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Opinions and Suggestions of Social Studies Teachers on Ecological Literacy

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Abstract

The increase in ecological problems day by day leads to irreparable dangers. This situation obliges people to live in harmony with other living things and the environment. It also increases the importance of ecology science. Therefore, ecological literacy is a qualified basis for the sustainable development of individuals. As a matter of fact, it is necessary to educate students with ecological awareness and environmentally sensitive behaviors. Social studies teachers have a central role for students to care about the sustainability of life and become responsible citizens. In this research, social studies teachers' views and awareness of ecological literacy are examined. 34 social studies teachers working in different provinces of Turkey participated in this research in which qualitative research method was used. Data was collected with a structured interview form consisting of open-ended questions prepared by the researcher. The data obtained in the research were analyzed by content analysis. It has been seen that the definitions of ecology, ecological literacy, the aims of ecological literacy and the characteristics of the ecologically literate individual are similar to the literature. In addition, the teachers emphasized that an active citizen is ecologically literate and that the social studies course is related to the science of ecology. Teachers expressed views on different principles, theories, strategies, methods, techniques and activities in the implementation of ecological literacy education. In addition, teachers drew attention to the difficulties that may be encountered before, during and after ecological literacy education.

Keywords: Ecology, Ecological literacy, Social studies, Teacher.



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INTRODUCTION

21st century individuals are expected to have various literacy levels. As a matter of fact, the word literacy integrates with various words such as geography, knowledge, economics, law, media, forming new and different concepts that include certain knowledge and skills. While literacy skills in education are characterized in a wide range, another of these new skills is ecological literacy.

Ecological literacy is an important term that connects the two topics (Ha, Huang, Zhang & Dong, 2021). When the words that make up the concept of ecological literacy are examined closely, the term "Oekologie" is derived from the Greek words "oikos" and "logos". It is defined as a discipline that studies the connections between living things and their interactions with their environment (Spurgeon, 2006; Online Etymology Dictionary, 2020). Literacy, which corresponds to the word "literacy", is the process of creating meaning that includes identity formation, agency, using literacy skills and learning (Häggströmi & Schmidt, 2020). The skills of reading, understanding and writing nature within the framework of sustainability include the literate part of the discipline of ecology (Demir, 2021a).

Ecological literacy is the ability to apply, analyze, evaluate, and deeply understand the global environment to make informed decisions as a global citizen (Makin, 2003); using the principles of ecology in daily life for the creation and maintenance of sustainable societies (Capra, 2007); acquiring and disseminating ecological knowledge, raising awareness of ecological conservation, and guiding ecological behavior in sustainable development (Ha, Huang, Zhang & Dong, 2021). The definitions focus on the reflection of acquired ecological knowledge on behavior (Özer & Yıldırım, 2021). The emergence of the concept of ecological literacy dates back to the late 1980s.

In 1986, Risser used the term ecological literacy for the first time in a speech at the Ecological Society of America to explain the lack of scientific knowledge of the American people about nature and the need for ecologically literate individuals. Therefore, ecologists have debated what constitutes ecological literacy and the responsibilities, content and pedagogy of ecological literacy. As a result, ecological literacy is emphasized that knowledge about nature is necessary to make informed decisions. In 1992, David Orr introduced the term ecological literacy in his book "Ecological literacy: Education and the transition to a postmodern world" and brought this term to the literature (Boehnert, 2013; McBride, Brewer, Berkowitz & Borrie, 2013; Çabuk, 2019). With ecological literacy, it is aimed to acquire ecological knowledge, to increase ecological awareness, reinforce ecological ethics, improve and strengthen ecological attitudes and behaviors (Ha et al., 2021). Individuals who achieve these goals can be defined as ecologically literate who have a perception and understanding of the past and future consequences of ecosystem dynamics, criticize, research, question and find solutions to ecological problems, and consider themselves a part of nature (Khanal, Pandey, Khan, Mishra & Kunwar, 2020; Özer & Yıldırım, 2021). Educating ecologically literate individuals is possible through ecological literacy education.

Ecological literacy education is one of the main focuses of the educational process. As a matter of fact, due to human-based wrong behaviors, irreversible environmental hazards such as air, soil and water pollution, reduction of natural resources and global climate change have occurred. Therefore, ecological literacy is important in today's world (Irianto, Yunansah, Mulyati, Herlambang & Setiawan, 2020; Khanal et al., 2020). Based on this situation, modern and urbanized individuals are asked to be able to read the language of ecology and to communicate effectively with nature and living things (Ramsay, 2020). Therefore, ecological literacy education should be systematically included in all stages of the education process, especially preschool education.

The content of the education to be given to the students today will help the sustainability of the future by revealing the individual's latent power and transforming them into behavior. Therefore, it is necessary to educate them as ecologically literate individuals. In order to develop ecological literacy in students, environmental protection and ecological awareness should be created within the scope of sustainability (Febriani, Fariyah & Nasution, 2020; Khanal et al., 2020; Koçoğlu & Ekici, 2013). At this point, there are three elements in gaining ecological literacy to students (Jordan, Singer, Vaughan & Berkowitz, 2009 cited by Zangori & Cole, 2019):

- To teach the basic concepts and ecological connections between abiotic and biotic ecosystem elements, which are called ecological connections.

- Establishing the relationship between human behavior and the environment.
- Developing the ability to reason about the science and issues of ecology, known as ecological reasoning.

These elements are necessary for students to become ecologically literate. Thus, students will both acquire basic information about the ecosystem and gain the dimensions of attitude, behavior and awareness (Khanal et al., 2020). As a matter of fact, it is aimed to educate ecologically literate individuals in the educational process not only in the knowledge dimension but also in the action dimension (Özer, & Yıldırım, 2021). Teaching ecological life skills, strengthening human beings by establishing their bond with nature and creating an ecologically based life can be realized by teachers (Aydın, DüNDAR & Korkut, 2016). Because teachers have an important role in raising ecologically literate individuals. The pedagogical knowledge levels of teachers, their knowledge, attitudes and behaviors related to ecological literacy are important in the education process. Berkowitz, Ford & Brewer (2005) states that teachers must first be ecology literate and understand the basic ecological systems and principles that include ecological literacy.

The central role of social studies teachers is to make students responsible and active citizens who care about the sustainability of life, and to improve ecological literacy in them. It is a course aimed at developing social studies, cultural values, political awareness, environmental issues, responsible citizenship and an understanding of sustainability. Social studies teachers, on the other hand, aim to raise democratic citizens who deal with the interaction of people with their physical and social environment and have basic values and skills related to life. For this reason, social studies teachers' views and awareness on this issue are important in developing students' sensitivity towards the protection of natural balance and gaining positive behavior (Chambers, 2007; Doğanay, 2002; Irianto et al., 2020; Kahyaoğlu & Kaya, 2012).

When the studies in the literature are examined, it is seen that there are studies on the concept of ecological literacy for pre-school teachers and teacher candidates (Çabuk & Haktanır, 2017; Okyay, Demir, Sayın & Özdemir, 2021; Özer & Yıldırım, 2021), science and geography teachers and teacher candidates (Puk & Behm, 2003; Puk & Stibbards, 2010) and social studies teachers (Aydın, DüNDAR & Korkut, 2016) who receive ecological literacy education. Although there are various studies on ecological literacy, it can be said that the studies on this subject within the scope of teachers are limited. However, ecological literacy seems to be underused and under-researched in the context of education. It is seen that the studies carried out are aimed at determining the opinions of teachers in different branches. It has been determined that there is a need for a comprehensive study to evaluate the views of social studies teachers. Therefore, the research is important in terms of emphasizing the concept of ecological literacy and revealing the situation of teachers related to the subject by conducting the research with social studies teachers. In this context, it is thought that the research will contribute to the literature in revealing the current views of social studies teachers on ecology and ecological literacy and in the development of ecological literacy education program.

