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IMPROVING ENVIRONMENTAL SENSITIVITY THROUGH ENVIRONMENTAL EDUCATION PRACTICES BASED ON PROJECT-BASED TEACHING

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Abstract

The aim of the research is to improve the environmental sensitivity of teacher candidates through environmental education practices based on project-based teaching. In this research carried out in the action research pattern, an action plan containing environmental education practices based on project-based teaching has been prepared. The research was conducted with 25 social studies teacher candidates determined by criterion sampling, one of the purposeful sampling methods. The data of the research were obtained using the attitude towards the environment scale and a semi-structured interview form. The analysis of the obtained quantitative data was evaluated by t test; the analysis of qualitative data was evaluated by content analysis. As a result of the research, a statistically significant difference was found between the pre-test and post-test average scores taken from the attitude towards the environment scale. Teacher candidates' views on project-based teaching based practices are that it improves their environmental sensitivity, has a positive impact on their knowledge, attitudes and behaviors towards the environment. In addition, teacher candidates propose various applications aimed at gaining environmental sensitivity in their daily lives and when they start their profession.

Keywords: Project-based teaching; environmental sensitivity; action research; candidate of social studies teacher

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1. Introduction

Concerns about environmental problems are increasing in different parts of the world. This situation is associated with an increase in the damage caused by man to nature. However, nature has been a source of inspiration for centuries for inventions that will allow man to live more comfortably in nutrition, housing, security. But man has not been afraid to harm the nature that embraces him with his increasing knowledge. This situation has caused environmental problems. It did not take long for the problems that initially appeared locally to become global in nature. Countries that remain silent in this situation for their interests have found the solution to be searching for solutions together when they become inadequate in the face of the increasing effects of environmental problems. The world has come together against different environmental problems, especially global warming, air pollution, acid rain, landslides, desertification, decontamination, deforestation and the extinction of living species. International conferences and meetings held with the participation of countries aimed at solving environmental problems were supported by environmental organizations and environmental professionals. The focus of the activities initiated by the states and environmental organizations aimed at solving environmental problems is to provide environmental sensitivity to the individual.

The term environmental sensitivity was first used by Peterson & Hungerford. Peterson & Hungerford (1981, p.2) he defined environmental sensitivity as “an empathetic approach of an individual to the environment”. Empathy, which means that an individual understands his feelings and thoughts by putting himself in the place of the other individual, is the basic condition of altruistic behaviors such as helping, sharing (Dökmen, 2001). If the ecosystem is considered as a human being and it is accepted that it has feelings, Peterson & Hungerford's (1981) definition will make sense. For many years, researchers have adopted the definition that empathy constitutes environmental sensitivity (Eisenberg, 1992). But over time, it has been recognized that environmental sensitivity is associated not only with empathy for the environment, but also with learning about the environment and being concerned about the environment. This situation has also affected the definitions of environmental sensitivity. Accordingly, Rabago (1988) defined environmental sensitivity as appreciating nature and being concerned about the protection of the natural environment. Dennis & Knapp (1997), on the other hand, defined environmental sensitivity as interest and concern towards the environment. It is seen that the concept of empathy, which shaped the first definitions of environmental sensitivity, was supplemented with interest and concern for the natural environment and knowledge in the following years. In this context, environmental sensitivity can be defined as an individual's perception of the natural environment with an empathetic understanding and feeling interest and concern for the natural environment. It has been shown by various studies that the ability of individuals with environmental sensitivity to cause environmental problems is lower than individuals without environmental sensitivity (Değirmenci, 2020; Demir & Koçoğlu, 2023; Kim & Choi, 2005; Kousar et al. 2022; Shrum et al. 1995). In this direction, it can be said that it is

important to gain environmental sensitivity in solving environmental problems. Environmental education is important for individuals to gain environmental sensitivity.

Environmental education is a learning process that supports the education of individuals with knowledge, skills and values that can solve environmental problems (Demir & Ulukaya Öteleş, 2023b; Chawla, 1998; Güven & Aydoğdu, 2012). The ultimate goal of environmental education is to raise environmentally conscious individuals who can solve environmental problems individually and through teamwork (Roth, 1992; UNESCO-UNEP, 1977; United Nations, 1992).

This education has knowledge, attitude and behavior dimensions (Marcinkowski, 2001). The information dimension relates to the information that the individual will need to solve environmental problems; the attitude dimension relates to the individual's thinking about the environment. Attitudes towards the environment are the totality of fears, resentments, value judgments arising from environmental problems, and positive and negative attitudes and thoughts shown by individuals towards beneficial behaviors aimed at solving environmental problems. Finally, the behavior dimension refers to the individual's actions that arise as a result of his/her knowledge and attitude towards the environment. An effective environmental education, which has a role in the acquisition of environmental sensitivity of the individual, depends on the support of the relevant dimensions (Karatekin, 2011, p. 270). It is important that environmental education, which has various dimensions, is provided at all educational stages.

