized soil relocates very quickly." (4 interviewees)

"To draw their attention to the destruction of erosion, I explain that soil formation requires a long time period." (2 interviewees)

The views of the teachers making statements on soil types are:

"Giving soil types as examples, I explain that the excessive fertilizing causes soil pollution while the excessive watering causes laterization of it." (3 interviewees)

"I make statements about the formation of acid rains and explain how they cause soil pollution." (2 interviewees)

The Applications about the Importance of Biological Diversity for Sustainable Development

All of the teachers in the research group indicated that it is important to develop positive behaviors towards biological diversity for sustainable development training. 8 of the teachers in the research group indicated that they explain the significance of biological diversity in the subject matter of ecosystem, 5 stated that they make correlations between the related topics, the remaining 4 teachers said that they clarify the subject to comprehend the results of man intervention to the environment especially under the heading of "Environment and Society."

The teachers explaining the significance of biological diversity in the subject matter of ecosystem stated the following ideas:

"When discussing the issues of ecosystem, I explain altogether how a degradation in one of the rings in ecosystem affects the others and the harmful results of this matter on biological diversity." (5 interviewees)

"I explain the functioning of ecosystem by giving example of the places where biological diversity is more." (1 interviewees)

"After describing the elements of the ecosystem, I try to make the subject more concrete by giving biological diversity as an example." (2 interviewees)

The views of the teachers who make correlations with biological diversity while discussing the related topics were as:

"I talk about the biological diversity when discussing the topics such as the distribution of living creatures on the earth, different types of environment use, climate conditions and different habitats." (3 interviewees)

"When discussing the climate ranges, by mentioning the biological diversity seen there, I emphasize the importance of the subject matter." (2 interviewees)

The views of the teachers who discuss the biological diversity under the heading of "Environment and Society" are as follows:

"Under the heading of "Environment and Society, I mainly discuss the harmful intervention of mankind to nature and as a result by mentioning the change in certain habitats, I explain how the biological diversity is affected negatively." (3 interviewees)

"Discussing the factors diminishing the biological diversity, I try to make the subject be comprehended by relating these factors to their harmful effects for human life." (1 interviewee)

The Applications about the Importance of Chemical Use for Sustainable Development

The teachers stated that consciously use of chemicals is quite important in sustainable development training. They stated that according to the characteristics of the topics they explain the chemicals slightly.

"I point out the effects of the chemicals when discussing the factors affecting global warming and making statements about air pollution." (5 interviewees)

"Upon discussing the petroleum under the topic of finite energy sources, I represent the side products of petroleum and the pollution emerged." (4 interviewees)

"I make brief explanations about the chemicals especially when discussing the reasons of ozone layer depletion." (4 interviewees)

"When discussing the subject matter of environmental problems, I state that the DDT used in equatorial regions is seen in the frame of creatures living in the poles; in addition, I make statements about the chemicals by mentioning the biological accumulation in the body under the heading of substance cycle." (4 interviewees)

The fact that the teachers explained the chemical use by referring them to the related topics was significantly remarkable.

The Applications about the Importance of Climate Change for Sustainable Development

All of the teachers in the research group pointed out that as for the sustainable development training, it is quite important to give information about the factors affecting the climate change. Out of 17 teachers in the research group, 4 teachers stated that they give information when discussing the climate issues, 3 of them said when they discuss the pole climate, while 6 teachers pointed out that when they study on the natural disasters issues, the remaining 3 indicated that they give information when explaining the immigrations.

The teachers' views were as:

"I make statements about global warming and the change as a result when discussing the climatic zones." (4 interviewees)

"Under the issue of pole climate, I give information about climate change when I discuss glacier melting and the underlying factors." (3 interviewees)

"I make statements about global warming when discussing the issues under the heading of natural disasters." (6 interviewees)

"When discussing the issues related to immigration, I draw attention to the immigrations taken place due to the global warming." (3 interviewees)

Realizing their views about the subject matter, it is remarkable that they give information about climate change under various headings.

The Difficulties Encountered

The teachers presented the difficulties they encountered in relation with different areas. The areas can be presented as:

Time

The teachers stated that they have a time problem because of the insufficient weekly class periods for 9th grades, and the amount of absentee for 12th grades due to the university entrance exam, on the other hand they pointed out that they have not any time related problems in 10th and 11th grades.

