

## Issues in teaching the human and ecology concept

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### Abstract

The purpose of this research is to evaluate the problems encountered in teaching the concept of human and ecology from the perspective of primary school teachers. The research was created in accordance with the qualitative research method. The study group of the research consists of 25 primary school teachers who are teaching in various primary schools in Kazakhstan in the 2022–2023 academic year. Research data were collected with a semi-structured interview form developed by the researchers. The research data were analysed by descriptive analysis method. As a result of the research, the majority of primary school teachers who participated in the research stated that they found the students' knowledge of human and ecology concepts at a moderate level. Majority of the primary school teachers who participated in the research stated that the students' interest in the concepts of human and ecology was high. The primary school teachers who participated in the research expressed the lack of materials, the inability to find the opportunity to practice, the lack of opportunity to develop projects, the inadequacy of cooperation with the family, the difficulty in sensitising the students and the inadequacy of the ecological infrastructure of the schools as the problems they encounter while teaching the concepts of human and ecology to their students.

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## 1. Introduction

Man has been in mutual interaction with nature since the day he existed. While this interaction, which constitutes one of the main discussion grounds for the transformation of modern societies, presents the history of man's struggle to dominate nature, according to some, it corresponds to the search for a unity with mother nature, which ensures the continuation of life (Uzunboylu, Cavus, & Ercag, 2009). However, these two different approaches come together in the common denominator of people's understanding of nature on the axis presented by their social relations and their belief in the explanatory nature of modern science (Alberti et al., 2003; Şahin, Aydın, & Yurdakul, 2016).

### 1.1. Theoretical and conceptual framework

In the changing and developing world, the individual encounters many concepts and can use the new concepts he has learned where necessary. People always benefit from concepts when communicating with others and describing an object or event (Cherdymova et al., 2018). The concept of ecology is named as the branch of science that examines all kinds of interactions of living things with their environment and their results and reasons (Harlow, Dwyer, Hansen, Iveland, & Franklin, 2018). As can be understood from the definition, ecology is closely related to environmental science. Ecology is the science of activities that concern all humanity and tries to insure the future of humanity. Ecology can be defined as a bridge between natural sciences and social sciences (Finn, Maxwell, & Calver, 2002; Lee & Stewart, 2013)

Ecology is the study of interactions between living things and their environment. This provides a new understanding of how vital systems may change in the future as they are now. Ecology is essential for enriching the world and for human well-being (Erdogan, 2011; Glettler & Torkar, 2021). It also provides new insights into the interdependence between humans and nature, which is vital for maintaining food production, clean air and water supply, and maintaining biodiversity in a changing climate (Ju & Kim, 2011; Nurbekova et al., 2022).

Ecology provides the necessary basis for the protection of nature. Maintaining a habitat mosaic ensures the survival of a rich variety of species (Kabapinar, Cengiz, & Aglarci, 2018). Ecology science, like other scientific disciplines, relies on observational, experimental and purely objective analyses to distinguish between answers to how the world works (Stevenson, 2007). Based on human understanding of ecology thought, humans are not as machines, which make them a part of nature (Ahi & Alisinanoğlu, 2018). In this context, the social understanding of ecological thought shows parallelism with the human understanding. The view of the society, which sees people as a part of nature, is that society does not only consist of people, trees, animals, water and soil (Jancius, Vazoniene, Gavenauskas, & Pekarskas, 2018; Küçük & Yıldırım, 2021).

In ecological thought, interspecies assistance and relationships are based on interdependence. Also, society is not like a forest where everyone is fighting against each other; it is seen as an understanding in which community relationships prevail among the members of the forest (Palmer, 2002). Many researchers, who are worried about the alienation of children from nature, are working

on how to re-establish the child–nature connection. It is important that these studies, which are especially promising to build on the negativity of the lack of nature and the benefits of nature connection, should be evidence-based in order to be useful (Charles & Louv, 2020). Spending time outside and exposure to living nature have mental benefits, either by enhancing senses and sensitivities through direct interaction requiring the use of practical knowledge or by enabling one to think clearly and be more creative through focusing attention. Studies show that the natural environment, in general, has positive effects on people, especially children (Wells & Evans, 2003).