In this research, the views of social studies teachers on ecology, ecological literacy and ecological literacy education are determined. Within the scope of this general purpose, answers to the following research questions were sought:

1. How do teachers perceive ecology?
2. How do teachers perceive ecological literacy?
3. What are the teachers' views on an active citizen being ecologically literate?
4. What are the teachers' views on the characteristics of an ecologically literate individual?
5. What are teachers' views on the aims of ecological literacy education?
6. What kind of a connection do the teachers make between the social studies course and the science of ecology?
7. What are teachers' views on implementing ecological literacy education?
8. What are the difficulties that teachers may encounter in ecological literacy education?

METHOD

Since it is aimed to determine in depth the knowledge of social studies teachers about ecology, ecological literacy and ecological literacy education, phenomenological design, one of the qualitative research methods, was used in the study. In this research, phenomenological patterns from qualitative research methods were used to determine in depth the knowledge that social studies teachers have about ecology, ecological literacy and ecological literacy education. The main purpose of the phenomenological design is to highlight the

perceptions and experiences of individuals from their own point of view, in-depth and detailed concepts or situations (Ersay, 2019).

1.Study Group

The research working group consists of 34 social studies teachers who work in different provinces of Turkey, who were chosen randomly on a voluntary basis. Snowball/chain sampling, one of the purposive sampling methods, was used while determining the participants. According to this approach, individuals who can be rich sources of information are determined in line with the research problem. To the social studies teacher who filled out the interview form, "Whom would you recommend to forward the interview form about the research topic?" It is aimed to increase the number of individuals and data diversity as the process progresses by asking the question (Yıldırım & Şimşek, 2016).

When the demographic information of the participants was examined, 16 of the teachers are female (47.05%), 18 are male (52.94%); 24 (70.58%) at undergraduate level, 10 at master's level (29.41%); 16 of them are 1-5 years (47.05%), 5 of them are 6-10 years (14.70%), 8 of them are 11-15 years (23.52%), 5 of them are 16 years and above (14.70%) have professional experience.

2.Data Collection Tool

The research was carried out with the approval of the ethics committee at the meeting numbered 4, dated 07.09.2021, of the Social and Human Sciences Research and Publication Ethics Committee of the Presidency of Kastamonu University.

In the research, structured interview, which is generally used in phenomenological studies, was preferred as a data collection tool (Ersay, 2013). It is aimed to obtain in-depth data from teachers' views on the research topic through the structured interview form developed by the researcher. While creating the draft interview form, researches in the literature were used. In this framework, a total of 10 items were prepared in the question pool. In order to ensure the suitability and clarity of the prepared interview questions for the purpose of the study, the necessary corrections were made by taking the opinions of three researchers (two Social Studies Education experts, one Geography education expert). These questions were removed from the form because the experts stated that two questions were out of the scope of the research. The form was finalized after the other questions were revised in order to be understandable and clear. In addition, questions were added to obtain information about the demographic information of the participants (gender, education level, professional seniority). The prepared form was restructured by applying it to two social studies teachers in order to ensure the validity of the questions and to check their clarity, scope and language. Entries suitable for the final interview formula; A place consisting of eight interviews.

3.Data Collection and Analysis

The data collection tool, which was prepared within the scope of the purpose of the research, was transferred to the Google Forms system in order to deliver it more easily to the teachers working in various provinces. In the first stage of the data collection process, voluntary participation consent was obtained from the participants. The internet connection of the online form was shared with the teachers by the researcher. Thus, the teachers participated in the research by filling out the form. Before the research, no information was given to the teachers about ecological literacy. The data were collected between 10.09.2021 and 10.10.2021 in the 2021-2022 academic year.

The qualitative data obtained in the research were analyzed by content analysis in order to determine basic coherence and meanings (Patton, 2014). The analysis of the data was carried out in four stages as suggested by Yıldırım & Şimşek (2016), coding the data, finding the themes, organizing and defining the data according to the codes and themes, and interpreting the findings. Within the framework of these stages, the data were analyzed in depth, read over and over again, and classified by determining categories and codes. Frequency (f) and percentage (%) rates for each question are given in the relevant tables. For the privacy of the participants, unique codes were given to each teacher (FT-1: Female Teacher-1, MT-2: Male Teacher-2). Interpretations and explanations were made for the findings identified as a result of the examinations.

4.Validity and Reliability of Data Analysis

Various studies have been carried out to ensure the validity and reliability of the research. These are; internal validity of the research by taking expert opinions; external validity of the research by making in-depth descriptions of the research group and process; internal reliability of the research by including direct quotes;

external reliability of the research by evaluating the analysis of the data by a different researcher. In addition, Miles & Huberman's (1994) reliability formula for qualitative data analysis was calculated as "[Reliability = Consensus / (Agreement + Disagreement) x 100]". Accordingly, "Reliability = 92%" was determined.

FINDINGS

The data obtained in line with the answers given by the teachers to the interview questions were analyzed within the scope of the research questions and the findings were presented respectively.

1. Findings on the definition of the concept of ecology

In the first research question, the teachers were asked how they defined ecology, and it was tried to determine the basic knowledge of the teachers about ecology. Information about the code and categories determined as a result of the analysis of the answers to this question is given in Table 1.

Table 1. Definitions of teachers related to the concept of ecology

Categories	Codes	f	%
Interaction	Interaction of living things with themselves and their environment	8	40
	Interaction of living and non-living things	5	25
	Interaction of living things with the environment	4	20
	Interaction of living things with each other	3	15
	Total	20	100
Science	Environmental science	9	69
	Natural science	4	31
	Total	13	100
Sustainability	Ecological balance	3	60
	Continuity of nature	2	40
	Total	5	100

When Table 1 is examined, it is seen that teachers define the concept of ecology and classify the characteristics of this concept. In this context, it has been found that their answers to the concept of ecology are grouped under eight codes in three categories. In the category of "interaction", it is seen that the most opinion on the definition of ecology is "the interaction of living things with themselves and their environment". Some of the teacher's views on this category are presented below.

FT-1: "The branch of science that studies the relationship of living things with their environment. **MT-4:** "It is the science that studies the relationships of organisms with each other and with their environment. **MT-3:** "Interactions of living and non-living things. **FT-7:** "It is the field of science that studies the relationship between living things in nature." **MT-17:** "It examines the interaction of living things, plants and animals living on Earth."

In general, according to teachers, the concept of ecology is expressed that living things are on the basis of interaction with each other, other living, non-living and environment. In this context, teacher opinions point to all kinds of interactions of both living and non-living elements as ecology.

When the definitions for the category "science", the second category for the definition of ecology, are examined, it is seen that the most views are "environmental science". Some of the teacher's views on this category are presented below.

MT-9: "Ecology means nature, natural science." **MT-13:** "It is environmental science. **MT-20:** "In short, natural science." **FT-26:** "It is environmental and natural science."

In general, ecology is expressed as both environmental and natural science, according to teachers. In this context, it is seen from the teachers' views that they perceive the concept of ecology as both nature and environmental science.

The third category created for the definition of ecology is "sustainability". It is seen that the most expressed opinion by teachers in this category is "ecological balance". Some of the teacher's views on this category are presented below.

FT-15: "Continuing the existence and continuity of nature within itself. **MT-23:** "The natural balance between living and non-living things on Earth. **MT-32:** "Ensuring continuity of living things in the context of other and inanimate beings and their environment.

In general, some of the teachers state that ecology is related to sustainability and provides integrity with the concept of ecology. In this context, it can be deduced from the views of teachers that the continuity of living and non-living elements is related to sustainability. However, when the cognitive understanding of the majority of teachers about ecology is examined, it can be said that they confuse the concept of ecology with the concept of ecosystem.

2. Findings on the definition of ecological literacy

In the second research question, the teachers were asked how they define ecological literacy, and it was tried to determine the teachers' views on the definition of ecological literacy. Information about the code and categories determined as a result of the analysis of the answers to this question is given in Table 2.