Environmental education extends to preschool, primary school, secondary school and higher education. It is said that preschool and higher education, in particular, have more influence from these levels of education. As a matter of fact, the foundation of the behaviors and habits that an individual will continue at a later age is laid during early childhood (Ersoy & Quadir, 2017, p.74). In this context, it is possible that giving an individual environmental sensitivity through environmental education activities in preschool may affect the state of pro-environmental behavior in later periods. Individuals who are educated at the higher education level, on the other hand, are the direction setters of societies. Especially the teacher candidates studying at the faculties of education shape the future with the children they raise. In this context, the level of environmental sensitivity of teacher candidates is important. In the relevant situation, the quality of environmental education comes to the fore. The environmental education to be given to teacher candidates should increase their level of knowledge, strengthen their positive attitude towards the environment and lead them to the right behavior. In this direction, teaching approaches and methods that encourage prospective teachers to think critically, conduct research and take responsibility for their own learning may have an impact on improving the quality of environmental education courses. The project-based learning approach is one of them.

Project-based learning approach is an approach that places the individual at the center of learning, contributes to the permanence of the knowledge obtained by the individual, supports skills such as critical thinking, analyzing information and working (English & Kitsantas, 2013). In project-based learning, learners individually or as a group determine the problem they

encounter in daily life and want to solve, then conduct research on the related problem and offer solutions within the scope of content, process, activity and result elements (Erdem, 2002; Ulukaya Öteleş & Ezer, 2020). The project-based learning approach includes the learning teaching process, setting goals, defining the work to be done, forming teams, determining the qualities and presentation forms of the results reports, creating a work calendar, determining control points, determining evaluation criteria, collecting information, organizing, reporting and presenting the project steps (Moursund, 1999). This approach places students in realistic structures and offers students problem solving environments. Projects created by students are associated with real life. Project-based learning, which requires a long period of time, also supports the interdisciplinary connection (Blumenfeld et al. 1991).

In the related study, it is aimed to improve the environmental sensitivity of teacher candidates through environmental education practices based on project-based teaching. When the field is examined in the summer, it is seen that there are studies related to the acquisition of environmental sensitivity at different educational levels (Akman, 2017; Delican & Sönmez, 2013; İbret, Demirbaş & Demir, 2019; Pirincci et al. 2020; Scrimin et al. 2018; Demir & Ulukaya Öteleş, 2023b; Demir et al., 2023). However, there have been a limited number of studies on the effect of project-based learning teaching on environmental sensitivity (Carlina, 2019; Nugraha & Ridwan, 2019). It is aimed to contribute to the elimination of the deficiency in the field with the related study.

1.1. Purpose of the research

The aim of the research is to develop environmental awareness of teacher candidates with environmental education practices based on project-based teaching. In this context, the questions sought to be answered in the research are as follows:

Is there a statistically significant difference between the average scores of social studies teacher candidates' attitudes towards the environment before and after project-based teaching or environmental education practices?

What are the social studies teacher candidates' views on environmental education practices based on project-based teaching?

2. Method

2.1. Research design

Action research, one of the qualitative research methods, was used in the study. Action research is the research that collects systematic information, individually or in groups, to solve a problem, learn about a practice, create change or improvement (Fraenkel & Wallen, 2003; Bogdan & Biklen, 2004). The current research was structured in accordance with participatory action research since it was carried out by researchers. In this context, environmental education

practices based on project-based teaching are designed and the effects of social studies teacher candidates on the average environmental sensitivity scores and their views on practices are determined. The stages of the action research process applied in the research are presented in Figure 1.

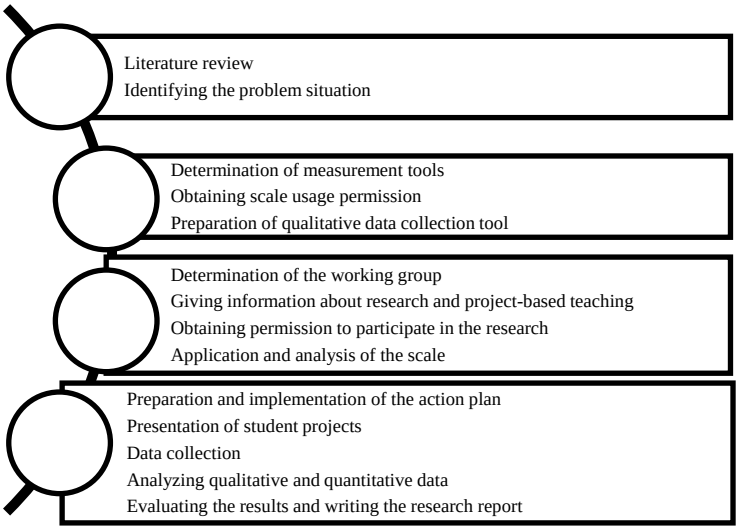

Figure 1. Stages of the action research process

The action plan/operation process applied in the research is briefly summarized in Figure 2.

