



AN INVESTIGATION OF THE VIEWS ON THE LAKE OF THE TEACHERS WHO WORK IN THE VICINITIES OF LAKE AVLAN, TURKEY

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Abstract:

Several problems such as the deterioration in water regime, climate's getting harsh, desertification and the decrease in agricultural productivity have been experienced in and around Lake Avlan which was dried in 1970's entirely for the purpose of opening new cultivation areas. Upon the deterioration, the gates of the regulators were closed by the Ministry of Environment upon the written demand from almost 3000 people from the vicinity by the organization of a mayor and 37 village headmen. Lake Avlan is the first wetland on which a decision of restoration has been taken upon the demand from the people in the vicinity, including the villagers who were given a piece of land from the lake. When the things experienced with the case are taken into consideration, it is observed that the perception of education on environment has changed and the importance of education on environment increased. The education for environment is aimed to raise individuals who are aware of local, regional, national and global problems; who approach these problems with concern and sensitivity; who spend effort voluntarily for the resolution of such problems; and those whose ecological culture, environmental moral and environmental consciousness is high (Atasoy&Ertürk, 2008). The aim of this study is to identify the views of the teachers who work in the schools in the vicinity of Lake Avlan on the lake. The participants of the study are 14 teachers as 9 males and 5 females. The study was designed as a case study, which is one of the methods of

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qualitative research. The data used in the study were collected by giving interviews to the teachers and were analyzed using content analysis technique. The findings revealed that the teachers rendered superficial information on the social and socioeconomic structure of the Lake Avlan; that they bear confusing ideas about the physical form of the lake and that the information they provide is not sufficient. They all share the idea that Lake Avlan has not been preserved and based upon each participant's explanations, the study reached the same conclusion.

Keywords: lake Avlan, environmental awareness, ecosystem, biological richness

1. Introduction

One of the best ways of having individuals gain a positive point of view towards environment, environmental awareness and a friendly attitude towards environment is education. Teachers, who are the implementers of education, bear a very crucial role in this implementation. Thus the views of teachers, who are to implement education related, on environment is vital. Educators constitute the most important one of the components which guide us in the regulation of our relations with environment at every stage of our lives.

2. Literature Review

All living or nonliving entities which exist within the environment where human beings live maintain their existence in a mutual interaction. The places where living creatures interact and lead their lives are called *habitats*. Along with this definition, Cansaran and Yıldırım (2017) define the term *habitat* as the place where an organism or a population lives naturally. *Habitat* was defined by Oruç, Mert and Ozdemir (2017) as a natural living area, which has its own unique features and where a living being lives naturally, maintains its development and reproduces of springs.

After making what habitat is clear, it must be stated that the negative interaction between the habitat and its components harms the whole habitat. Baş (2011) states that we should be aware of the fact that the environmental diversity in Turkey is very important among other cultural riches of the world and we should also be aware of the responsibility of accommodating this diversity on our shoulders. Baş (2011) maintains that every destroyed or contaminated part of environment brings forth the problem of the destruction of cultural history to an irreversible extent and the deletion of some parts of the world history.

While the fast development in science and technology in today's world has improved the living standards of individuals, it has also been causing the extinction or transformation of many things within the environment of those individuals. Taking the possibility that human life may come to an end on earth if the environmental problems are not solved by human beings into consideration, it is essential that both individuals

and the state take an action to undertake the responsibility (Yılmaz, Morgil, Aktuğ and Göbekli, 2002).

The attitude and value judgment constructed during childhood and youth are very crucial in, the development of empathy and love of nature which emerge as a result of interaction with nature at early ages (Erten, 2004). Attitude is an emotional or physical change developed by an individual in relation with a specific object, action or case and attitude is not innate; instead attitude is learned and can be transformed (Bozkurt, 2011).

Being knowledgeable about environment is helpful in the acquisition of basic terms about environment, in understanding the relationship between environment and human beings and in the understanding of how environmental problems can be solved (Öztürk, 2013).

According to Davis (1998), environmental education is not an academic lesson but it is a kind of education which shapes the attitude of an individual towards environment positively and as a result, which causes environmental-friendly behaviours to emerge.