Table 2. Definitions of teachers regarding the concept of ecological literacy

Categories	Codes	f	%
Cognitive definitions	Understanding the natural cycle/processes	7	37
	Understanding nature correctly	7	37
	To learn about living and non-living things and the environment	3	16
	To learn about the human-environment relationship	2	10
	Total	19	100
Behavioral definitions	Living in harmony with the environment/nature	11	61
	Reading nature correctly	7	39
	Total	18	100
Affective definitions	Awareness of the human-environment relationship	7	54
	Understanding of environmental/environmental awareness	4	30
	Awareness of ecological problems	2	16
	Total	13	100

When Table 2 is examined, it is seen that teachers define the concept of ecological literacy and give different definitions for this concept. In this context, it was determined that the answers to ecological literacy were gathered under nine codes in three categories. In the category of "cognitive definitions" among the categories presented, it is seen that the highest number of views on ecological literacy are "understanding the natural cycle/processes" and "understanding nature correctly". Some of the teacher's views on this category are presented below.

MT-3: "To understand the natural cycle and ecosystem. **MT-4:** "It's about understanding what's going on around people." **FT-7:** "It is to acquire the ability to read and understand nature correctly and to add meaning to the relationship of man with other living things and the environment through this skill." **MT-12:** "Gaining information about the environment in which they live, being able to recognize the environment and the living things in it, and perceiving the problems they are in". **FT-32:** "To live in harmony with nature and to know the principles of nature."

In general, the concept of ecological literacy is stated to be based on understanding the elements related to nature in the cognitive dimension, according to the teachers. In this context, definitions of ecological literacy as the process of understanding natural processes and acquiring knowledge are obtained from the views of teachers.

It is seen that the most opinions expressed by the teachers in the "behavioral definitions" category created about the definition of ecological literacy are in the "living in harmony with the environment/nature" code. Some of the teacher's views on this category are presented below.

FT-1: "Living in harmony with the environment and nature. **FT-14:** "Protecting nature." **MT-17:** "To ensure that the natural structure and functioning of the ecosystem continue without disturbing it." **FT-6:** "To be able to live in harmony without harming the environment and nature in which people live."

When teachers' opinions are examined, it is seen that the concept of ecological literacy is based on living in harmony with nature/environment in behavioral dimension. In this context, definitions of ecological literacy as providing continuity, harmonious living, and protection in relation to the environment are obtained from the teachers' opinions.

It is seen that the opinions of the teachers in the third category named "*affective definitions*" created regarding the definition of ecological literacy are mostly gathered under the code of "*awareness about the relationship between human and environment*". Some of the teacher's views on this category are presented below.

MT-2: "*Being more sensitive to one's environment.*" **FT-15:** "*To raise awareness in students for the protection of ecological balance.*" **FT-19:** "*To create awareness in people by using environmental information in order to be more sensitive to the environment.*" **MT-5:** "*It is to have the necessary sensitivity in order not to spoil the relationship between people and nature.*"

In general, teachers state that while defining ecological literacy, it is in the direction of creating awareness and understanding on the basis of the environment and people in the affective dimension. In this context, definitions of the concept of ecological literacy as being sensitive to the environment, being conscious and creating awareness are obtained from the views of the teachers.

3. Findings on the ecological literacy of the active citizen

In the fifth research question, the opinions of the teachers on the ecological literacy of an active citizen were asked, and it was tried to determine the teachers' views on the reasons for the active citizen to be ecologically literate. Information about the code and categories determined as a result of the analysis of the answers to this question is given in Table 3.

Table 3. Opinions of teachers on an active citizen being ecologically literate

An active citizen must be ecologically literate. Because,	f	%
Leaving a livable world	9	25
The need to be a responsible citizen	8	23
Patriotic value	7	20
Interaction between man and environment	7	20
People's sensitivity	4	12
Total	35	100

When Table 3 is examined, the teachers stated the reasons why an active citizen should be ecologically literate. In this context, it has been determined that teachers' opinions are gathered under five categories. It is seen that the most opinion among the categories presented is "leaving a livable world". Some of the teacher's views on this category are presented below.

FT-1: "*It definitely should. Thus, the world becomes a more livable place. The ongoing mutual relationship between the individual and the environment can be carried forward with the sensitivity of the citizens.*" **MT-3:** "*The active citizen must first lead the protection of the area in which he lives. Being a citizen requires protecting the place where oneself and other people live. At the same time, it requires contributing to the solution of problems related to the natural environment.*" **FT-10:** "*Citizenship is not just about voting or paying taxes. First of all, it is necessary to protect the ecological balance in order to ensure the continuation of life and transfer it to the future. This is only possible by being ecologically literate.*" **MT-12:** "*An active citizen is one who does not harm his country or nation. In order for a homeland to be passed on to future generations, individuals must be environmentally conscious. If individuals unconsciously use and consume the environment, they will not be able to leave a livable homeland for future generations. This is the greatest harm that can be done to the homeland and nation in the eyes of individuals.*" **MT-5:** "*Every citizen must be ecologically literate. This is a requirement of being a citizen.*" **FT-32:** "*Considering today's environmental problems, our citizens should be ecologically literate, since the main factor that will protect the environment is human.*" **MT-17:** "*An active citizen tries to build the future and takes care of ecology. Being aware of the fact that ecology is entrusted to us for future generations and acting accordingly are among the characteristics of good and effective citizens.*" **MT-30:** "*It definitely should. One of the most important duties of a responsible citizen is to leave a clean and livable environment to future generations.*"

In general, teachers express opinions about the need for an active citizen to be ecologically literate, to have responsibilities regarding the environment, and to the need for human-environment interaction. In this context, it is stated in the opinions of the teachers for various reasons such as the ecological literacy of an active citizen, the need for individuals to leave a livable world, the need to be a responsible citizen, the value of patriotism, the interaction between people and the environment, and the sensitivity of people.

4. Findings on the characteristics of ecologically literate individuals

In the fourth research question, it was tried to determine the opinions of the teachers about the characteristics of the ecologically literate individual. Information about the code and categories determined as a result of the analysis of the answers to this question is given in Table 4.

Table 4. Teachers' views on the characteristics of an ecologically literate individual

Categories	Codes	f	%
Characteristics of an ecologically literate individual	Sensitive	14	22
	Loving	12	18
	Protecting	9	14
	Not engaging in dangerous behavior	8	13
	Conscious	6	10
	Respectful	5	8
	Valuing	4	6
	Living in harmony	2	3
	Peace	1	2
	Knowing the principles of nature	1	2
	Defending the rights of living beings	1	2
	Total	63	100
Self-evaluation as an ecologically literate individual	Raising awareness	7	27
	Get informed	4	15
	Researching	4	15
	Frugal/saving	3	12
	Solution oriented	2	7
	Observer	1	4
	Curious	1	4
	Being a role model	1	4
	Responsible	1	4
	Clean	1	4
	Entrepreneur	1	4
	Total	26	100

When Table 4 is examined, the teachers expressed their views on the characteristics of the ecologically literate individual. In this context, it was determined that the answers of the teachers regarding the characteristics of the ecologically literate individual were gathered under twenty-two codes in two categories. It is seen that the most opinions in the category of "characteristics of an ecologically literate individual" are described as "sensitive" and "loving". Teachers expressed their views on the characteristics and responsibilities of an ecologically literate individual. Some of the teacher's views on this category are presented below.

FT-7: "Knowing and valuing the habitats of living creatures in nature. Thus, it can be possible to take precautions against possible dangers." **MT-17:** "Those who know the ecological system, struggle to prevent the deterioration of the ecological balance, and reflect what they know into their lives." **MT-22:** "It loves nature, defends the right to life of every living thing, does not exclude any living thing, and protects our world." **MT-3:** "Knowing the principles and limits of nature, living in harmony with nature."