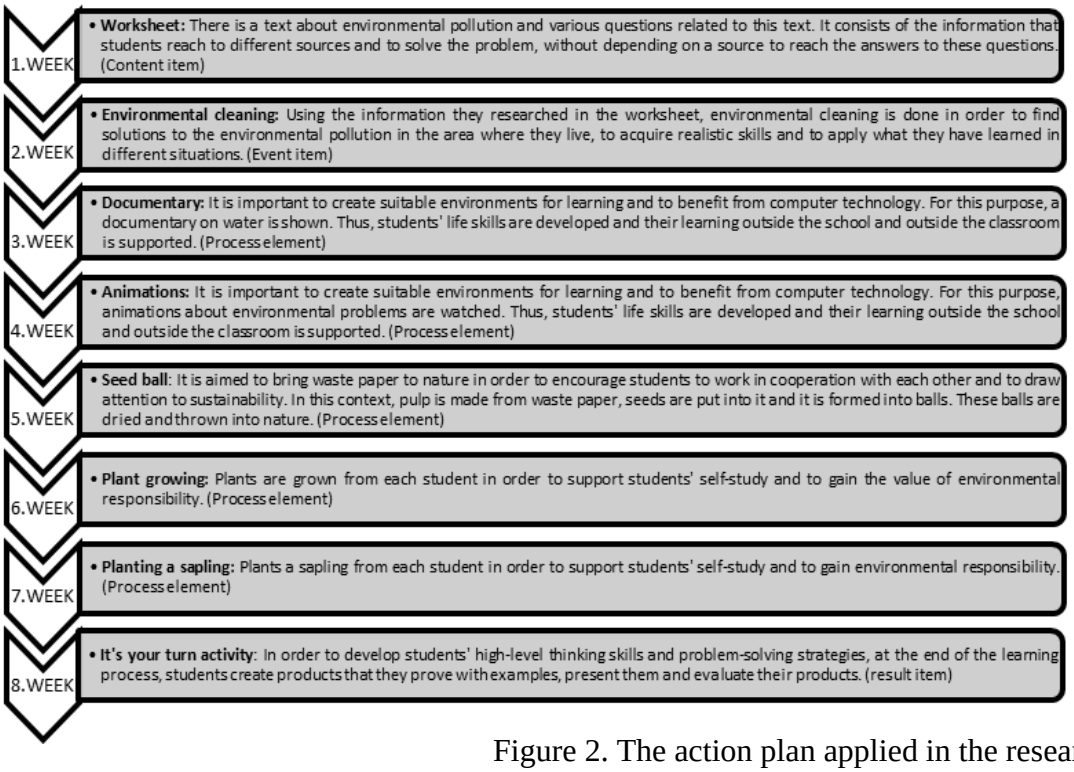

Figure 2. The action plan applied in the research

When Figure 2 is examined, practices were carried out within the scope of the elements of project-based teaching (content, activity, process, result) in order to raise environmental awareness with pre-service teachers for 7 weeks. In the continuation of these practices, pre-service teachers were asked to create products by producing solutions to environmental problems based on project-based teaching.

2.2. Study grup

The study group of the research consists of 25 pre-service teachers studying in the second grade of social studies education in Turkey in the fall semester of the 2022-2023 academic year. These 25 pre-service teachers were determined by criterion sampling, one of the purposive sampling methods. The criterion sampling method is the selection of the sample that meets the criteria predetermined by the researchers (Baş & Akturan, 2017; Patton, 2014; Yıldırım & Şimşek, 2021). While determining the study group, it was determined that the teacher candidates should take the "Environmental education" course. Since this course was given in the second year of the social studies education undergraduate program, it was decided to work with the

second year students. During the 9 weeks of action research application, 25 students actively participated in all applications without being absent.

2.3. Research design

In action research, quantitative data collection tools are used as well as qualitative data collection tools. In this study, two different data collection tools were used, namely "Attitude Scale Towards Environment" and "semi-structured interview form". The contents of the data collection tools are as follows:

Environmental Attitude Scale: The quantitative data collection tool used in the research is the "Attitude Towards Environment Scale" developed by Yeşil & Turan (2020). The scale was prepared in a 5-point likert structure with 20 items under five factors. The Cronbach's Alpha value of the scale is .84. The Cronbach's Alpha value of the scale for this study was found to be .89. The scale was applied in the first (1st week) and last week (9th week) of the research process.

Semi-structured interview form: An interview form with open-ended questions was created in order to reveal the pre-service teachers' thoughts on environmental education practices based on project-based teaching. There are 6 questions in the form, which was prepared by the researchers and the necessary arrangements were made by taking expert opinions. In order to detail the quantitative findings obtained and to reveal the students' views on the action plan process, it was applied in written form to the prospective teachers in the study group. The form was applied in the last week (9th week) of the research process.