Environmental education aims to transform individuals into a person who is informed about local, regional, national and global problems, who approaches these problems sensitively and with concern, who struggles voluntarily for the solution of these problems and who has a high level of ecological culture, ecological moral and awareness (Atasoy & Ertürk, 2008, s.105). Güven, Yurdatapan, Benzer and Şahin (2013) stated that teachers are in a position to be a role model for students; that the students would adopt the attitudes of the teachers towards environment as their own and that the teachers' behaviours related with environment is very important. When taken into consideration from this point of view, the idea which states that teachers' beliefs about and views towards close environment has great influence on students' sensitivity towards environment gains importance. It is thought that teachers' beliefs and behaviours related with environment would have an effect on environmental education, and thus investigation of teachers' environmental identity and their point of view of environment is significant (Tanık, 2012).

2.1 Lake Avlan

Lake Avlan, the subject of our research, is a wetland covering a 10000 hectar of area, which has a karstic structure; is surrounded by juniper, red pine and cedar woodlands, which has a very rich species diversity regarding the components of flora and fauna and thus has a nationwide significance. Based upon the report issued by the geologist Dr. Hans Stark in 1951, The Branch Directorate of Waterworks under the authority of The Ministry of Public Works of the time designed a proposal of drying Lake Elmalı Avlan in 1957. By reference to this proposal, The General Directorate of State Waterworks passed a decision for the drying of Lake Avlan within "Karagöl-Avlan Project of the Overflowing Facilities Planning Report" in 1970.

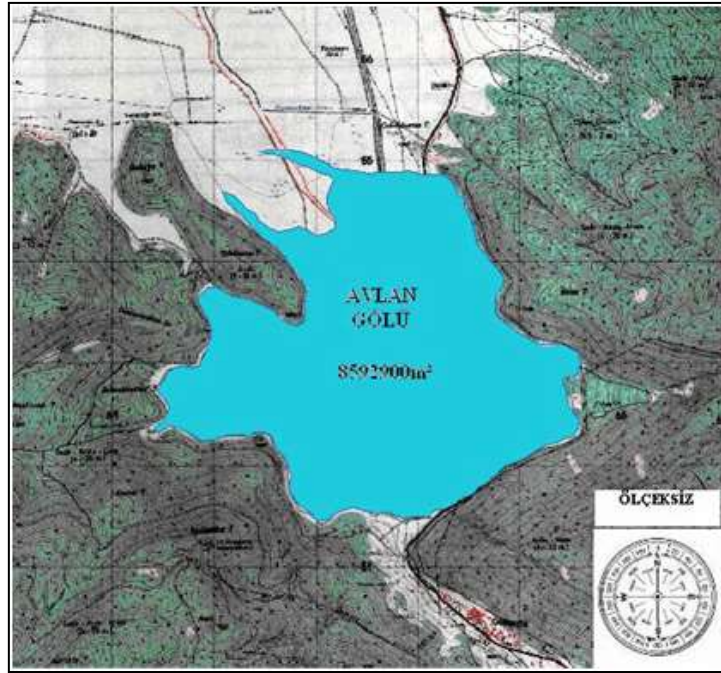


Figure 1: The surface area of Lake Avlan in 1968 (Timur, 2007)

With the drying of the lakes in Elmalı Plain, which takes place in a transitional location between Mediterranean and continental climate, changes on behalf of continental climate have been experienced; summers got hotter, winters got colder and precipitation decreased. Especially, the dew and fog observed in spring and winter times were not observed after the lakes dried and as a result, frost emerged during the blooming period of apple trees. Thousands of apple trees whose yield decreased were cut down. The drying of the lake did not influence only apple trees negatively but it also caused a decrease in the yield of other agricultural crops in the area. While it was possible to get the underground water from the depth of only 5 or 6 meters, it was not possible even from 70 or 80 meters after the lake had been dried which caused the soil to get arid. As a result of the aridity, the soil had deep cracks and was impossible to irrigate. The drying of Lake Avlan caused Başgöz Stream to dry totally and the brooks of Aykırı and Badız to have only half of the water they used to hold.