In this context, objectives such as ecological literacy, creating a sensitive society and creating environmental understanding are obtained from the views of teachers. In this context, it is emphasized that an ecologically literate individual should have some characteristics such as being sensitive, loving and protecting the environment, not engaging in dangerous behaviors, and being conscious.

Regarding the category of "self-evaluation as an ecologically literate individual", teachers first stated that ecologically literate individuals raise awareness of other individuals. Teachers express their views on ecological literate identity characteristics. Some of the teacher's views on this category are presented below.

FT-10: "A role model who is knowledgeable about the living things in the natural life, stays away from all kinds of behavior that will harm the nature, tries to raise the awareness of the people around him on this issue." **FT-19:** "Investigative, curious, seeking solutions to problems, social, able to listen to himself ." **MT-2:** "The one who acts sparingly in the consumption of resources and raises awareness of the people around him." **MT-16:** "Has knowledge about the harmony of living things in the environment." **FM-6:** "He is willing to enlighten his environment on issues related to ecology."

In general, teachers express their views on their ecologically literate identity characteristics. In this context, teachers' opinions emphasize some of their own characteristics such as ecologically literate individuals who raise awareness of others, acquire knowledge, research, frugal/saving, and solution-oriented.

5. Findings on the aims of ecological literacy education

In the third research question, the teachers were asked what the aims of ecological literacy education could be, and it was tried to determine the teachers' views on the aims of ecological literacy. Information about the code and categories determined as a result of the analysis of the answers to this question is given in Table 5.

Table 5. Opinions of teachers about the aims of ecological literacy education

Categories	Codes	f	%
Behavioral purposes	Living without disturbing the ecological balance	6	24
	To raise awareness of individuals	6	24
	Protecting nature/living things	5	20
	Ensuring ecological balance	5	20
	Making the world livable	2	8
	Shrinking the ecological footprint	1	4
	Total	25	100
Cognitive purposes	Understanding the impact of living things on ecosystems	6	32
	Establishing a relationship between man and the environment	6	32
	Getting to know nature	5	26
	Gaining knowledge to protect nature	2	10
	Total	19	100
Affective purposes	Developing a society sensitive to ecological problems	3	60
	Build in-depth understanding of individuals	2	40
	Total	5	100

When Table 5 is examined, it is seen that teachers have classified the aims of ecological literacy education. In this context, it has been determined that teachers' answers to the aims of ecological literacy education are grouped under twelve codes in three categories. It is seen that the most opinions in the "behavioral purposes" category among the categories presented are "living without disturbing the ecological balance" and "raising awareness of individuals". Some of the teacher's views on this category are presented below.

MT-3: "To enable people to survive without destroying nature." **MT-5:** "It is to protect the environment we live in and make it more livable without harming the nature." **MT-17:** "Ensuring the continuation of the natural balance, trying to prevent the occurrence of a chain of disasters in the ecosystem." **FT-18:** "To organize our life practices in a way that will reduce our ecological footprint and to defend the right to life of every living thing."

In general, teachers state that the aims of ecological literacy are to protect ecology in the behavioral dimension and to provide ecological balance. In this context, objectives such as ecological literacy, sustainability, protection of the environment and defending the right to life of living things are obtained from the views of teachers.

It is seen that the most opinions expressed by the teachers in the category of "cognitive purposes" created about the objectives of ecological literacy are under the codes of "understanding the impact of living things in the ecosystem" and "establishing a relationship between people and the environment". Some of the teacher's views on this category are presented below.

MT-12: "It is to enable people to recognize the environment and perceive environmental problems." **FT-19:** "It is to raise individuals who think ecologically and understand and comprehend natural systems so that all people living in the world can survive." **FT-15:** "To teach what to do to protect nature." **MT-23:** "To understand the harmony and order in nature well." **MT-29:** "To understand the effects of humans, nature and other living things on each other."

In general, the teachers stated that the aims of ecological literacy are to learn about nature in the cognitive dimension, to know nature, and to understand the effect of living things on nature. In this context, objectives such as ecological literacy, recognizing the environment, ecological thinking and understanding for sustainability are obtained from the views of teachers.

Another category created for the purposes of ecological literacy is the category called "aims with affective content". It is seen that teachers' opinions are mostly gathered under the code of "developing a society sensitive to ecological problems". Some of the teacher's views on this category are presented below.

FT-6: "To give people the awareness that life is possible without harming nature." **FT-8:** "To create a society sensitive to environmental problems." **MT-9:** "To introduce individuals to nature and living things well, to make them aware of the relationships between them, and to change people's perspectives on the world accordingly." **FT-10:** "When we look at today's world, we are faced with many ecological problems. In order to prevent this, it is necessary to create awareness of nature and environment in all individuals." **MT-16:** "It is to raise awareness of people to be sensitive to the living things around them and not to harm them." **MT-22:** "To raise individuals who have adopted the principle of living in harmony with nature."

In general, teachers state that the aims of ecological literacy are to create an environmentally sensitive and understanding society in the affective dimension. In this context, objectives such as ecological literacy, creating a sensitive society and creating environmental understanding are obtained from the views of teachers.

6. Findings on the relationship between social studies course and ecology

In the sixth research question, it was tried to determine the knowledge and opinions of the teachers about how they establish a relationship between the social studies course and the ecology. Information about the code and categories determined as a result of the analysis of the answers to this question is given in Table 6.

Table 6. Opinions of teachers on the connection between social studies course and ecology

Categories	Codes	f	%
Common features of social studies course and ecology science	Interdisciplinary	14	29
	On the basis of human and environment interaction	11	23
	Deals with living and non-living things	7	16
	Associated with life	6	12
	Living in harmony with all the elements in the environment	5	10
	Trying to protect natural resources with environmental awareness	3	6
	To raise awareness on ecology issues	2	4
	Total	48	100

When Table 6 is examined, the teachers stated that there is a connection between the social studies course and the science of ecology. Teachers used expressions regarding the common characteristics of both the course and the science of ecology. In this context, it was determined that the answers of the teachers about the relationship between social studies course and ecological literacy were gathered under seven codes in one category. Some of the teacher's views on this category are presented below.

MT-24: "Environmental issues are among the main topics of social studies. Every subject that concerns nature, environment and life is related to both ecology and social studies." **MT-3:** "Social studies gives information about the individual, society and environment. For this reason, social studies acquisitions are related to ecology itself." **FT-6:** "Social studies course includes many disciplines within social sciences. Human interaction with the environment or the effects of the natural environment on humans are the subjects given in the social studies course." **FT-32:** "The expression "explains the interaction between human and environment by recognizing the general geographical features of the world and the environment in which they live" in the general objectives of the social studies course is proof that it is directly related to ecology." **MT-5:** "All kinds of elements that concern living things in society are related to social studies. Since ecology is a science that studies living things, it is related to social studies." **FT-7:** "Social studies is not independent of nature and human and helps to establish the link between human-society-nature-future." **MT-11:** "Since the Social Studies course is a course that directly concerns life, there is a direct connection between them and ecology. Both environmental problems and human relations with other living things are indispensable subjects in social studies." **FT-31:** "Since social studies is a course that includes many branches of science, it is also closely related to the science of ecology."

In general, teachers express opinions that there is a connection between the social studies course and the science of ecology, and that this connection has common features both in the course and in ecology. In this context, it is stated in the opinions of the teachers that the social studies course and the science of ecology have common features such as being interdisciplinary, on the basis of human and environmental interaction, related to life and aiming to live in harmony with all the elements in the environment.

7. Findings on ecological literacy education

In the seventh research question, the teachers were asked how ecological literacy education should be done, and it was tried to determine the basic knowledge and opinions of the teachers about the applicability of such an education process. Information about the code and categories determined as a result of the analysis of the answers to this question is given in Table 7.