2.4. Data analysis

The analysis of the qualitative and quantitative data obtained in the research was analyzed with two data analysis methods. Analysis of quantitative data: Obtained data were analyzed with SPSS 23.00. The normality of the pre-service teachers' total scores from the scale was evaluated with the Kolmogorov-Smirnov test and it was seen that the significance value was p=.20 (p>.05). Thus, since the data collected through the scales show normal distribution, it can be said that it is appropriate to conduct parametric tests in the research. In the analysis of quantitative data, t-test was used.

Analysis of qualitative data: The obtained data were analyzed by content analysis method. In content analysis, any qualitative data reduction and meaning making attempts are aimed at determining basic coherences and meanings by taking qualitative data (Patton, 2014, p. 453). In this context, firstly, the data obtained from the interview form were transferred to the computer environment. The data obtained were collected under the categories created. The expressions of

the pre-service teachers regarding the categories were coded as "T1, T2, T3…" and their views were included.

2.5. Validity and reliability

In order to increase the quality of the study with these applications made in this research, the following factors were taken into consideration:

Data diversity was made by using both qualitative data collection tools and quantitative data collection tools.

The quantitative and qualitative data obtained in the research were analyzed by two different field experts and their reliability was ensured.

Direct quotations were included in the views of the pre-service teachers in such a way that their identities were not identified.

As a result of the expert opinion, it was calculated as 94% by using Miles and Huberman's (1994) reliability formula for qualitative data analysis. It can be stated that the results obtained with qualitative data are reliable.

The Cronbach's Alpha value of the scale for which permission was obtained for this study was calculated and found to be.89.

3. Results

3.1. Findings Regarding Quantitative Data

"Is there a statistically significant difference between the pre- and post-environmental sensitivity average scores of social studies teacher candidates based on project-based instruction?" In order to find an answer to the question, the scores obtained by the teacher candidates from the attitude scale towards the environment were analyzed and the findings obtained are presented in Table 1.

Table 1. T-Test results regarding the scores of the teacher candidates from the attitudes towards environment scale before and after the implementation

	Test type	**N**	$\overline{X}$	**Ss**	**Sd**	***t***	***p***
Attitude towards the environment	Pre-test	25	67,00	8,47	46	1,86	,00
	Post-test	25	89,08	11,69			

When Table 1 is examined, there is a significant difference between the pre-test score ($\overline{X}$=67.00) and the post-test score ($\overline{X}$=89.08) averages in favor of the post-test scores in the total of the pre-

service teachers' attitude towards the environment scale [$t_{(46)}$=1,86, p<0,01]. As a result of the data obtained, it can be said that environmental education practices based on project-based teaching are effective in improving environmental awareness.

3.2. Findings Related to Qualitative Data

"What are the opinions of social studies teacher candidates on environmental education practices based on project-based teaching?" In order to find an answer to the question, the answers given by the teacher candidates to the questions in the semi-structured interview form were analyzed and presented in the relevant figures.

"What are your views on environmental education practices based on project-based teaching?" The answers given by the pre-service teachers regarding the question are shown in Figure 3.

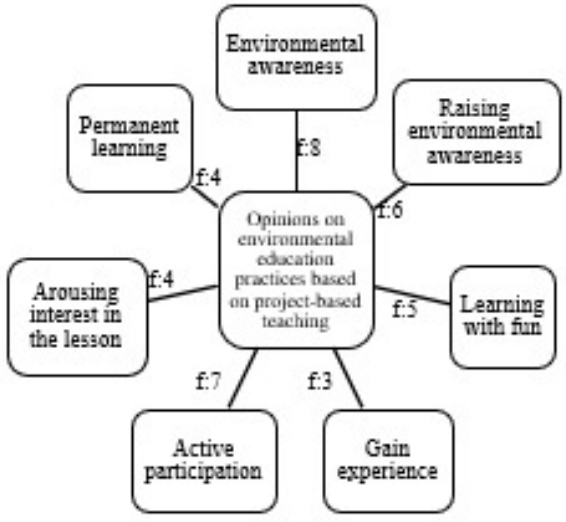

Figure 3. Opinions of pre-service teachers about environmental education practices based on project-based teaching

When the data obtained from the views of the teacher candidates were examined, it was seen that environmental education practices contributed to the teaching-learning process and environmental awareness. According to Figure 3, pre-service teachers stated that environmental education practices provide the most environmental awareness (8) and active participation (7). When the statements of the teacher candidates are examined, it is as follows.

T-17: These applications bring learning while having fun. I think of it as fun and beautiful events.

T-15: The applications were very good and understandable. The events added color to the process and ensured active participation.

