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The Awareness of Social Studies Pre-Service Teachers About the Concept of Environmental Waste Recycling and Acrostics Trials

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Abstract

Due to globalization and the impact of industrialization and urbanization, natural resources are wasted, and popular consumption leads to environmental waste. The problem of waste that deteriorates individual and social life is a prominent current issue. Recycling, described as the remanufacturing, production and employment of collected material, is an important solution to that problem. The present study aimed to determine the awareness of pre-service social studies teachers about the concept of environmental waste recycling and to analyze acrostic poems written by the participants. The study findings included the views of the pre-service social studies teachers. A semi-structured interview form was developed by the authors under expert supervision and employed to collect the views of the pre-service teachers. The pre-service teachers included in the study sample were assigned with simple random sampling technique and the study group included 162 pre-service social studies teachers. The descriptive survey model was employed in the study, the data were analyzed with content and descriptive analysis techniques to determine thematic codes. Furthermore, an acrostic poem authoring activity on the concept of recycling was conducted with the participants. The poems authored by the participants are presented as a category in a table in the findings section. The study findings revealed significant results on the recycling concept and processes. It was determined that the views of the participating pre-service social studies teachers reflected a high level of awareness on the concept of recycling and exhibited various perspectives on the implementation.

Keywords: Recycling, Social Studies, Activity, Pre-Service Teachers, Acrostics

1. Introduction

Recycling entails the collection, remanufacturing and reproduction and employment of previously used material (Schultz, Oskamp & Mainieri, 1995). In other words, recycling, which is the next option when the material cannot be reduced and reused, entails the transformation of waste material into new products (Harman & Yenikalaycı, 2020). Mankind has always used natural sources for survival during its existence. In time, rapid urbanization, population growth, technological advances and industrialization have rapidly increased the anthropogenic pressures on the environment. Thus, the development in production and marketing activities

required more intensive employment of natural resources, and the quantity and harmful quality of the waste generated by the ever-increasing consumption trends became a threat to the environment and human health (Kaçtıoğlu & Şengül, 2010).

Waste is classified based on various factors such as chemical and physical properties and consumption and production mechanisms. Thus, waste is classified as solid waste, liquid and gas waste and packaging waste (Gündüzalp & Güven, 2016). The limited regeneration capacity of natural resources emphasizes resource recovery and the social, ecological and economic impact of recovered resources in waste management based on the sustainable development approach (Ak & Genç, 2018). The fulfillment of the responsibilities of the individuals who are active in environmental problems to find solutions to these problems is only possible through qualified environmental education (Altın, Bacanlı & Yıldız, 2002).

Schools play an important role in the acquisition of environmental preservation topics such as the use of recycled products (Çimen & Yılmaz, 2012). It was reported that it is extremely important for teachers who would play an active role in quality environmental education to develop student sensitivity on the protection of nature, to improve student knowledge on environmental issues, to improve their attitudes and behavior due to their role in fostering positive behavioral change (Kahyaoğlu & Kaya, 2012).

Literature review revealed several studies conducted with pre-service and active teachers on recycling, environmental awareness and environmental pollution. Pre-service chemistry teachers are reported to state that recyclable materials should be used by the society and the industry (Yücel & Morgil, 1998), it was reported that the environmental awareness of the pre-service teachers was "moderate" about organic waste and packaging issues, and "good" about recycling and waste reduction (Cici et al., 2005), pre-service geography teachers stated that recycling should be included among the measures against environmental problems, used items, paper and garbage should be disposed to recycling bins, and recycling was a universal activity (Kocalar & Balcı, 2013), the attitudes of the pre-service science, classroom and social studies teachers were positive towards solid waste and recycling (Kışoğlu & Yıldırım, 2015), and the awareness of the pre-service science teachers was low awareness towards the meaning and necessity of recycling and the types of recyclable waste (Harman & Çeliker, 2016).