Table 7. *Opinions of teachers on the implementation of ecological literacy education*

Categories	Codes	f	%
Teaching principles	Experience-based learning	16	72
	Learning from near and far	4	18
	Learning from the concrete to the abstract	2	10
	Total	22	100
Teaching-learning theories	Social learning	8	42
	Project-based learning	6	32
	Cooperative learning	4	21
	Multiple intelligences	1	5
	Total	19	100
Teaching strategies	Teaching through presentation	10	58
	Inquiry-based teaching	6	36
	Teaching by invention	1	6
	Total	17	100
Teaching methods	Case study	11	34
	Expression	10	30
	Experiment	6	18
	Problem solving	5	15
	Argument	1	3
	Total	33	100
Teaching techniques	Drama	6	34
	Brainstorming	3	18
	Simulation	3	18
	Creating a story	2	12
	Speaking ring	1	6
	Six hats	1	6
	Six shoes	1	6
	Total	17	100
In-school practices/activities	Video	7	20
	Film	5	15
	Image/photo	5	15
	Nature documentary	4	12
	Animation	4	12
	Educational game	3	9
	Board-poster works	3	9
	Workshops	2	6
	Quizzes	1	3
	Total	34	100
Out-of-school practices/activities	Nature trips	21	31
	Observation	15	22
	Tree planting	8	12
	Growing plants	6	9
	To feed animal	5	7
	Camp	4	6
	Environmental Cleaning	3	4
	Hiking	3	4
	Visit to the zoo/shelters	2	3
	Landscape studies	1	2
	Total	68	100

When Table 7 is examined, the teachers expressed their views on how ecological literacy education should be done in line with their experiences and knowledge. In this context, it was determined that the answers of the teachers on how to do ecological literacy education were gathered under forty-one codes in seven categories.

In the category of "teaching principles" created about ecological literacy education, the highest number of opinions expressed by teachers was "learning based on experience"; "Social learning"; In the category of "teaching strategies", the highest number of opinions were "teaching by presentation"; In the category of "teaching methods", the highest number of opinions was "case study"; "drama"; "video" with the highest number of views in the "in-school applications/activities" category; In the category of "out-of-school practices/activities", it is seen that the most opinions are under the code of "nature trips". Some of the teacher's views on the categories are presented below.

MT-2: "As stated in the theory of multiple intelligences, methods such as trips, observations and field studies can be used for ecological literacy education, in which the nature/existential intelligence type is emphasized. Again, social learning theory can be used as another approach. In social learning theory, student awareness can be increased through observation." **FT-10:** "Ecological literacy education should be done by directly intertwining individuals with nature. For this, scientific excursions and camps can be carried out. Thus, individuals will realize the vitality, harmony and cyclicity in natural life. At the same time, the level of knowledge and sensitivity of individuals can be increased by watching animated films and videos. They may be asked to carry out a project related to any ecological problem." **MT-5:** "Every school should provide the ecological environment itself. Schools should not be built only as areas covered with concrete. Various animals and plants can be grown in schools. This will contribute greatly to the students' having this competence." **FT-18:** "This education should explain how the world and life on it came to be, teach the importance of diversity in life and the benefits that nature offers to all living things, and introduce the problems that threaten nature and living things." **MT-9:** "I don't think that this will be possible via computer or smart boards, I think this habit should be gained by doing and living."

In general, teachers associated both teaching principles, methods and techniques, and practices/activities with ecological literacy education. In this context, it is stated in the opinions of the teachers that ecological literacy education should be given on the basis of learning by doing, supported by in-school and out-of-school practices and with various in-class practices.

8. Findings on the difficulties that may be encountered in ecological literacy education

In the eighth research question, teachers were asked about the difficulties they may encounter in ecological literacy education, and it was tried to determine the teachers' views on the problems in the ecological literacy education process. Information about the code and categories determined as a result of the analysis of the answers to this question is given in Table 8.

Table 8. Opinions of teachers about the difficulties that may be encountered in ecological literacy education

Categories	Codes	f	%
Difficulties encountered before training	Financial inadequacy	10	38
	Student attitude	6	22
	Transportation shortage	3	12
	Lack of education	2	8
	Official permissions	2	8
	Attitude of school administration	1	4
	Animal phobia	1	4
	Parent's attitude	1	4
	Total	26	100
Difficulties encountered during training	Environmental conditions	5	37
	Time crunch	3	21
	Inconsistency of plan and implementation	3	21
	Number of participation	2	14
	Insect bite	1	7
	Total	14	100
Post-training difficulties	Social attitude	11	92
	Allergic reactions	1	8
	Total	12	100

When Table 8 is examined, the teachers stated that there are various difficulties that may be encountered before, during and after the education in ecological literacy education. In this context, it has been determined that the answers of the teachers regarding the difficulties that may be encountered in ecological literacy education are gathered under fifteen codes in three categories.

Teachers express the difficulties experienced in ecological literacy education under the "material inadequacy" code of the most opinions in the category of "problems that may be encountered before education". Teachers stated that there may be various problems such as financial inadequacies, transportation problems, lack of education, permissions, negative attitudes of students, school administration and parents before education. Some of the teacher's views on the categories are presented below.

MT-17: "A teacher who does not have sufficient knowledge and skills can be a problem. There may be problems such as permission and cost in out-of-school activities." **MT-5:** "The most important problem will be the prejudices of people who do not have this skill." **MT-9:** "There may be problems such as

financial opportunities in schools and student indifference.” FT-28: “An effective result cannot be achieved if it is not taken seriously and given importance.”

In general, teachers stated that there may be various problems such as financial inadequacies, transportation problems, lack of education, permissions, negative attitudes of students, school administration and parents before ecological literacy education.

It is seen that the most opinions expressed by the teachers in the category of "problems that may be encountered during education" created about the difficulties experienced in ecological literacy education are under the code of "environmental conditions". The teachers stated that there may be problems such as the environmental conditions during the education, the insufficient time allocated, the implementation and the plan are not in the same direction, and the number of participants is high. Some of the teacher's views on the categories are presented below.

MT-25: *“Time and space can be a problem.”* **FT-1:** *“Theoretical knowledge may cause difficulties in practice.”* **FT-27:** *“There may be problems in controlling students.”* **MT-2:** *“While gaining ecological literacy skills, awareness is raised within the possibilities of environmental factors.”*

In general, teachers stated that problems such as environmental conditions during ecological literacy education, insufficient time allocated, application and plan are not in the same direction, and the number of participation is high.

Another category created regarding the difficulties experienced in ecological literacy education is the category of "problems that may be encountered after education". It is seen that the opinions of the teachers are mostly gathered under the code of "social attitude". Teachers state that after the training, there may be a contradiction between what the students acquire in education and their social attitudes, and that various reactions may occur. Some of the teacher's views on the categories are presented below.

It will be difficult to gain this awareness because the characteristics of today's consumer society are widespread and an understanding that consumes limited natural resources (FT-8).

MT-11: *“Just as the ecological literacy education given at the school remains only as a course and cannot be transferred to practical life.”* **FT-31:** *“Infectious diseases may occur after training.”* **FT-10:** *“It is not possible today to demand a sustainable life by making some concessions from people's habits, wishes and comforts.”*

In general, teachers state that after the ecological literacy education, there may be a contradiction between what the students have acquired in education and their social attitudes, and that there may be various reactions.

CONCLUSION, DISCUSSION AND SUGGESTIONS

In the study, it was aimed to determine the views of social studies teachers on ecology, ecological literacy and ecological literacy education. In the light of the findings obtained from the research, the following results were determined:

It is seen that the teachers have knowledge about the concept of ecology, as they define the concept of ecology as "the interaction of living things with each other, with inanimate objects and their environment, nature and environmental science" and "sustainability". In this context, when the definitions of teachers about ecology are examined, it is seen that they are generally parallel to the definitions in the literature (Erinç, 1984; Spurgeon, 2006; McBride, 2011). However, when the cognitive understanding of some teachers about ecology is examined, it can be said that they confuse the concept of ecology with the concept of ecosystem. Aydın et al. (2016) also state that teachers respond to the concepts of ecology and ecological literacy in different ways. Ecology can be characterized as taking into account all living things while understanding the economy of nature. While ecology examines the relationships of living things with each other and with their environment, ecosystem is defined as the whole of the living and non-living environment.