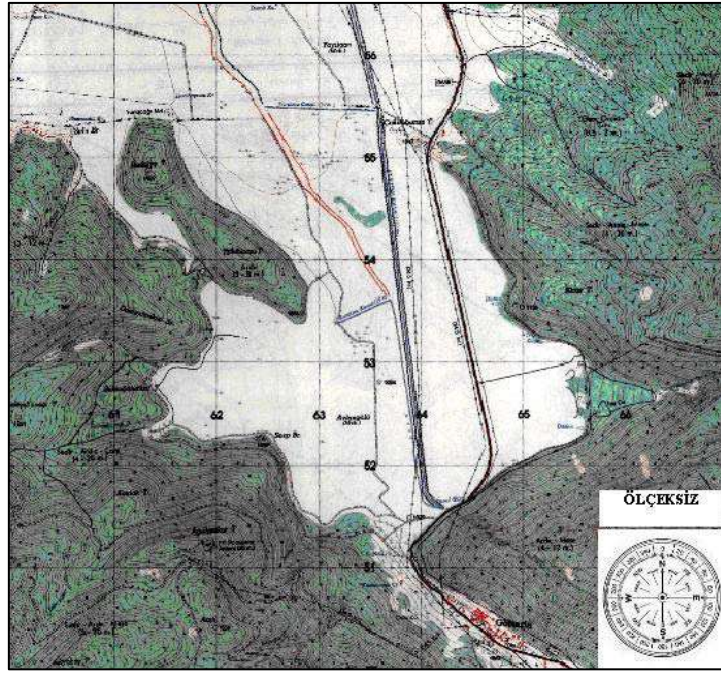


Figure 2: The surface area of Lake Avlan in 1995 (Timur, 2007)

The cedar trees in the forests surrounding Elmalı Plain got their share from the drying of the lake and with the leave of birds from the plain, the population of the pest *Aclerisundulana*Wlsgm. which is known as cedar louse among the local people increased too much and finally the cedar trees began to dry. After all of these damaging effects had been experienced, it was decided that the gates on the canals which discharged water from the lake were closed in 2001 and the lake began to accumulate water again.

Lake Avlan has fought with many damaging factors for years and today it is in the process of recovery. A positive change in the view towards environment and future generations' leading an environmental friendly life has proved its importance. The regulation and improvement of our relationship with environment depends on the education of the growing generation. The teachers', who are raising our future generations, transferring the knowledge they have about the characteristics of the area they work to their students, and their guiding the students about what sort of an attitude they should develop towards environment is a very strong factor in leaving the future generation a more habitable environment. In order to do this, teachers must bear the responsibility of knowing and understanding the features of their environment and then transferring that knowledge to their students. Alım (2006) stated that individuals must be given an awareness and responsibility of environment starting at very early ages and that it is possible through effective and efficient education, especially environmental education. Gül, Çobanoğlu, Aydoğmuş and Türk (2018) also proposed that environmental education is the most important solution in the prevention of damaging activities in nature and the problems emerging as a result of these activities. They maintained that individuals must take place in educational activities as a qualified person and within a plan.

Teachers' being aware of positive or negative environmental changes happening by the interference of human beings is very important for environmental education. Thus it is thought that the investigation of the views of the teachers who work in the vicinity of Lake Avlan on the lake, which is the subject of this case study, will contribute to the development of a positive view of environment and sensitivity in children living in this region.

3. Material and Methods

3.1 Research Model

This study which aims to identify the views of the teachers who work in the vicinity of Lake Avlan on the lakewas designed as a case study which is one of the qualitative research methods. A case study is the organization of a set of data in order to see a social reality (Bestt & Kahn, 2017). A case study is a method which investigates a phenomenon within its unique real life context; and where the borderline between the phenomenon and the content in which it exists is not so clear cut; and in the conditions when there are more than one piece of evidence or data (Yıldırım & Şimşek, 2011, p.277). In this study, the case study model was chosen to investigate the views of the teachers who work in the vicinity of Lake Avlan on the lake.