Adults mostly obtain information on recycling from TV shows, municipal posters/brochures and the internet, females mostly get their information from TV shows and males mostly get their information from the internet (Gürer & Sakız, 2018). Studies conducted with college students reported that students who attended environmental courses had better knowledge on solid waste pollution and management when compared to those who did not take these courses, and the courses had no positive effect on student attitudes and behavior on issues such as disposal of the garbage to the environment or employment of recycling bins (Akanyeti & Kazımoğlu, 2019). It was reported that vocational school students knew the effects of plastic waste and recycling on the environment better; however, their behavior did not reflect this knowledge level (Taş Divrik, Karakaş & Divrik, 2018).

In general, it is important to inform and raise awareness of the society on recycling for the sustainability of both ecological balance and economic resources. In a study, Ak and Genç (2018) determined that individuals should have a high awareness towards recycling and participate in recycling for the benefits of environmental waste recycling. The influence of teachers is very important in the development and sustenance of recycling. It is important to know whether social studies teachers who would instruct environmental education in middle schools possess the required awareness and knowledge. Thus, the present study aimed to determine the awareness of the pre-service social studies teachers about recycling and to analyze the examples of acrostic poems that the participants authored on the recycling concept.

1.1. The Aim of the Study

In the present study, conducted to measure the awareness of pre-service social studies teachers about the concept of recycling of environmental waste and to analyze acrostic poems they wrote on the topic, the following research problems were determined:

- ✓ What does recycle mean?
- ✓ In which educational level you heard the concept of recycling for the first time?
- ✓ Do you thing recycling is necessary? If yes, why?
- ✓ How could awareness about recycling be improved?
- ✓ What are the goals of recycling?

2. Method

The methodology section included a number of subtitles. These subtitles are detailed in the methodology section based on the study topic.

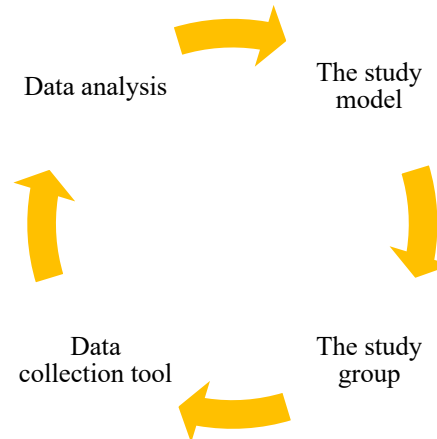


Figure 1: Methodological stages

2.1. The research model

The survey model, a descriptive study method, was employed in the present study that aimed to measure the awareness of pre-service social studies teachers about environmental waste recycling and to analyze acrostic poems written by the participants. Survey model is a popular study method employed in social sciences, and it aims to describe a past or present case as is. The current status of the study subject event, individual or object is described as is. No effort is spent to change or affect the variables in any way (Karasar, 2012).

2.2. The study group

The study data included the views of pre-service teachers. The study group was assigned with simple random sampling method. In simple random sampling, all members of the population have an equal and independent chance for selection. Random sampling methods provide higher representation of the population when compared to other sampling methods (Özen & Gül, 2007). Thus, 162 pre-service social studies teachers attending Artvin Çoruh University, Faculty of Education, Department of Social Studies Education were assigned to the study group.

2.3. Data collection instrument

The study data were collected with a semi-structured interview form developed by the authors. The interview form included 5 open-ended questions. Detailed information on the theoretical framework and the studies available in the literature was provided to ensure the content validity that reflects the reliability representability of the data collection instrument. Furthermore, expert views were obtained to determine whether the data collection instrument items were sufficient to determine the pre-service teachers' awareness about the topic, and whether there were any comprehensibility problems and editing or exclusion requirements. The interview form items were developed using a clear and comprehensible language. The items were filtered and items that relied

on assumptions were excluded. Questions that required excessive knowledge were avoided and the items were developed with an impartial approach.

2.4. Data analysis

In data analysis, for each semi-structured interview form item, pre-service teacher data were enumerated, and the collected raw data were recorded. The raw data were analyzed with the content analysis method. A framework was developed for use in data analysis based on the interview form dimensions and the conceptual study framework. The themes developed based on the data were determined within this framework. The data were read based on the predetermined framework and described with a meaningful and rational approach. The described data were explained, correlated and presented in a meaningful design (Yıldırım & Şimşek, 2011). Tables and graphs were developed to include the data frequencies and percentages based on the content analysis. The tables and graphics were interpreted. The validity and reliability data were analyzed separately by the two authors. Then, the authors combined and compared the analysis results and organized these findings based on the consensus. The data are presented by organizing the data under concepts and themes and direct quotes by pre-service teachers are presented to describe the findings in detail (Yıldırım & Şimşek, 2011). Similar views were combined under common themes and grouped as G.1, G.2.... The quotations are presented with participant codes.