Teachers defined the concept of ecological literacy as "understanding the natural cycle/processes, understanding nature correctly, living in harmony with the environment/nature, awareness of the

relationship between human and environment". It was concluded that they had knowledge about this concept. In the related literature, ecological literacy is defined as a skill that includes dimensions such as knowledge, awareness, attitude and behavior. In addition, the results of the research support the results of different studies. [Özer & Yıldırım \(2021\)](#) found that preschool teachers have knowledge of ecological literacy and that the definitions they make are similar to the literature. Another study shows that social studies teachers trained in ecological literacy define ecological literacy as "the science of understanding nature correctly and living appropriately" ([Aydın et al., 2016](#)). When the studies are compared, it can be said that even teachers from different branches perceive this concept in a similar way.

All of the teachers stated that an active citizen should be ecologically literate. Teachers justify these thoughts as leaving a livable world, being a responsible citizen, patriotic value, interaction between people and the environment, and people's sensitivity. In a study conducted with social studies teachers who have received ecological literacy training, it is stated that countries should make laws regarding the solution of ecological problems, that their citizens should be educated to gain ecological thinking skills, and that every citizen should be ecologically literate ([Aydın et al., 2016](#)). [Demir \(2021b\)](#) found in her study that the parents of students receiving ecological literacy education emphasized that an active citizen should also be ecologically literate. In this direction, the result reached in the research is important in reaching the ultimate goal of social studies.

As another result of the research, teachers stated that ecologically literate individuals are sensitive, loving, protecting, not behaving dangerously, conscious, respectful, valuing, living in harmony, knowing the principles of nature, and defending the right to life of living things. In addition, it is seen that teachers evaluate themselves as ecologically literate individuals as being conscious of others, informed, researching, frugal/saving and solution-oriented. In this context, the ecologically literate individual characteristics stated by the teachers are similar to the literature. In this context, the ecologically literate individual characteristics stated by the teachers are in line with different studies ([Borden, 2007](#); [McBride, 2011](#); [Özer & Yıldırım, 2021](#)). Therefore, the ecologically literate individual is both the one who knows and the one who can apply what he knows in his daily life ([Lebo III, 2012](#)).

By adding the concept of literacy to the concept of ecology, which has a common bond with different disciplines, it is aimed to make individuals understand the dynamics of the world and to adopt sustainable lifestyles. As another result of the research, teachers generally state the aims of ecological literacy education, including behavioral, cognitive and affective content. In line with this result, it is seen that the aims of ecological literacy stated by the teachers are similar to the literature ([Schwartz, 1999](#); [Wooltorton, 2006](#); [Ha et al., 2021](#)). As a matter of fact, ecological literacy aims to understand the dynamics of the modern world, to understand the nature of ecological problems and to design sustainable lifestyles ([Boehnert, 2013](#)).

All of the teachers defend the view that the social studies course is related to ecology. Teachers stated that social studies is related to ecology as an interdisciplinary, interaction-based, life-related, natural resources and awareness-raising course. As a matter of fact, social studies course makes use of various sciences such as ecology in order to raise effective citizens who can make informed decisions and solve problems in changing local and global conditions ([Öztürk, 2009](#)). [Wooltorton \(2006\)](#), on the other hand, states that the concepts, skills, values and activities related to ecological literacy are taught to students in the social studies course. In addition, ecological literacy can play an important role in raising effective citizens, which is the ultimate goal of social studies course.

Teachers stated that ecological literacy education should be done within the scope of various teaching principles, strategies, methods and techniques. Teachers generally stated that ecological literacy education can be applied with the principle of experience-based learning, social learning theory, teaching strategy by presentation, case study method, and drama technique. In addition, video, film, visual/photography, such as in-class applications/activities can be included, while nature trips, observation, tree planting, plant breeding, animal feeding, such as outside-class applications/activities can be included. This result obtained in the study is in the same direction as similar research results in the literature. [Okuy et al. \(2021\)](#) in their study with preschool teachers, they stated that teachers should make arrangements for school gardens suitable for feeding animals and growing plants. In addition,

they emphasized that students should be given responsibility and that their work that awakens the consciousness of nature should be done. In the study conducted by [Güzelyurt & Özkan \(2018\)](#) with pre-school teachers, activities such as plant breeding, animal feeding, examination in nature, making trips and recycling are included in environmental education. [Turkoğlu \(2019\)](#) stated that teachers and teacher candidates prefer experiment and observation, drama and game methods in environmental education. In the relevant literature, students can better grasp the seriousness of ecological problems through activities intertwined with nature ([Ha et al., 2021](#)). In addition, [Berkowitz et al., \(2005\)](#) emphasized that learning and teaching should be a content together and field studies should be included in ecological literacy education.

Teachers stated that the difficulties in ecological literacy education were before, during and after the education. Financial inadequacy, lack of transportation, lack of education, official permissions, negative attitudes of students, parents and administrators are listed as the difficulties that may be encountered before the education. During the training, environmental conditions, time constraints, high number of participants, inconsistency of the plan and the implementation were stated as other difficulties that could be encountered. The stereotypical perception of society after education is stated as the most important difficulty that can be encountered. Similar to the results of the research, in a study conducted with preschool teachers, the lack of materials in nature education, the subject, the field of application, the overprotection of the parents, the negative attitude of the administrators, the financial inadequacy, the lack of experts, crowded classes, official permissions, the undisciplined behavior of the children in the activities were stated as the difficulties experienced by the teachers ([Okuy et al., 2021](#)). [Güzelyurt & Özkan \(2018\)](#) and [Türkoğlu \(2019\)](#) stated in their studies that the inadequacy of the educational environment of the teachers, the lack of support from the parents, the lack of materials and the lack of support from the administrators are the difficulties they experience in nature education. [Pedretti & Nazir \(2014\)](#) also found that teachers have difficulties in environmental education due to the lack of environmental resources and the intensive curriculum.

Ecologically minded individuals are needed to ensure a sustainable future. Teachers, especially the family, have an important role in raising these individuals. Within the scope of the qualified formal education given, it is important to facilitate the ecological literacy education process and to ensure the continuity of this education in order for the individual to be ecologically literate and to be able to provide these educations.

In the light of the research findings and the results of the studies in the literature, the following suggestions are presented: Ecological literacy training can be provided to social studies teachers and the continuity of these trainings can be ensured. Environmental education activities can be planned in the presence of teachers and experts. It can be suggested that all stakeholders in the education process (school management, parents, etc.) provide convenience in order to overcome the difficulties to be experienced in the ecological education process to be given in schools. Materials, transportation vehicles, etc. needed in the realization of ecological literacy education. factors may be taken into account by the authorities. A comparison can be made by taking the opinions of teachers in different branches about ecological literacy. Determining the ecological literacy levels of social studies teachers can be handled by other researchers.