T-4: The applications were effective in arousing the students' interest in the lesson.

T-9: It was interesting that the teacher came to the lesson with different materials. Our attendance has increased. When the lesson is made encouraging and fun, there is more participation.

T-5: I learned how to plant seeds. The seed ball was so much fun.

T-23: I always participated in the applications. Frankly, I think I am a much more conscious individual.

When the views of teacher candidates about environmental education practices based on project-based teaching are examined in general, it is seen that they express positive views on raising conscious individuals, learning by doing, learning effectively, and spending time productively. In this context, it can be deduced from the opinions of pre-service teachers that environmental education practices based on project-based teaching can bring environmental awareness based on effective and active learning.

"Do you think that environmental education practices based on project-based teaching have an impact on your knowledge, attitudes and behaviors towards the environment?" The answers given by the pre-service teachers regarding the question are shown in Figure 4.

Figure 4. Opinions of pre-service teachers on the impact of project-based instruction-based environmental education practices on their knowledge, attitudes and behaviors towards the environment

When the data obtained from the views of teacher candidates are examined, it is seen that environmental education practices based on project-based teaching contribute to the dimensions of environmental knowledge, skills and attitudes. According to Figure 4, pre-service teachers stated that the activities related to environmental education were most effective on raising conscious citizens (14) and developing positive attitudes (9). When the statements of the teacher candidates are examined, it is as follows.

T-1: Yes, I think so. Because we learned that these practices are harmful to the environment and that some wastes are recycled to the environment. I think our behavior is shaped accordingly.

T-8: It definitely contributed. Because I was worried about the negative things that would occur in the future. I use and apply what I learned in the course to have a positive impact on our future.

T-15: The plant growing activity was really effective. It was important to take responsibility for taking care of a creature on our own and seeing it develop and grow.

T-24: Yes, I think so. Things that I didn't notice before are now catching my eye. I became conscious after environmental education practices.

T-2: I am sensitive and meticulous about the environment. Applications about a subject I know and love made me happy.

T-19: Yes. I think we are more sensitive. I want to intervene when we see any problem.

Pre-service teachers state that environmental education practices based on project-based teaching generally provide knowledge, awareness and responsibility on a sustainable basis. In addition, it is seen that no negative expression was used for the related question. In this context, it can be said that pre-service teachers were able to transfer the environmental information they obtained from environmental education practices based on project-based teaching to their attitudes and behaviors.

"Did you encounter any problem in the process of environmental education practices based on project-based teaching? If so, how did you solve the problem?" The answers given by the pre-service teachers regarding the question are shown in Figure 5.

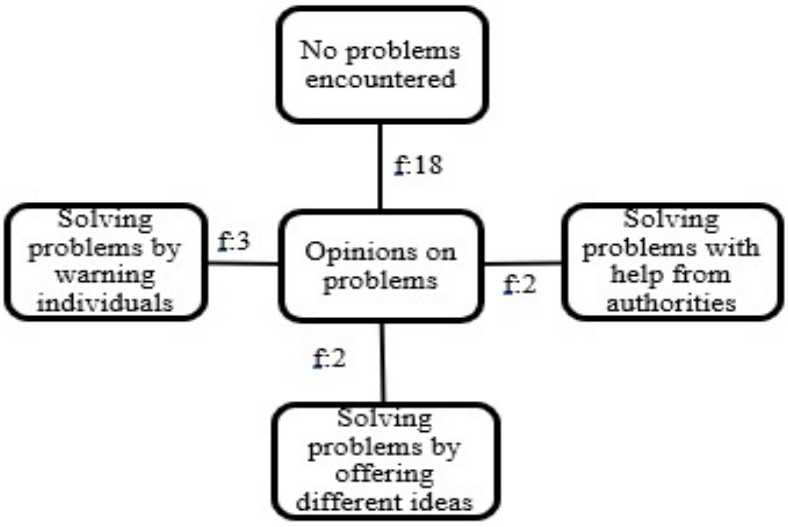

Figure 5. Opinions of pre-service teachers about the problems they experience in environmental education practices based on project-based teaching

When the data obtained from the opinions of the teacher candidates are examined, it is seen that they generally do not have any problems in environmental education practices based on

project-based teaching. According to Figure 5, some of the pre-service teachers solved the problems they experienced in environmental education practices by warning individuals (3), getting help from the authorities (1), and offering different ideas (2). When the statements of the teacher candidates are examined, it is as follows.

T-21: I did some research on the environmental problem that I identified and got help from an authorized person.

T-25: I did not encounter any problems.

T-9: Everyone throwing the garbage on the ground. I spoke politely. I have been informed of the consequences of this ending.

T-18: I had a hard time coming up with environmentally friendly project ideas.