The Student

The teachers stated the following views about the student- related problems.

"Their backgrounds are too bad and they have learning difficulties." (12 interviewees)

"The students are indifferent to the classes." (5 interviewees)

The Class Size

Out of 17, 14 teachers stated the fact that classroom sizes are over 30 have negative effects on learning.

The School

The interviewed 13 teachers share the opinion that the school environment is insufficient in sustainable development training.

The Textbooks

The teachers were interviewed about whether the main texts and apart from these texts whether the activities given under various headings are sufficient or not in sustainable development training.

They indicated that the textbooks include issues related to the environment, but they are insufficient about activities related to sustainable development training.

The Perceptions about Success

While 13 teachers in the study group stated that they do not do any activities about sustainable development training due to their insufficient knowledge on the subject matter, but by its very nature the manner of handling the issues contribute to sustainable development training in Geography classes, the remaining 4 teachers expressed their views as they find themselves successful in the subject.

The teachers' views were as follows:

"I do not do a study specifically about sustainable development training. However, I think the handling of certain issues contribute to the subject matter." (6 interviewees)

"I do not have a detailed knowledge about sustainable development training. Nonetheless I believe that the activities carried out during the classes contribute to sustainable development training." (5 interviewees)

"Although not necessarily directly, I think the handling of the issues contribute to the sustainable development indirectly." (2 interviewees)

The views of the teachers finding themselves successful in the subject are:

"Geography itself, by the very nature of its subject matter contributes to sustainable development training." (2 interviewees)

DISCUSSION

The sustainable development training includes the consciously use of current sources so as to guarantee the future of the world. The sole way of internalizing sustainable development rather than a mere effort is to bring up individuals believing the sustainable development phenomena and accepting it as their life philosophy (Yapici 2003). At the end of the sustainable development training, the students ought to acquire some abilities such as reconciliation, noticing and planning the relationships, solidarity, motivation and critical thinking (Haan and Harenberg 1999).

The sustainable development training has three goals: Proving the acquisition of environmental knowledge, acquiring positive attitudes towards environment, and enabling environmentally friendly behavioral change (Rieß 2009). From this point of view, we can assume that in order sustainable development training to achieve its goals a number of stages should take place. Realizing the fact that every one of our interventions to the environment can affect the individuals in any parts of the world or the next generations is the first stage of sustainable development training. The motivation of individuals accordingly forms the second stage while the desired behavioral change is the third one. The first stage, namely the students to be acquit with the subject matter can be succeeded by environmental education. Notwithstanding the

acquisition of the abilities in the second and third stages can only be possible via sustainable development training. Thus, we can claim that the planning towards sustainable development training can attain positive results inasmuch as it is prepared according to those three stages.

CONCLUSION

Taking the teachers' views as the starting point, we can claim that the teachers of Geography do not have enough equipment as for the stage where sustainable development training reach its goals and that they accept sustainable development training as a mere fact as environmental training. However, the sustainable development training is much more comprehensive than that of environment.

RECOMMENDATIONS

- It can be claimed that an in-service training for the teachers on some issues such as how to implement and carry out activities, what are the goals and contents of sustainable development training, how to implement the planning to achieve these goals, how to develop education process, how to use the school facilities effectively and how to implement technology in accordance with the goals of sustainable development training, can be quite beneficial.
- From the point of view that using technology in the classroom will contribute to the learning and teaching process, we can state that in addition to some regulations in the school such as donating the school and classrooms with modern technologies and textbooks can contribute sustainable development training.
- In Geography classes, there is a time problem in both 9th and 12th grades because, in 9th grade the content is too heavy to be finished with the number of the courses per week and in 12th grade the students study for the university exams. In order to address these problems, the number of Geography courses per week can be increased for the 9th grades and the course contents can be mitigated for the 12th grades.

- ♦ The workload of Geography teachers can be reduced by enabling teachers of all branches be more sensitive about sustainable development training.
- ♦ Some other activities such as enlightening the students about the organizations and activities contributing to sustainable development training, making statements about these organizations and activities when discussing the related issues in textbooks during the classes and inviting the staff of those groups who can give information about their own studies can produce good results

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