3. Findings

3.1. The meaning of the recycling concept

The responses of the study group members to the semi-structured interview form question "What does recycle mean?" were analyzed with content analysis and the results are presented in Table 1.

Table 1: The perceptions of pre-service social studies teachers about the meaning of the recycling concept

<i>Theme</i>	<i>f</i>	<i>%</i>
<i>G.1.Revaluation</i>	70	43
<i>G.2.Conversion of the waste into raw material</i>	46	29
<i>G.3.A system that extends the life of the world</i>	26	16
<i>G.4.Saving the nature</i>	20	12
Total	162	100

As seen in Table 1, pre-service social studies teachers, who constituted the study group that was used to collect the study data, stated various thematic concepts on the meaning of recycling. However, it could be suggested that the themes that pre-service teachers emphasized included revaluation and change. It could be observed in Table 1 that the distribution of the themes stated by the pre-service teachers included revaluation (43%), conversion of waste into raw material (29%), a system that extends the life of the world (16%), and saving the nature (12%). The views of certain pre-service teachers are presented below:

"I think it would be insufficient to explain the meaning of the concept of recycling with just one concept. Therefore, I want to use a general expression. In my opinion, recycling is the transfer of yesterday to tomorrow. How? By reorganizing the material used yesterday based on the needs of tomorrow and using it again." (Participant 58)

"The concept of recycling is, in my opinion, a concept that the whole world should focus on and think about for several days. I think the world still does not fully understand the concept. If they understood it, we would not witness news reports every other day in the print and visual media that the extinction of the world accelerates every day due to anthropogenic factors. I think you know what I mean." (Participant 22)

3.2. The educational level that the students first heard about recycling

The responses of the pre-service social studies teachers in the study group to the semi-structured interview form question "In which educational level did you first hear about the concept of recycling?" were analyzed with the content analysis technique and the findings are presented in the form of themes. The theme frequencies and percentages are presented in Table 2. As seen in Table 2, it could be suggested that the pre-service social studies teachers had different perceptions about the topic.

Table 2: The perceptions of the study group members about the environment they acquired the concept of recycling

	Theme	f	%
<i>G.1.Teacher</i>	<i>Preschool</i>	7	4
	<i>Primary school</i>	67	42
	<i>Middle school</i>	46	28
<i>G.2.Parents</i>		35	22
<i>G.3.TV</i>		7	4
Total		162	100

The review of the Table 2 demonstrated that significant findings were obtained on the question developed based on the study topic. It could be argued that factors pertaining to the environment, educational institution, the development level of the family, the culture, etc played a role in this finding. It was observed that more than half of the pre-service social studies teachers in the study group first heard about the concept of recycling from teachers (4% from kindergarten teachers, 52% from primary school teachers and 41% from middle school teachers). As seen in Table 2, certain pre-service teachers heard it from their parents (21%) and television (4%). This could be explained by socio-economic, cultural, and education quality factors. The views of certain pre-service teachers are presented below:

"As a pre-service teacher who clearly acquired environmental awareness in the 7th grade, I first heard about the concept of recycling from my teacher who instructed the social studies course in middle school. I do not know whether it was my fault or my parents' fault, but I think that it is not important when we heard about it but whether we internalized it and adapted it practically in life." (Participant 7)

"I never heard of the concept of recycling from any teacher. I learned this concept in a television show. This shows that the education provided at all educational levels was not the same in educational institutions and learning environments." (Participant 42)

3.3. The necessity of recycling

The responses of the pre-service social studies teachers in the study group to the semi-structured interview form question "Do you think recycling is necessary, and if yes why?" were analyzed with the content analysis technique and the findings are presented in the form of themes in Table 3. The analysis of the participant responses demonstrated a significant finding that all deemed recycling necessary.