3.2 Participants

The primary school teachers, science teachers, social sciences teachers who work in the surrounding area of Lake Avlanwhich is located in the territory of Elmalı town of Antalya province were chosen as the participants of this study because the subject areas of these teachers are the closest to the subject of environment. Along with this, 14 teachers, whom we thought they can provide more qualified information to future generations related with the issue were interviewed. Four schools located around Lake Avlan, which is within the territory of Elmalı, were identified by searching the relevant schools on the official website of The Provincial Directorate of National Education of Antalya province and necessary attention was paid to choose the closest villages to Lake Avlan with the idea that the awareness of the lake in these schools must be stronger. Then the schools were visited after this identification. Six of the teachers were female while 8 of them were male. Ten of the teachers were primary school teachers, 3 of them were science teachers and 1 of them was social sciences teacher. Three of the teachers were working for 5 years, 3 of them for 4 years, 1 of them for 3 years, 3 of them for 2 years and 4 of them were working there for less than a year. Eleven of these teachers inhabit in Elmalı, the town which accommodates Lake Avlan in its territory.

3.3 The Design of the Data Collection Tool

As the data collection tool, an interview form was designed. Alternative questions were prepared beforehand to ask to the teachers during the interview and the alternative questions were directed when an extra explanation is required. In order to have an insight

into the thoughts of the teachers, semi-structured interview was used. The interview questions were designed as semi-structured ones in order to elicit the views of the teachers on Lake Avlan and to elicit more detailed views, in-depth questions were used. The question pool to be used for data collection was built by consulting one environmental education expert, two science teaching experts and one educational sciences expert. The questions written were revised with reference to the research questions of the study. Some of the questions were chosen from the pool by consulting experts' views and the chosen questions were also reviewed by a language expert according to the form we designed in order to maximize the understandability of the questions.

The interviews with the teachers were conducted in the rooms of the principal of the school where they were working. They lasted averagely 20-30 minutes. Prior to the interviews, the introductory part was read to each teacher and the teacher's willingness to continue the interview was asked explicitly. The interviews were conducted with the teachers who were willing to continue the interview. While the findings were being presented, the nickname given to each participant was used. Utmost attention was paid to preserve the identity of the participants anonymous.

The questions used during the interviews were supported using in-depth and alternative questions. The questions in the interview form, which are directed to the teachers were as follows.

- What do you know about Lake Avlan?
- Do you think that Lake Avlan has preserved its nature up to date?
- How did you learn the knowledge you have about Lake Avlan?
- What do you think about the impact of Lake Avlan on nature or environment?
- What do you think about the factors from nature and environment which affect Lake Avlan?
- What can be done to protect Lake Avlan?
- Have you conducted any activities related with Lake Avlan or what kind of an activity would you plan if you did?

3.4 Data Processing and Analysis

The data were processed using content analysis. In the content analysis, the qualitative research data collected through an interview, observation, or documents analyzed at four stages: data coding, identification of the themes, the organization of the codes and themes, description and interpretation of the findings (Yıldırım & Şimşek, 2008: 228-239).

A. Data Coding

While analyzing the data collected during the research, the audio recorded data were transcribed. The information obtained was analyzed, it was dissected into meaningful chunks and the meaning it bore was identified. During the coding, sometimes a word and sometimes a sentence or a paragraph was used.

B. The Identification of the Themes

The codes were analyzed in order to categorize them. After the the identification of the similarities and differences among the codes, the themes which allowed us to place the codes which have common features under a title. Again, the codes which have been classified according to certain features were placed under the same themes.

C. The Description of the Data

After the coding at the first stage of processing and classifying the data under certain themes at the second, a system was established in order to describe the data, to make them understandable and to decorate the data with numerical quality. The frequency calculations were used in the analysis of the classified data within the framework of the system constructed.

D. Interpretation of the Findings

The findings obtained analyzing the processed data were evaluated holistically in the light of the views of the teachers and necessary explanations were made.

4. Results

The findings obtained from the teachers individually in order to identify the views of the teachers on Lake Avlan, the interaction of Lake Avlan with environment and the activities which can be performed to protect the lake were presented below.

4.1 As an answer to the question “*What do you know about Lake Avlan?*”, the 6 of the teachers mentioned their views about social and socioeconomic structure of the vicinity and the lake while 4 of them stated ideas of ecological balance related with the lake.