### *1.2. Related research*

Lisowski and Disinger (1991) conducted an experimental study with 79 middle-school students consisting of three groups, examining the effects of ecological concepts and education in nature on the development of these concepts. In this study, a 40-question ecology test was developed, including the characteristics of plants and animals, classification of plants and animals, habitats of plants and animals, nutritional relationships, food chain, energy transfer, energy pyramid and decomposition. According to the results obtained from the research, it has been revealed that the natural field studies carried out on site are effective in learning ecological concepts and the permanence of the learned knowledge.

In a qualitative study conducted by Willis (2001) to determine the thoughts of teachers who use the school environment for nature education, interviews were conducted with 10 teachers. According to the results obtained, teachers' past nature experiences have an effect on their willingness to conduct nature education studies with their students. According to the research, teachers expressed a very strong belief in the benefit of nature education.

Aaron (2009), on the other hand, primarily aimed to determine the nature perceptions of the students in a case study of 381 fifth-grade students living in the city. He compared the data he collected from students before and after a 4-day outdoor education programme. As a result of the research, it was revealed that the activities carried out improve students' perceptions of nature and enable them to talk about natural elements instead of artificial elements in nature. It has also been demonstrated that these activities are particularly important for students suffering from nature deprivation.

The study of Flogaitis, Daskolia, and Agelidou (2006) titled 'Preschool Teachers' Concepts on Environmental Education' was conducted on 110 preschool teachers in Athens. Five open-ended questions about environmental education were asked in the study. As a result of the research, it was revealed that the teachers mostly carried out environmental education on environmental knowledge and that teachers adopted positive ideas for nature and environmental protection. Moreover, while it has been accepted by the education experts that it is more important to develop attitudes and behaviours towards the environment in creating environmental awareness, it has been stated that this situation cannot be given to the students sufficiently by the teachers, that environmental issues are better taught to the students through activities that interact with nature and that environmental education should be compulsory in preschool.

The aim of Tsekos, Christoforidou, and Tsekos's (2012) study titled 'Forest Theme in Preschool Students' was to reflect the environmental awareness that has gained importance in the last century among preschool students with different activities. In general, it is seen that the objectives related to environmental education in environmental conferences are focused on the primary school period. This study is a study on the name that environmental education can be brought to an earlier age. The content of the study is about the feeling of the forest ecosystem by the students through visual and various interactive activities of a fairy tale written to increase the awareness of the forest concept in preschool children.

The aim of Levine and Strube's (2012) research titled 'Attitudes, Knowledge and Behaviours towards the Environment among University Students' was to determine the attitudes and behaviours of university students towards the environment. The research was conducted on 90 people, and as a result of the research, it was determined that there was no significant difference in terms of environmental knowledge; there were significant differences between individuals in terms of attitude and behaviour; and men were more interested in environmental issues than women.

### *1.3. Purpose of the research*

The purpose of this research is to evaluate the problems encountered in teaching the concept of human and ecology from the perspective of primary school teachers. For this purpose, the following sub-objectives have been established:

1. How do primary school teachers evaluate students' level of knowledge about the concept of human and ecology?
2. How do primary school teachers evaluate students' level of interest in human and ecology concepts?
3. What kind of problems do primary school teachers encounter while teaching students the concepts of human and ecology?

## **2. Methods and materials**

In this section, which aims to reveal the problems faced by the primary school teachers participating in the research while teaching the concepts of human and ecology to the students, there is information about the method, the participant group of the research, data collection tools, the data collection process and the evaluation of the data.