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Ekolojik Okuryazarlığa Yönelik Sosyal Bilgiler Öğretmenlerinin Görüş ve Önerileri

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Özet

Ekolojik sorunların günden güne artması telafisi olmayan tehlikelere yol açmaktadır. Bu durum insanların diğer canlılar ve çevre ile uyumlu yaşamasını zorunlu kılmakta ve ekoloji biliminin önemini artırmaktadır. Dolayısıyla bireylerin sürdürülebilir kalkınmasında ekolojik okuryazarlık nitelikli bir temel oluşturmaktadır. Nitekim çevreye duyarlı davranışlara sahip öğrencilerin yetiştirilmesi gerekmektedir. Öğrencilerin yaşamın sürdürülebilirliğini önemsemeleri ve sorumlu vatandaşlar olmaları için sosyal bilgiler öğretmenlerinin merkezi bir rolü bulunmaktadır. Bu araştırmada, sosyal bilgiler öğretmenlerinin ekolojik okuryazarlığa ilişkin görüşleri ve farkındalıkları incelenmektedir. Nitel araştırma yönteminin kullanıldığı bu araştırmaya Türkiye'nin farklı illerinde görev yapan 34 sosyal bilgiler öğretmeni katılmıştır. Araştırmacı tarafından hazırlanan açık uçlu sorulardan oluşan yarı yapılandırılmış görüşme formu ile veriler toplanmıştır. Araştırmada elde edilen veriler içerik analizi ile çözümlenmiştir. Öğretmenlerin yaptığı ekoloji, ekolojik okuryazarlık tanımlarının, ekolojik okuryazarlığın amaçlarının ve ekolojik okuryazar bireyin özelliklerinin literatür ile benzer olduğu görülmüştür. Ayrıca öğretmenler etkin bir vatandaşın ekolojik okuryazar olduğunu ve sosyal bilgiler dersinin ekoloji bilimi ile ilişkili olduğunu vurgulamıştır. Öğretmenler ekolojik okuryazarlık eğitiminin uygulanmasında farklı ilke, kuram, strateji, yöntem, teknik ve etkinlikler hakkında görüş belirtmiştir. Ayrıca öğretmenler ekolojik okuryazarlık eğitimi öncesi, sırası ve sonrasında karşılaşılabilecek güçlüklerle dikkat çekmişlerdir.

Anahtar Kelimeler: Ekoloji, Ekolojik okuryazarlık, Sosyal bilgiler, Öğretmen.



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Genişletilmiş Özet

Problem: 21. Yüzyıl bireylerinden çeşitli okuryazarlıklara sahip olması beklenmektedir. Nitekim okuryazarlık kelimesi coğrafya, bilgi, ekonomi, hukuk, medya gibi çeşitli kelimelerle bütünleşerek belirli bilgileri ve becerileri içeren yeni ve farklı kavramları oluşturmaktadır. Eğitimde okuryazarlık becerileri geniş bir yelpazede nitelendirilirken bu yeni becerilerden biri de ekolojik okuryazarlıktır.

Ekolojik okuryazarlık, iki konuyu birleştiren önemli bir terimdir (Ha, Huang, Zhang & Dong, 2021). Ekolojik okuryazarlık kavramını oluşturan kelimeler yakından incelendiğinde ekoloji, Yunanca kökenli "oikos" ve "logos" kelimelerinden oluşarak "Oekologie" terimi türetilmiştir. Canlıların birbirleri arasındaki bağlantıları ve çevreleri ile etkileşimlerini inceleyen bir disiplin şeklinde tanımlanmaktadır (Spurgeon, 2006; Online Etymology Dictionary, 2020). "Literacy" kelimesine karşılık gelen okuryazarlık ise kimlik oluşturma, eylemlilik, okuma yazma becerilerini kullanmayı ve öğrenmeyi içeren anlam oluşturma sürecidir (Häggströmi ve Schmidt, 2020). Ekolojik okuryazarlık ile ekolojik bilginin edinilmesi, ekolojik farkındalığın artırılması, ekolojik etiğin pekiştirilmesi, ekolojik tutum ve davranışların iyileştirilmesi, güçlendirilmesi amaçlanmaktadır (Ha ve diğerleri, 2021).

Ekolojik okuryazarlık ile ekolojik bilginin edinilmesi, ekolojik farkındalığın artırılması, ekolojik etiğin pekiştirilmesi, ekolojik tutum ve davranışların iyileştirilmesi, güçlendirilmesi amaçlanmaktadır (Ha ve diğerleri, 2021). Bu amaçları gerçekleştiren bireyler, ekosistem dinamiğinin geçmiş ve gelecekteki sonuçlarına ilişkin algı ve anlayışa sahip, ekolojik sorunları eleştiren, araştıran, sorgulayan ve bu sorunlara çözüm bulan, kendilerini doğanın bir parçası kabul eden ekolojik okuryazar olarak tanımlanabilir (Khanal, Pandey, Khan, Mishra & Kunwar, 2020; Özer & Yıldırım, 2021).

Ekolojik okuryazarlık eğitimi, eğitim sürecinin temel odaklarından biridir. Nitekim insan temelli yanlış davranışlar sebebiyle hava, toprak ve su kirliliği, doğal kaynakların azalması ve küresel iklim değişikliği gibi geri dönüşü olmayan çevresel tehlikeler meydana gelmiştir. Bu nedenle ekolojik okuryazarlık günümüz dünyasında önem taşımaktadır (Irianto, Yunansah, Mulyati, Herlambang & Setiawan, 2020; Khanal, Pandey, Khan, Mishra & Kunwar, 2020). Öğrencilere bugün verilecek eğitimin içeriği, bireyin gizil gücünü ortaya çıkarmak ve bunları davranışa dönüştürerek geleceğin sürdürülebilirliğine yardımcı olacaktır. Dolayısıyla onları ekolojik okuryazar bireyler olarak yetiştirmek gerekmektedir. Öğrencilerde ekolojik okuryazarlığı geliştirmek için sürdürülebilirlik kapsamında çevrenin korunması ve ekolojik farkındalık oluşturulmalıdır (Febriani, Fariyah & Nasution, 2020; Khanal ve diğerleri, 2020; Koçoğlu & Ekici, 2013). Nitekim eğitim sürecinde sadece bilgi boyutunda kalmayıp eylemsel boyutta ekolojik okuryazar bireyler yetiştirmek hedeflenmektedir (Özer & Yıldırım, 2021). Ekolojik yaşam becerilerinin kazandırması, insanın doğayla bağını kurarak kuvvetlendirilmesi ve ekolojik temelli bir yaşam oluşturulması öğretmenler tarafından gerçekleştirilebilir (Aydın, Dünder & Korkut, 2016). Çünkü öğretmenler, ekolojik okuryazar bireylerin yetiştirilmesinde önemli bir role sahiptir. Öğretmenlerin sahip olduğu pedagojik bilgi düzeyleri, ekolojik okuryazarlığa ilişkin bilgi, tutum ve davranışları eğitim sürecinde önem taşımaktadır. Berkowitz, Ford & Brewer (2005) öncelikle öğretmenlerin birer ekoloji okuryazarı olmalarını ve ekolojik okuryazarlığı içeren temel ekolojik sistemleri ve ilkeleri anlamaları gerektiğini belirtmektedir.

Ekolojik okuryazarlığın yeni bir kavram olmasından dolayı literatürde ilgili çalışmaların sınırlı olduğu söylenebilir. Bununla birlikte, ekolojik okuryazarlığın eğitim bağlamında az kullanıldığı ve az araştırıldığını görülmektedir. Yapılan çalışmaların farklı branştaki öğretmenlerin görüşlerinin belirlenmesine yönelik olduğu görülmektedir. Sosyal bilgiler öğretmenlerinin görüşlerinin de değerlendirilmesine yönelik kapsamlı bir çalışmaya ihtiyaç olduğu tespit edilmiştir. Bu bağlamda araştırmamızın, sosyal bilgiler öğretmenlerinin ekoloji ve ekolojik okuryazarlık konusunda mevcut görüşlerinin ortaya koyulmasına ve ekolojik okuryazarlık eğitimi programının geliştirilmesinde literatüre katkı sağlayacağı düşünülmektedir.

Yöntem: Sosyal bilgiler öğretmenlerinin ekoloji, ekolojik okuryazarlık ve ekolojik okuryazarlık eğitimi hakkında sahip oldukları bilgileri derinlemesine tespit etmek amaçlandığından, çalışmada nitel araştırma yöntemlerinden fenomenolojik desen kullanılmıştır. Fenomenolojik desenin temel amacı, bireylerin kendi

bakış açısından algı ve deneyimlerini derinlemesine ve ayrıntılı kavramlar veya durumları ön plana çıkarmaktır (Ersoy, 2019).