“... I know that the area is used as a picnic area. I had heard that once it was dried but because of the deterioration of the ecological balance and weather conditions after the drying, they changed their mind and the lake was filled again.” (Ayşe)

“ ... we went there for barbecue and saw that they have constructed very beautiful facilities.” (Hasan)

“... I heard that the ecosystem of the area got narrower with the starting of the cultivation in the area; that certain species disappeared; that, as a result, a dis-balance emerged there; and that studies to revitalize the lake were initiated as a result of people’s becoming aware of the problem.” (Deniz)

“...With the drying of the lake..there are the insects we call cedar louse... the cedar trees dried as a result of the disappearance of the birds which fed on these cedar lice.” (Murat)

"... By opening the gates, they have emptied the lake. They had released some fish in the lake. A lot of fish died. The barren areas emerged in the area after the drying of the lake. Be it for cedar trees or apple trees, many negative changes emerged in the climate." (Bekir)

"... I think that Lake Avlan is a very important place for the town Elmalı because there is no another place to go for refreshment or recreation around Elmalı." (İsmail)

"... I personally witnessed the pollution in the picnic areas and the surroundings." (Bülent)

4.2 As a response to the question *"Do you think that Lake Avlan preserves its nature?, 12 of the teachers interviewed stated that the lake does not preserve its nature while 2 of them said that it does. Some of the views elicited from the teachers interviewed are as follows.*

"... People say that the lake was once dried and as a result very bad conditions emerged. Clearly, if the lake was destroyed and attempted to be dried in the past I do not think that it preserves its nature. If they do not interfere with it, it may perhaps regain its vitality." (Deniz)

"It seems that it could not preserve its nature. Today they are trying to restore it. There was a road passing through it. They removed it. Once, human hand touched it." (Esat)

"There is a lot of hearsay about it. Besides it was once dried. Later they tried to revitalize it. I do not think that it preserves." (İsmail)

"It certainly could not preserve its natural state because the nature of a thing whose structure has been destroyed is also destroyed." (Halil)

"... I know that it preserves its nature relative to past years- I know the time when it was dried- because the water is not released now. Especially the cedar trees had strong inclination to dry but now there is some revitalization in them. It seems that it preserves now." (Osman)

"It does not seem so artificial. I heard that once it was dried. Now I think that it preserves its natural state." (Hasan)

4.3 The teachers interviewed stated as a response to the question *"How did you learn the knowledge you have about Lake Avlan?" that they learned them through their personal observations and their interaction with the people of the village where they work. Some of their opinions related to the question are as follows.*

"I learned them from the native people of Elmalı..." (Ayşe)

"...Except for that one, I learned them through my own observations and environment..."(Meral)

" I learned them from the people of the village. I did not encounter it in social media at all. Clearly, I have never thought that necessary importance has been given to these subject..."(Esra)

"I obtained them through my own observations..." (Bülent)

4.4 As a response to the question *"What do you think about the impact of Lake Avlan on nature or environment?"*, 11 of the teachers stated that the lake has positive effects on precipitation, social life, being a habitat for living creatures, being a source of irrigation and tourism while 3 of them thought said the lake emits some sort of malodor and caused the emergence of mosquitos.

"...Regarding the climate, the lack of the lake will make the humid air dry because evaporation will decrease. The amount of precipitation will also decrease." (Halil)

"... Tourism of course. There is a park and there is a picnic area near it. A recreation area for people..." (Osman)

"... but there is an awesome potential by Lake Avlan and it has not been used and at the same time various bird species live there ..." (Esat)

"...as I said the water of the lake met the need of the people living by the beach after it had been directed to the beach-ward ..." (Esra)

"... I heard that mosquitos come out in summer time, I heard it from people living in Avlan ..." (Meral)

"... Because of the bad smell, when there are people having picnic, they would naturally not come there. When we visited there it was the beginning of spring, time so there were no mosquitos but summer is approaching if the stench continues to come out, to a high probability, mosquitos will emerge." (Bülent)

4.5 When the question *"What do you think about the factors from nature and environment which affect Lake Avlan?"* was posed to the teachers, 12 of them mentioned that climatic events affected the lake positively. Ten of the teachers stated that the drying activities and 9 of them said industrial companies affected the lake negatively. The views of some of the teachers are as follows.