### *2.1. Research method*

The research was created out in accordance with the qualitative research method. In qualitative research, a causal link may not be established between events and facts. In addition, the causes of events and phenomena that cannot be measured by quantitative research can be determined by more in-depth investigations. Qualitative studies often involve in-depth analysis of events and phenomena and specific descriptions of the researcher. The researcher is obliged to present the events and facts without distorting the reality; events and facts are not detached from their own

reality or context and they are tried to be preserved as they were formed. The researcher tries to analyse, interpret and make sense of events and phenomena in their own context (Golafshani, 2003). For this reason, qualitative research method was chosen as the research method in this study.

## 2.2. Participants

The study group of the research consists of 25 primary school teachers who are teaching in various primary schools in Kazakhstan in the 2022–2023 academic year. After explaining the ethical principles of the research, primary school teachers were chosen from among the teachers who voluntarily agreed to participate in the research. Of the primary school teachers, 10 are female and 15 are male. While 6 of the primary school teachers have 1–10 years of professional experience, 19 of them have 11 or more professional experience.

## 2.3. Data collection tools

Research data were collected with the semi-structured interview form developed by the researchers. After the researchers carried out the relevant literature review, interview questions were formed to get the opinions of the study group of the research. The prepared interview questions were presented to the expert and their opinions were received on whether the questions were appropriate. The semi-structured interview form, which was finalised with expert opinions, is given in Table 1.

Table 1. Semi-structured interview form

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Demographics
Your gender:
Professional experience:
research questions
1. How do you evaluate your students' level of knowledge about human and ecology concepts? Very high: ( ) High: ( ) Medium: ( ) Low: ( ) Very low: ( ) Teacher Opinion:
2. How do you evaluate your students' level of interest in human and ecology concepts? Very high: ( ) High: ( ) Medium: ( ) Low: ( ) Very low: ( ) Teacher Opinion:
3. What kind of problems do you encounter while teaching your students the concepts of human and ecology? Teacher Opinion:

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In the semi-structured interview form given in Table 1, there are two demographic questions created to learn the gender and professional experiences of primary school teachers. Within the scope of the research, three questions were formed to get the opinions of the teachers.

## 2.4. Data collection process

The research data were collected during face-to-face interviews with teachers in primary schools where primary school teachers work. The interviews with the teachers were held in a meeting room that the school officials found appropriate. Primary school teachers were asked to fill in semi-structured interview forms. Teachers filled out the forms in different time periods and answered all questions in approximately 25–30 minutes. It took approximately 3 weeks to complete the interviews with all the teachers who constituted the study group of the research.

### 2.5. Data collection analysis

Research data were analysed by descriptive analysis method. It has been stated that descriptive analysis is a frequently used method for researchers to obtain summary information about different phenomena and events they want to study. In most descriptive analyses, the data are classified according to predetermined themes; the findings related to the classified data are summarised; and the summaries are interpreted with the subjective knowledge of the researcher. In this study, two of the research questions prepared to collect data were formed on the themes prepared before, and one of them was prepared as an open-ended question.

## 3. Results

In this section, the answers given by the primary school teachers to the questions in the semi-structured interview form are given in tables. The comments of the teachers are given under the tables by keeping the personal information of the teachers confidential (Code-1, Code-2, Code-3 ...).

In Table 2, the evaluations of the primary school teachers participating in the research regarding the students' knowledge levels about human and ecology concepts are given.

Table 2. Evaluations of primary school teachers participating in the study on students' knowledge levels of human and ecology concepts

Category	F	%
Very high	2	8
High	5	20
Middle	14	56
Low	4	16
Very low	-	-
Total	25	100

In Table 1, the evaluations of the primary school teachers participating in the research regarding the students' knowledge levels about human and ecology concepts are discussed in five categories. 8% of the primary school teachers stated that they found students' knowledge levels about human and ecology concepts very high, 20% high, 56% medium and 16% low. Among the teachers participating in the research, there is no teacher who stated that the students' knowledge level about human and ecology concepts is very low.

The views of some primary school teachers who participated in the research are as follows: 'Code-3: I think students have a very high level of knowledge about the concepts of environment and ecology according to their age'. 'Code-10: I think students have a high level of knowledge about human and ecology. This is because I think they are children of the technology age'. 'Code-4: I find it moderate. I think we are not providing enough training'. 'Code-22: I find it low. Unfortunately, it is not possible to say that they have achieved the targeted gains'.