Pre-service teachers stated that they generally do not have any problems in environmental education practices based on project-based teaching. Candidates who had problems in the process stated that they produced a solution to the related problem by researching and informing about these problems. In addition, it can be said that the related problems are solved in accordance with the project-based teaching.

"What can you do to create environmental awareness in your students when you start your professional life?" The answers given by the pre-service teachers regarding the question are shown in Figure 6.

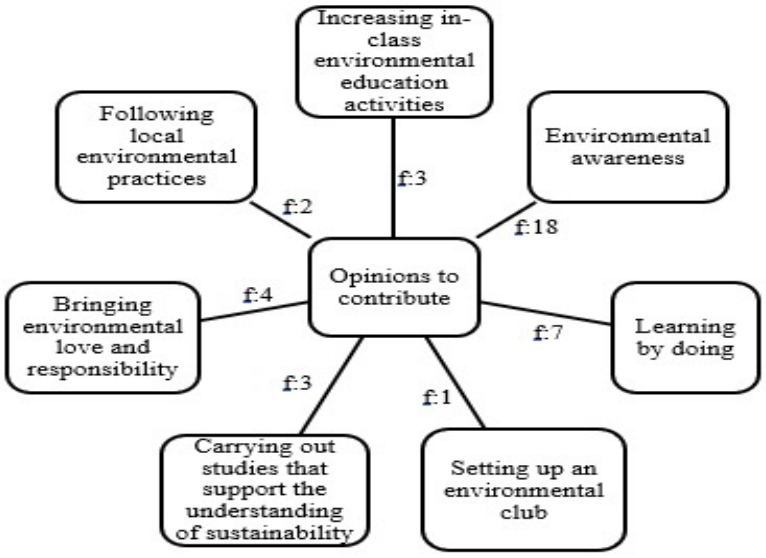

Figure 6. Opinions of pre-service teachers on increasing environmental awareness in their professional life

When the data obtained from the opinions of the teacher candidates were examined, they stated various suggestions for instilling environmental awareness in their students in their professional lives. According to Figure 6, pre-service teachers emphasized environmental

awareness the most (18) and learning by doing (7). When the statements of the teacher candidates are examined, it is as follows.

T-10: I first do activities that enable them to define nature together with the children, and then I do the benefits of nature and the works for protection in a practical way. My priority is to instill environmental awareness and love.

T-19: In order to make students conscious and sensitive, I choose the environment as an out-of-school learning environment and enable students to integrate with nature.

T-8: Definitely growing a plant, teaching with nature.

T-3: In the transfer of information about the environment, I include sustainable activities that will enable students to gain sensitivity and learn with experience.

T-20: I form a student club in order to protect the environment. I raise a sensitive generation by organizing nature-related activities, not with a single group, but for everyone.

The opinions of the pre-service teachers about raising environmental awareness to their students in their professional lives are generally in the direction of using out-of-school learning environments, establishing student clubs, nature-based practices on the basis of developing environmental awareness, on the basis of gaining knowledge, skills and behavior. In this context, it can be said that pre-service teachers take environmental education approaches as a basis.

"What adjustments do you think you can make in your life that you can increase your environmental awareness?" The answers given by the pre-service teachers regarding the question are shown in Figure 7.

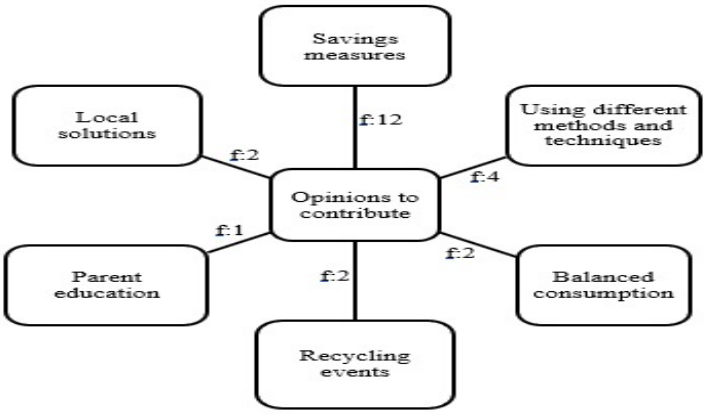

Figure 7. Pre-service teachers' views on practices that can increase environmental awareness in their lives

When the data obtained from the opinions of the pre-service teachers are examined, it is seen that they have stated various suggestions regarding practices that can increase environmental awareness. According to Figure 7, pre-service teachers mostly emphasized making practices in line with saving measures (12) and using different methods and techniques (4). When the statements of the teacher candidates are examined, it is as follows.

T-7: I raise awareness of people starting from the closest circle. When environmental problems cannot be resolved, there will be no turning back. Full awareness of this must be given.

T-20: I use less perfume. I recycle waste. I pay attention to the waste of water.

T-12: If I buy as much as I need, spend as much as I need, and contribute to recycling, I can prevent problems.