"... Climatic events. Especially the impact of the precipitation happened this year. Besides, it gets full when it precipitates. Their effect ..." (Bora)

"... The people (of the vicinity) began to be aware of the impacts of the lake's being dried and its consequences, though it is still little." (Murat)

"...What's happening there now? When we look at environment, the stone mines, marble mines. The trees cannot be seen because the dust from these mines covered them." (Bekir)

4.6 When the teachers were posed the question *"What can be done to protect Lake Avlan?"*, 10 of them stated that, in order to protect the lake, the people in the vicinity should be made conscious of the case at educational dimension and at legal dimension, 9 of the teachers proposed that a tourism planning must be made and 6 of them stated that the lake must be declared to be a national park. According to this, the views that are foregrounded are raising an awareness in people at educational dimension, tourism planning and the lake's being declared to be a national park at legal dimension.

"An awareness may be raised in the people..." (Meral)

"... First of all, an awareness must be raised in people ..." (Osman)

"...I believe that a good seminar may be organized, one which is open to all people and under the idea of 'Let's save our values'. People may be invited..." (İsmail)

"...I would struggle to have this place be included in the protected areas. I would also try to design this place as a touristic place without harming it during touristic activities. Bungalows may be built instead of concrete buildings..." (Halil)

"... A council may be built for the preservation of the lake and the council may organize activities by negotiating the people. Different things may be done. The place can be declared to be a protected area." (Bora)

4.7 Eleven of the teachers answered the question *"Have you conducted any activities related with Lake Avlan or what kind of an activity would you plan if you did?"* saying that educational trips could be organized and 5 of them stated that the surroundings of the lake can be cleaned in an activity with the participation of students. Some of the views from the teachers are as follows.

"... I did not carry out any studies so far, after necessary official permissions are taken, a trip, including a picnic, may be organized so the students can see the lake ecosystem, or the types of rock and at the same to entertain them." (Ayşe)

"... If I were to do something concrete, I would organize a cleaning activity ..." (Osman)

"... as the whole school, a trip may be organized there and it may be said "Come on kids, let's clean the surroundings..." (Hasan)

5. Discussions

- 1) The evaluation of the data obtained by posing the question *"What do you know about Lake Avlan?"* to teachers demonstrated that they are not knowledgeable about the physical structure (depth, width etc.) of the lake; that the concept of social and socioeconomic structure was conceived of as having picnic or other social activities, and this situation revealed that the teachers who were interviewed have only superficial knowledge about the lake; that the information they possess is not certain and that the information they provided is insufficient.
- 2) As a result of the analysis of the answers produced upon the question *"Do you think that Lake Avlan preserves its nature?"*, it was observed that all of the teachers share the same opinion that Lake Avlan has not preserved its nature. It is known that, when the human intervention made to the lake in the past is revised, the lake has not preserve its nature to date, but as for today, the studies to help the lake restore its natural form are going on. Great steps were taken in 1997 in the direction of Lake Avlan's accumulating water and recovering its ecological balance again. During the years the lake was dry, Finike-Elmalı road passed through the lake. Although 15000 fish were released into the lake in order to increase the biological diversity in the lake, the chick water-birds which attempted to cross the road were run over by the passing cars every night (Yıldırım & Genç, 2010).
- 3) Although the teachers mentioned media, the teachers community, internet and studies conducted by the governor of the town in their opinions on Lake Avlan as a reaction to the question *"How did you learn the knowledge you have about Lake Avlan?"*, most of them stated that they learned the information about the lake through their personal observations and their interaction with the people of the vicinity. It was thought that the teachers' own observations of environment and their interaction with environment are very important elements in their acquiring knowledge about the region.
- 4) As a result of the analysis of the responses produced upon the question *"What do you think about the impact of Lake Avlan on nature or environment?"* it was observed that the teachers generally emphasized the lake's positive effects on environment but also that they did not refrain from mentioning its negative effects. As the positive effects, all of the teachers agreed that the lake makes the climate mild and as the negative effect they stated that the lake causes the emergence of mosquitos. At the end of the discussions carried out within this context, it was thought that the lake made the weather conditions of the area mild. The study carried out by

Kantarci (2008) supports our results stating that, *“depending on the direction of the wind, the slopes of the mountains which are subject to the air mass which get humid because of the evaporation from the surface of lakes are more humid”*.