Table 3. The perceptions of the study group members about the necessity of recycling

	Theme	f	%
YES	<i>G.1.The future of the earth and health of future generations</i>	46	28
	<i>G.2.Preservation of nature</i>	35	23
	<i>G.3. Preservation of natural resources</i>	25	15
	<i>G.4.Conversion of waste into raw material</i>	25	15
	<i>G.5.Economic benefits</i>	16	10
	<i>G.6. Preservation of forests</i>	15	9
Total		162	100

Based on the Table 3, it could be suggested that the awareness of all participating pre-service social studies teachers about the concept of recycling was positive. Based on the thematic findings, the study group members stated the following reasons for the necessity of the concept of recycling: "For the future of the earth and the health of future generations" (28%), preservation of nature (23%), preservation of natural resources (15%), conversion of waste into raw material (15%), economic benefits (10%) and preservation of forests (9%) (Table 2). The views of certain pre-service teachers are presented below:

"I think the concept of recycling is the most important factor in the preservation of the nature of the earth. I think this concept touches every aspect of our lives. Therefore, I think that this concept is very important and necessary for our world, our country, us and our future. The main reason for this is the fact that recycling provides the opportunity to live in an environment that does not harm our organic structure. In other words, I think it contributes to preservation of our environment." (Participant 32)

"As one of the future teachers of social studies, which is one of the fields that investigates the formation of the elements that make up the natural life and their contribution to the environment through the disciplines it includes, I think that the concept of recycling is very important and necessary for our lives. I can argue several points as the reason for this. However, the most important of these reasons, in my opinion, is the positive effect of this concept on economy." (Participant 17)

3.4. Raising recycling awareness

In this section on the measures to implement to raise individual and social awareness on the concept of recycling, the responses of the pre-service social studies teachers in the study group to the semi-structured interview form question "What do you think should be done to raise awareness about recycling?" were analyzed with the content analysis technique and the findings are presented in the form of themes in Table 4. Based on the Table 4, it could be suggested that the study group members had different perceptions about raising awareness about the concept of recycling.

Table 4: The perceptions of the study group members about raising awareness about recycling

Theme	f	%
<i>G.1.Exemplary projects</i>	35	21.5
<i>G.2.Employment of interesting tools and material</i>	23	14.5
<i>G.3.TV shows</i>	13	8
<i>G.4.Advertising</i>	20	12
<i>G.5.Exemplary video presentations</i>	13	8
<i>G.6.Thematic conferences and workshops</i>	35	21.5
<i>G.7.Rewarding activities</i>	23	14.5
Total	162	100

The review of the Table 4, where the findings on the measures that should be implemented to raise awareness about the concept of recycling are presented, demonstrated that the pre-service social studies teachers proposed several recommendations to raise awareness. The themes included exemplary projects (21.5%), employment of interesting tools and materials (14.5%), TV shows (8%), advertising (12%), exemplary video presentations (8%), thematic conferences and workshops. (21.5%) and rewarding activities (14.5%). It was observed that the most interesting of these themes were exemplary projects and meetings on recycling. It could be suggested that these two themes revealed the importance of scientific studies in raising awareness about recycling. The views of certain pre-service teachers are presented below:

"I want to answer this question as an ordinary citizen, not a pre-service teacher. Unfortunately, more than half of our society watches the visual media, especially television, and utilizes it as the most important learning tool. Thus, I say, wouldn't it be better if shows on recycling or other essential topics were included instead of one of these primetime shows or some meaningless series that are broadcasted every night? I think it would. However, these programs should be presented in Yeşilçam style. Otherwise, I think the ratings will be very low." (Participant 76)

"I consider myself as a future teacher in Turkey, and I would like you to answer this question as follows: I ask what should I do. When I will be a teacher, I will have my students watch exemplary videos

on bulletin boards on the internet to raise awareness about this concept. After watching these, I will exchange views with my students about their comprehension and assess the importance of the topic. Therefore, we should ask ourselves what we do about recycling and first we should do what needs to be done. You will see it spread like a virus after a certain period. I do not know how the awareness could be better raised than this." (Participant 79)

3.5. The goals of recycling

The responses of the pre-service social studies teachers in the study group to the semi-structured interview form question "What are the goals of recycling?" were analyzed with the content analysis technique and the findings are presented in the form of themes in Table 5. Based on the Table 5, it could be suggested that according to the pre-service social studies teachers, recycling has significant goals.