T-25: I give environmental education to children with different methods and techniques in order to raise awareness about the environment.

T-5: I can prevent noise pollution by stopping talking loudly outside. I can prevent environmental pollution by warning those who throw garbage on the ground.

T-19: I think that teaching with methods and techniques is more permanent and can be learned easily. If we teach this at a young age, there will be no such problems in the future.

The opinions of pre-service teachers on practices that can increase environmental awareness in their lives are generally that environmental awareness can be increased by using different methods and techniques in the process of adopting positive environmental behaviors based on the principle of learning from close to far and learning and teaching. In this context, it can be said that environmental awareness should be adopted as a philosophy of life.

"What can be done to bring environmental awareness to society?" The answers given by the pre-service teachers regarding the question are shown in Figure 8.

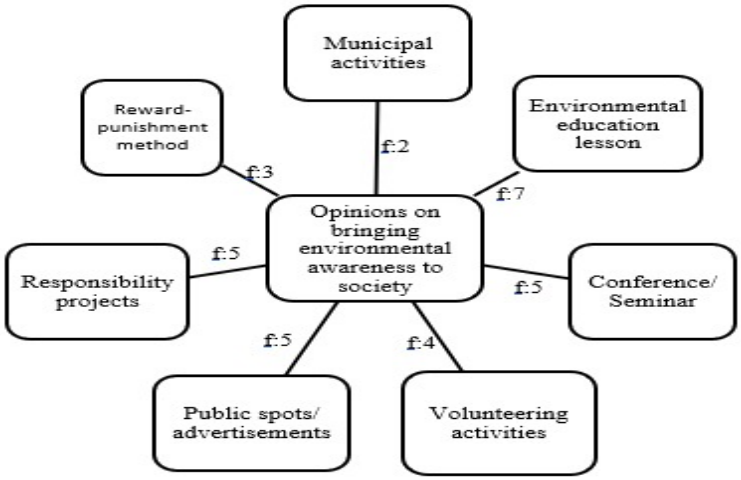

Figure 8. Opinions of pre-service teachers on bringing environmental awareness to society

When the data obtained from the opinions of teacher candidates are examined, it is seen that especially community service and volunteering practices are included in the promotion of environmental awareness to the society. According to Figure 8, pre-service teachers emphasized

that environmental awareness can be brought to the society by making environmental education lessons (8), responsibility projects (5), public service announcements/advertisements (5) and conferences/seminars (5) the most. When the statements of the teacher candidates are examined, it is as follows:

T-5: Seminars and conferences can be organized for everyone to attend. Sensitivity studies should be given starting from an early age.

T-12: Various and different activities can be organized more frequently, and awards can be given to people.

T-21: Environmental education should be given in formal and non-formal education. Reward-punishment method can be used for the society. The activities that managers will participate in will be effective.

T-8: There may be advertising activities that raise awareness of the society.

T-14: Environmental education course should be given as a compulsory course at all levels.

T-19: Different projects can be done. For example, garbage sorting with the support of municipalities as responsibility projects.

Pre-service teachers' views on bringing environmental awareness to the society are generally about giving place to conferences, seminars and activities to raise awareness of the society. It is especially emphasized that environmental education and responsibility projects to be given at all age levels are implemented in order to ensure environmental sustainability.

4. Discussion and Conclusions

Environmental problems have reached serious dimensions worldwide. It is important for individuals to have environmental sensitivity in preventing environmental problems. It is considered that qualitative environmental education is important in gaining environmental sensitivity. On the other hand, different methods and approaches are important in increasing the quality and impact of environmental education. The project-based learning approach is one of them. In the related study, the effect of environmental education practices based on project-based teaching on environmental sensitivity of teacher candidates was examined. At the same time, it was tried to determine the opinions of teacher candidates for environmental education practices based on project-based teaching.

The results obtained from the research show that environmental education practices based on project-based teaching positively affect the environmental sensitivity of teacher candidates. This result is associated with the structure of the project-based learning approach, which makes it possible for individuals to cope with complex problems by using high level thinking skills. As a matter of fact, individuals with environmental sensitivity are expected to approach the environment with an empathetic understanding, to be interested and concerned about the natural environment, and to bring solutions to environmental problems in this direction. This result obtained coincides with the results of the research of Nugraha & Ridwan (2019). In the related research, it is shown that the project-based learning approach increases the awareness and

sensitivity of the individual towards the environment. In the research conducted by Carlina (2019), it is also seen that the project-based learning approach positively affects the individual's environmental sensitivity and has an impact on environmental literacy.

In the research, it was also tried to determine the views of teacher candidates on environmental education practices based on project-based teaching. In this context, the opinions of teacher candidates are that environmental education practices based on project-based teaching are effective in increasing environmental sensitivity, ensuring active participation, gaining environmental awareness, learning by having fun, permanent learning, arousing interest in the lesson and gaining experience.