Araştırmının çalışma grubunu, Türkiye'nin farklı illerinde görev yapan, gönüllülük esası 34 sosyal bilgiler öğretmenini oluşturmaktadır. Katılımcılar belirlenirken amaçlı örnekleme yöntemlerinden kartopu/zincir örnekleme kullanılmıştır. Bu yaklaşıma göre, araştırmanın problemi doğrultusunda zengin bilgi kaynağı olabilecek bireylerin belirlenmektedir. Bu yaklaşıma göre, araştırmanın problemi doğrultusunda zengin bilgi kaynağı olabilecek bireylerin belirlenmektedir. Görüşme formunu dolduran sosyal bilgiler öğretmenine "Araştırma konusu ile ilgili görüşme formunu kimlere iletmemi önerirsiniz?" sorusu sorularak süreç ilerledikçe birey sayısı ve veri çeşitliliğinin artırılması amaçlanmaktadır (Yıldırım & Şimşek, 2016).

Araştırmada veri toplama aracı olarak fenomenolojik çalışmalarda genellikle kullanılan yapılandırılmış görüşme tercih edilmiştir (Ersoy, 2013). Araştırmacı tarafından geliştirilen yapılandırılmış görüşme formu aracılığıyla öğretmenlerin araştırma konusuna ilişkin görüşlerinden derinlemesine veri elde edilmesi amaçlanmıştır. Nihai görüşme formu katılımcıların kişisel bilgilerini içeren birinci kısımdan; sekiz adet görüşme sorularının yer aldığı ikinci kısımdan oluşmaktadır.

Araştırmının amacı kapsamında hazırlanan veri toplama aracı çeşitli illerde görev yapan öğretmenlere daha kolay bir şekilde ulaştırılması için Google Forms sistemine aktarılmıştır. Veri toplama sürecinin ilk aşamasında katılımcılardan gönüllü katılım onayı alınmıştır. Çevrimiçi formun internet bağlantısı araştırmacı tarafından öğretmenlerle paylaşılmıştır.

Araştırmada elde edilen nitel veriler, temel tutarlılıklar ve anlamları belirlemek amacıyla içerik analizi ile çözümlenmiştir (Patton, 2014). Verilerin analizi Yıldırım & Şimşek (2016) tarafından önerilen, verilerin kodlanması, temaların bulunması, verilerin kodlara ve temalara göre düzenlenmesi ve tanımlanması ile bulguların yorumlanması olmak üzere dört aşamada gerçekleştirilmiştir.

Araştırmının geçerlik ve güvenirliğinin sağlanması amacıyla çeşitli çalışmalar yapılmıştır. Bunlar; uzman görüşleri alınarak araştırmanın iç geçerliği; araştırma grubu ve süreci hakkında derinlemesine betimleme yapılarak araştırmanın dış geçerliği; doğrudan alıntılara yer verilerek araştırmanın iç güvenirliği; verilerin analizi farklı bir araştırmacı tarafından değerlendirilerek araştırmanın dış güvenirliği sağlanmıştır. Bunlara ek olarak Miles & Huberman'ın (1994) nitel veri analizine ilişkin güvenirlik formülüne göre "Güvenirlik = %92" olarak tespit edilmiştir.

Bulgular: Öğretmenlerin ekoloji kavramını "canlıların kendisi, birbiriyle, cansız varlıklarla ve çevresi ile etkileşimi, doğa ve çevre bilimi" ile "sürdürülebilirlik" olarak tanımlamaları üzerine bu kavram hakkında bilgi sahibi oldukları görülmektedir. Bu bağlamda öğretmenlerin ekoloji ile ilgili tanımları incelendiğinde genel olarak literatürde yer alan tanımlara paralel olduğu görülmektedir (Erinç, 1984; Spurgeon, 2006; McBride, 2011).

Öğretmenler ekolojik okuryazarlık kavramını "doğal döngüyü/süreçleri anlamak, doğayı doğru anlama, çevre/doğa ile uyumlu yaşamak, insan ile çevre ilişkisine yönelik farkındalık" kapsamında tanımlamışlardır. Özer & Yıldırım (2021) çalışmasında, okul öncesi öğretmenlerinin ekolojik okuryazarlık hakkında bilgi sahibi olduklarını ve yaptıkları tanımların literatür ile benzer şekilde olduğunu ortaya koymuştur.

Öğretmenler genel olarak davranışsal, bilişsel ve duyuşsal içerikli olmak üzere ekolojik okuryazarlığın amaçlarını belirtmektedir. Bu sonuç doğrultusunda öğretmenlerin belirttiği ekolojik okuryazarlığın amaçları literatür ile benzer olduğu görülmektedir (Schwartz, 1999; Wooltorton, 2006; Ha ve diğerleri, 2021).

Öğretmenler ekolojik okuryazar bireyi duyarlı, seven, koruyan, tehlikeli davranışlarda bulunmayan, bilinçli, saygılı, değer veren, uyumlu yaşayan, barışık doğanın ilkelerinin bilen, canlıların yaşam haklarını savunan özelliklere sahip olduğunu belirtmişlerdir. Bu bağlamda öğretmenlerin belirttikleri ekolojik okuryazar birey özellikler farklı çalışmalarla aynı doğrultudadır (Borden, 2007; McBride, 2011; Özer & Yıldırım, 2021).

Öğretmenlerin tamamı etkin bir vatandaşın ekolojik okuryazar olması gerektiğini ve sosyal bilgiler dersinin ekoloji ile bağlantılı olduğunu görüşünü savunmaktadır. Nitekim sosyal bilgiler dersi değişen yerel ve küresel şartlarda, bilgiye dayalı karar alıp, problem çözebilen etkin vatandaşlar yetiştirmek amacıyla ekoloji gibi çeşitli bilimlerden yararlanmaktadır (Öztürk, 2009).

Öğretmenler genel olarak ekolojik okuryazarlık eğitiminin yaşantı temelli öğrenme ilkesi, sosyal öğrenme kuramı, sunuş yoluyla öğretim stratejisi, örnek olay yöntemi, drama tekniği ile uygulanabileceğini belirtmişlerdir. Öğretmenler ekolojik okuryazarlık eğitime yönelik güçlüklerin eğitim öncesi, sırası ve sonrasında olmak üzere belirtmişlerdir. İlgili literatürde öğrenciler doğayla iç içe yapılan etkinliklerle ekolojik sorunların ciddiyetini daha iyi kavrayabilmektedir (Ha ve diğerleri, 2021). Ayrıca Berkowitz, Ford ve Brewer (2005) ekolojik okuryazarlık eğitiminde öğrenme ve öğretimin birlikte olan bir içeriğin olması gerektiğini ve saha çalışmalarına yer verilmesi gerektiğini vurgulamışlardır.

Öneriler: Sosyal bilgiler öğretmenlerine ekolojik okuryazarlık eğitimleri verilmesi ve bu eğitimlerin süreklilik sağlanabilir. Öğretmenler ve uzmanlar eşliğinde çevre eğitimi etkinlikleri planlanabilir. Okullarda verilecek ekolojik okuryazarlık eğitim sürecinde yaşanacak zorlukların üstesinden gelinebilmesi için eğitim sürecindeki tüm paydaşların (okul yönetimi, veli, öğretmen vb.) kolaylık sağlaması önerilebilir. Ekolojik okuryazarlık eğitiminin gerçekleştirilmesinde ihtiyaç duyulan materyal, ulaşım aracı vb. unsurlar yetkililerce dikkate alınabilir. Ekolojik okuryazarlığa ilişkin farklı branştaki öğretmen görüşleri alınarak karşılaştırma yapılabilir. Sosyal bilgiler öğretmenlerinin ekolojik okuryazarlık seviyelerini belirlenmesi diğer araştırmacılar tarafından ele alınabilir.