- 5) As a result of the analysis of the answers to the question *“What do you think about the factors from nature and environment which affect Lake Avlan?”*, it was determined that the most important negative effects to the lake were the drying of the lake and the industrial institutions in the area. Güney (1995) stated that the most important threat wetlands face is the drying of those wetlands and the same study mentioned one of the most important reasons why wetlands are deteriorated as wetlands' providing facilities for the investors in obtaining raw and produced materials and transportation. The findings of this study support our conclusions. Along with this, it has been concluded that climatic events affected the lake positively. Korkanç (2004) revealed that the refilling potentials of wetlands depend on the type of the wetland, geological location, the geological structure beneath the surface, type of the soil and the precipitation, which also supports the findings obtained in our study.
- 6) As a result of the analysis of the opinions elicited from the teachers by directing the question *“What can be done to protect Lake Avlan?”*, it was observed that the teachers are likeminded on the idea that an awareness must be raised in the people through education, and such an educational awareness raising activity has been decided in order to protect the lake. At the legal dimension, while a tourism planning seemed to be foregrounded, at legal dimension, teachers were observed to be likeminded on the idea that the area must be declared to be a protected area. In the book published by The Ministry of Forestry and Water Affairs (2013) supported our results stating that *“The ecological planning approach used in wetlands is seen to be one of the tools of sustainable development. During the process of wetlands management plan, the participation of people must be increased primarily by organizing meetings in order to raise awareness in people and informing people via internet or other broadcasting media and later by consulting people's opinion for every stage of the whole process. All of the information about the process must be accessible to people. Instead of expecting a direct participation of all related people during the whole study, and especially during the evaluation of the politics about the issue, in some certain cases, a representative body or a council whose opinion is consulted may participate in the studies.”* Furthermore, possibilities will be created for raising an awareness thanks to trips, containing concrete elements, to the area, interaction with environment, a balance between human beings and environment, negative issues experienced in the environment, environmental pollution and the like (Aktepe & Girgin, 2009).
- 7) When the opinions of the teachers elicited as a response to the prompt question *“Have you conducted any activities related with Lake Avlan or what kind of an activity would you plan if you did?”* are analyzed, it was observed that everybody reached a full agreement on the idea that an educational trip and an activity of cleaning the surroundings of the lake was to be organized. It was also concluded that to raise

awareness in the people at very young ages would be possible through such activities to save the future of the lake.

6. Suggestions

- Based on the findings we obtained, further research may be recommended as follows:
- According to the findings of this study, an awareness raising activity may be organized by designing a 'Nature School Project' which would be supported by TUBITAK (The Scientific and Technological Research Council of Turkey) and with the participation of the local people.
- Orientation activities or in-service training programs related with Lake Avlan may be organized for teachers.
- New research may be designed about environmental planning related with Lake Avlan with the participation of the local people.
- New research may be carried out in different state institutions in order to obtain opinions about Lake Avlan.
- New research may be designed in order to obtain the views of the local people about Lake Avlan.
- Applied research may designed in the faculties of education, science and letter or forestry at the universities which are located close to the region.
- The discouraging power of the regulations which are issued to prevent harmful activities towards Lake Avlan may be increased.
- Programs may be broadcasted or published in the visual or print media, trekking activities may be organized or brochures may be delivered in order to save the future of the lake.
- Seminars may be given to the related local people on cultivation and husbandry and on the positive contribution of the lake for environment.

7. Conclusion

As a result of this research, it was concluded that teachers must be aware of the natural and biological riches which exist in the vicinities of the schools they work, and they must transfer this awareness to their students. It was expected that the students would approach their environment more sensitively and they would be aware of the harm given to environment as a result of this transfer. Thus, it is a necessity that the teachers who work in the schools which are located in settlements throughout the whole country must be trained and educated as the ones who are sensitive towards environment, aware of the environmental problems and decorated with necessary knowledge.

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