In Table 2, the evaluations of the primary school teachers participating in the research regarding the students' level of interest in the concepts of human and ecology are given.

Table 3. Primary school teachers' evaluations of students' levels of interest in human and ecology concepts

Category	F	%
Very high	2	8
High	15	60
Middle	7	28
Low	1	4
Very low	-	-
Total	25	100

In Table 2, the evaluations of the primary school teachers participating in the research regarding the students' level of interest in the concepts of human and ecology are gathered in five categories. 8% of the primary school teachers stated that they found the students' interest levels about human and ecology very high, 60% high, 28% medium and 4% low. Among the teachers participating in the research, there is no teacher who stated that the students' interest levels about human and ecology concepts are very low.

The opinions of some primary school teachers who participated in the research are as follows: 'Code-15: I also stated that their knowledge level is high. This is because they are already related. I think they have an extremely high level of awareness'. 'Code-11: Students' interest in human and nature concepts is higher than their level of knowledge. I think it attracted a lot of attention'. 'Code-24: Students have a moderate environmental consciousness'. 'Code-25: The educational opportunities we offer to students are not enough to make them interested in the concepts of human and environment. That's why I think they have a low level of interest'.

In Table 3, the views of the primary school teachers participating in the research on the problems they encounter while teaching the concepts of human and ecology to their students are evaluated.

Table 4. Opinions of primary school teachers on the problems they encounter while teaching their students the concepts of human and ecology

Category	F	%
Lack of material	18	72
Unable to find application	15	60
Lack of project development opportunity	11	44

Lack of cooperation with family	7	28
Difficulty in sensitising students	6	24
Inadequate ecological infrastructure of schools	2	8

In Table 4, the views of primary school teachers participating in the research on the problems they encounter while teaching the concepts of human and ecology to their students are categorised. 72% of primary school teachers lack materials, 60% cannot find the opportunity to implement, 44% do not have the opportunity to develop projects, 28% lack cooperation with the family, 24% have difficulty in sensitising students and 8% are schools' ecological problems. They answered that there is a lack of infrastructure.

The opinions of some primary school teachers who participated in the research are as follows: 'Code-5: Necessary materials must be provided in order to fully teach the concepts of human and environment in the school environment. Creating environmental awareness in students is possible by learning by doing. We can do this by creating spaces where they can find the opportunity to practice at school'. 'Code-9: Lack of material is the most important problem. We cannot find the opportunity to develop projects with students. Schools need to support teachers in this regard'. 'Code-12: The ecology awareness, which is tried to be brought to the students at school, should be supported by the families in the home environment. For example, when we mention the importance of saving in creating sustainable environmental awareness, families need to display a thrifty attitude in the home environment. Oftentimes, families act unconsciously on such matters'. 'Code-16: It is an important problem that schools are not designed according to ecological architecture. The lack of supporting materials, the difficulties experienced in raising students' sensitivity, and the disinterested attitude of families to the issue are among the problems that I consider important'.

#### 4. Discussion

The majority of the primary school teachers participating in the research stated that they found the students' knowledge about human and ecology concepts at a moderate level. Majority of the primary school teachers who participated in the research stated that the students' interest in the concepts of human and ecology was at a high level. The primary school teachers who participated in the research expressed the lack of materials, the inability to find the opportunity to practice, the lack of opportunity to develop projects, the inadequacy of cooperation with the family, the difficulty in sensitising the students and the inadequacy of the ecological infrastructure of the schools as the problems they encounter while teaching the concepts of human and ecology to their students. When the researches in the field are examined, it is seen that various studies have been carried out on the creation of ecology awareness. Dutcher, Finley, Luloff, and Johnson (2007) found that there was no difference between environmental interest and behaviour in variables, such as age, gender and income level. Atasoy (2005), in his study titled 'Education for the Environment: A Study on Environmental Attitudes and Environmental Knowledge of Primary School Students', used the Environmental Knowledge Test and the Environmental Attitude Scale to determine the environmental attitudes and knowledge of sixth-, seventh- and eighth-grade students and tried to determine the effectiveness of environmental education. According to the results of the research, it was determined that there were significant differences between the scores of sixth-grade and