When this result is evaluated in general, it can be interpreted that teacher candidates think that project-based learning applications are effective in gaining environmental sensitivity. This result of the research also coincides with the result of the research conducted by Ernst (2007). In the research, teachers expressed the opinion that a project-based learning approach can increase environmental sensitivity, environmental awareness and the ability to apply environmental based education.

Teacher candidates' views on the impact of environmental education practices based on project-based teaching on environmental knowledge, attitudes and behaviors are that environmental education practices based on project-based teaching in the context of raising conscious citizens, positive attitude, positive behavior development, gaining knowledge and active learning are effective. This result obtained in the research can be interpreted in the context of the project-based learning approach placing the learner at the center of learning, increasing the individual's awareness by supporting high evel thinking skills, ensuring permanence in learning and having an attitude changing effect. As a matter of fact, similar effects of the related approach are observed in research aimed at determining the impact of the project-based learning approach (Mahasneh & Alwan, 2018; Dağ & Durdu, 2013; Şule, 2013; İbret, Demirbaş & Demir, 2019). In this context, it is said that the candidates' views on the impact of environmental education practices based on project-based teaching on knowledge, attitudes and behavior are appropriate.

The majority of teacher candidates claim that they have not encountered a problem in the environmental education process based on project-based teaching. Some of the teachers stated that they encountered various problems and solved these problems by warning individuals, offering different ideas and getting help from the authorities. The relevant finding of the research can be related to the fact that the project-based learning approach increases individual responsibility and that failure to draw the boundaries of the project well in the related approach leads to certain problems. In Stern & Huber (1997), he included relevant issues among the dimensions that project-based learning approach will create disadvantages.

In order to create environmental sensitivity in their students in their professional lives, prospective teachers listed their views in the form of gaining environmental sensitivity, providing learning opportunities by doing, gaining environmental love and responsibility,

conducting studies that support the understanding of sustainability, increasing environmental education activities in the classroom, following local environmental practices and establishing an environmental club.

In this context, it can be said from the opinions of teacher candidates that environmental sensitivity is based on students' direct interaction with nature, as well as an educational approach for the environment in order to give them the opportunity to learn experientially and by doing; to integrate students with their sociocultural and biophysical environment, to become sensitive, conscious and sociable citizens. The findings of the research conducted by Myers (1997) also coincide with the findings of the related research. As a matter of fact, the findings of the relevant research are that the studies conducted for environmental education in schools, environmental life experiences and actions increase the environmental sensitivity of the individual.

Teacher candidates' views on practices that can increase environmental sensitivity in their lives are aimed at saving measures, using different methods and techniques, balanced consumption, recycling activities, local solutions and providing parent education. When the responses of prospective teachers are examined, it is seen that they attach importance to the education of parents who are significantly influential in the behavior of students and students with in class educational activities in which different methods and techniques are used. At the same time, activities based on deconstructing one's own life in favor of the natural environment were also included among the teachers' responses. Considering that the children of today are the ones who will shape the future and that their parents are the most role models for their children, children and parents should be educated about environmental sensitivity as a priority. In this respect, it is said that the opinions of the teacher candidates are correct and understandable. The results of the research conducted by Chawla & Hart (1995) indicate that parents or other role models are effective in children's concerns and attitudes towards the environment. Teacher candidates' views that balanced consumption, recycling, savings measures and local solutions will be effective in improving environmental sensitivity are more understandable when it is considered that the human being is the one who causes the most damage to the environment, and again depends on human actions in protecting the environment and solving environmental problems.

The opinions of the teacher candidates in the direction of bringing environmental awareness to the society are listed as environmental education course, conference / seminar, public spotlights / advertisements, responsibility projects, volunteering activities, reward punishment method and municipal activities.

It is seen that the opinions of teacher candidates are based on raising public awareness and legal regulations with different methods and tools. In the study conducted by Demir & Öteleş (2023b), he believes that raising awareness of individuals through punishment method, municipal studies and education will be effective in reducing teachers' environmental problems and instilling environmental sensitivity. The research conducted by Chawla, (1998), on the other

hand, is that the media, and therefore advertising and environmental television programs, can be effective in increasing environmental sensitivity.

As a result, it has been found that environmental education practices based on project-based learning positively affect the environmental sensitivity of teacher candidates. It also shows that teacher candidates think that environmental education practices will create advantages in the context of individuals and society. For this reason, similar practices and methods can be used in the development of environmental sensitivities of teacher candidates in the faculties of education. The environmental sensitivity of individuals can be increased by using a project-based learning approach at different educational stages. In this research, when selecting participants, it was determined that they were taking only the environmental education course as a criterion. The effect of demographic variables of the participants on the study was not examined. In this direction, research can be carried out by researchers with different methods and working groups.

Declaration of Conflicting Interests and Ethics

The authors declare no conflict of interest.

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