eighth-grade students and seventh-grade and eighth-grade students in terms of environmental attitude and environmental knowledge. When the attitude scale was evaluated, it was seen that there was a significant difference between the scores of the sixth-grade and eighth-grade students. Jeronen, Jeronen, and Raustia (2009) investigated environmental education in schools. With the qualitative study, he stated that teachers generally carry out environmental education studies in schools for children. In addition, it was stated that environmental trips were made, and instead of learning by doing and living in nature, methods including mental thinking methods were emphasised. In this sense, it is emphasised that environmental education is not used effectively

In another study conducted by Shepardson, Wee, Priddy, and Harbor (2007) to investigate the cognitive models of primary school students about the concept of environment, it was seen that environmental perceptions were gathered in four different categories according to the pictures drawn by the students. The students described the environment as the place where animals and plants live, the place that supports life, the place that is affected or changed by humans and the place where animals, plants and people live, under four categories. In his study, Alerby (2000) analysed 109 children between the ages of 7 and 16, and what comes to mind when they talk about the environment. The analyses of children's thoughts about the environment were made by digitising them by revealing the qualitative similarities, differences and patterns that each of them contains. The results of the study showed that children's thoughts focused on clean environment, dirty environment, both clean and dirty environment and activities needed to protect the environment. Ballantyne and Packer (2002) state that free environmental education practices based on nature experience and formal environmental education practices carried out within the school have the potential to fill the gap in students' correct and realistic perception of their environment and acquiring responsible behaviour.

## **5. Conclusion**

In today's conditions, where the contact with nature is gradually decreasing, factors such as the dominance of city life and the increase in contact with electronic devices make childhood experiences different from the past. Especially in the last quarter century, the relationship between education and training and environmental problems has been re-examined. The suitability of teachers, schools and curricula to raise individuals with high environmental awareness and ecological awareness has begun to be questioned again. As a result of all these, concepts such as virtue, morality, value, tolerance, balance, unity, ethics, development and economy have been redefined ecologically. While the necessity, importance, function and effects of education for the environment are being questioned, the issue of environmentalising the lessons and not giving sufficient environmental awareness to students in schools has started to be discussed in many countries. In this direction, this study aimed to evaluate the problems encountered in the teaching of the concept of human and ecology from the perspective of primary school teachers. As a result of the research, the majority of primary school teachers who participated in the research stated that they found the students' knowledge of human and ecology concepts at a moderate level. Majority of the primary school teachers who participated in the research stated that the students' interest in the concepts of human and ecology was high. The primary school teachers who participated in the research expressed the lack of materials, the inability to find the opportunity to practice, the lack of

opportunity to develop projects, the inadequacy of cooperation with the family, the difficulty in sensitising the students and the inadequacy of the ecological infrastructure of the schools as the problems they encounter while teaching the concepts of human and ecology to their students.

## 6. Recommendations

Primary school teachers who participated in the research emphasised that their students' knowledge of human and ecology concepts was at a moderate level, but their interest in these concepts was high. From this point of view, it is understood that when the necessary educational opportunities are created, the targeted gains in the students can be created. For this reason, it is necessary to eliminate the problems that primary school teachers encounter while teaching the concepts of human and ecology. In this direction, it is necessary to eliminate the spatial deficiencies of the education given in schools. It is necessary to provide the necessary materials in the school and in the classroom, to create application areas, to support students to carry out projects within the school and to organise the schools in an ecology-friendly manner. In addition, various activities should be organised in order to raise awareness in students. In order to facilitate cooperation with the parents of the students, environmental awareness seminars should be organised at regular intervals in schools.

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