Table 5: The perceptions of the study group members about the goals of recycling

Theme	f	%
<i>G.1. Promotion of informed resource utilization</i>	56	35
<i>G.2. Concerns for a safe future</i>	34	20
<i>G.3. Awareness about savings</i>	25	15
<i>G.4. A habitable environment</i>	22	14
<i>G.5. Waste reduction</i>	16	10
<i>G.6. Contribution to national economy</i>	9	6
Total	162	100

It was observed that the pre-service social studies teachers, the views of whom were the basis of the study findings, stated various goals for recycling (Table 5). The related themes included the promotion of the informed utilization of resources (35%), concerns for a safe future (20%), awareness about savings (15%), habitable environment (14%), waste reduction (10%), and contribution to the national economy (6%). Although each of these thematic findings was significant, it could be suggested that most pre-service teachers suggested the promotion of informed use of resources and concerns for a safe future. The views of certain pre-service teachers are presented below:

"I do not think that the concept of recycling is considered sufficiently in Turkey. However, we, as a society, express the inadequacy in recycling as a national policy due to low awareness on this issue. A high level of awareness could not be expected from a society that throws the cigarette butts on the ground without hesitation to separate the waste into recycling bins, the different colors of which represent different materials. Thus, I can state that the main goal of recycling should be to raise the individual and social awareness about the utilization of resources." (Participant 92)

"I think your question should be answered with an inclusive approach since the recycling activities are conducted for several purposes. I can state that the implementation of recycling is associated with social development. As recycling plays a very important role in education in developed societies, it plays an opposite role in undeveloped societies. Thus, regardless of the social development level, I think that recycling activities should be prioritized to create a habitable environment in the geography of all people." (Participant 29)

3.6. Acrostic poems on the concept of recycling

One of the interesting dimensions of the study was the poems authored by the pre-service social studies teachers who participated in the study, on recycling using acrostic technique. The acrostic technique entails creating a meaningful word with the first letters of the verses in a poem. The concepts and frequencies of these concepts employed in the poems written by the pre-service teachers in the study are presented in Figure 2.



Figure 2: Concepts and frequencies of these concepts employed in the acrostic poetry authored by the study group members

It could be suggested that the fact that pre-service social studies teachers could assign a concrete meaning to recycling and related concepts, which could be considered as the content knowledge competency of the pre-service social studies teachers, was one of the problems encountered in the learning-instruction processes. This was reported by several studies. However, it could not be argued that concretization of these topics in instruction would eliminate all problems associated with recycling. This is due to the fact that the topic or concept was not internalized adequately by the individuals or the society. Thus, the present study employed the views of pre-service social studies teachers via the semi-structured interview form that required qualitative findings that improved the intelligibility of the topic. Furthermore, poems were authored by the pre-service teachers in the study group to contribute to the perceptions of the students and to draw attention to the topic. The analysis of the poems written by the study group members revealed that there was a perceptual diversity about the concept of recycling. This diversity could be considered as a significant criterion in the determination of the awareness level in the study group about the concept of recycling. The examples of the acrostic poetry written by the pre-service social studies teachers in the study group on the themes given in Figure 2 are presented below:

Table 6: Acrostic poetry samples

<p><i>Güzel bir dünya için (For a better world)</i> <i>Elindeki atıkları at geri dönüşüme (Recycle your waste)</i> <i>Renkli plastikleri, cam şişeleri atma çöpe (Do not discard colored plastics, glass bottles)</i> <i>İnsanları uyar, dönüştürelim hep birlikte. (Warn others to recycle all.)</i></p>	<p><i>Geri Dönüşüm</i> (Recycling)</p>	<p>(Participant 44)</p>
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<p><i>Denizler mavi kalsın yazık etme (Do not destroy the seas, let them remain blue)</i> <i>Ördekler yüzün temiz nehirler üzerinde (let the ducks swim in clear streams)</i> <i>Ne olur bilinçli olalım (Let us be aware)</i> <i>Üzerimize düşen görevi hep birlikte yapalım (Let us do our share together)</i> <i>Şöyle bir bak etrafındaki atıklara (look at the waste around you)</i> <i>Üzülme geç kalmadın vaktin var hala (Do not despair, it is still not too late)</i> <i>Mutlaka geri dönüşüme katılmalısın bunu unutma. (Just remember that you should participate in recycling.)</i></p>		
<p><i>Atma doğaya çöpleri (Do not dispose your garbage to the nature)</i> <i>Temiz tut çevreyi (Keep the environment clean)</i> <i>Izdırıp çektirme gelecek nesillere (Do not torture the future generations)</i> <i>Katkın olsun geleceğe (Contribute to the future.)</i></p>	<i>Atık (Waste)</i>	(Participant 23)
<p><i>Peyzajda süs (Ornament in landscape)</i> <i>İmarıda donanım ve uyum (Equipment and harmony in buildings)</i> <i>Lisanda doğruluk gerekli (Accuracy in language are necessary)</i></p>	<i>Pil (Battery)</i>	(Katılımcı 132)
<p><i>Güneş gibi değil ki (They are not like the sun)</i> <i>Elektronik atıklar (The electronic waste)</i> <i>Rüzgâr gibi geri dönmez (They would not recuperate like the wind)</i> <i>İşlem görmeyen kâğıtlar (Non-processes paper)</i></p> <p><i>Dünya için hepimiz (Altogether for the earth)</i> <i>Önlemler mi alsak (Should we implement measures)</i> <i>Nice güzel projeyi (Several good projects)</i> <i>Ülkece hep konuşsak (Should we discuss nationwide)</i> <i>Şişeleri camları (Bottles and glasses)</i> <i>Üşenmeden toplasak (Should we collect without indolence)</i> <i>Memleket hepimizin bunu hiç unutmasak (This land belongs to all of us, we should never forget)</i></p>	<i>Geri Dönüşüm (Recycling)</i>	(Participant 111)

4. Conclusion and Discussion

In the present study, conducted to measure the awareness of pre-service social studies teachers about the concept of recycling and to analyze acrostic poems written by them, significant findings were obtained. It could be suggested that the study group members, whose views were obtained with a semi-structured interview form, made significant contributions to the study findings. The study findings included six dimensions on recycling. It could be suggested that each dimension included significant findings on recycling. The finding dimensions determined in the study included the meaning of the concept of recycling, the educational level that the participants heard about recycling for the first time, the necessity of recycling, raising awareness about recycling, the goals of recycling, and authoring acrostic poems about the concept of recycling. One of the significant study findings included those presented in Table 1 on the meaning of the concept of recycling. As seen in Table 1, it was observed that the study group members reflected four different themes on recycling. This may indicate that the study group members comprehensively analyzed the concept of recycling. It could be argued that the study findings in this section were consistent with the findings reported by Harman and Çelikler (2016), and Öktem (2016).

In the study, the section on the education level where the participants first heard about the concept of recycling included further significant findings. It could be observed in Table 2 that about 74% of the participating pre-service social studies teachers heard about the concept of recycling from their teachers at different education levels, 22% heard about recycling from their parents and the rest were informed by TV shows. This could be considered as the most important indicator that activities associated with recycling were included in various education levels. Furthermore, the study finding on the necessity of recycling was also quite significant. The fact that all study group participants paid attention to this requirement and expressed their views was a significant finding that revealed individual and social awareness. It could be argued that these study findings would raise the awareness about the positive impact of recycling on national economy in Turkey. This awareness had an impact on government policies on recycling. It could be suggested that this significant study finding was consistent with the statement by Meys, Frick, Westhues, Sternberg and Klankermayer (2020) that recycling played an important role in government programs since it determines economic development. Furthermore, all present study participants considered recycling necessary and stated that it should be conducted for the future of the earth and the health of future generations. They included the alleviation of the destruction of nature and the preservation of natural resources, the transformation of waste into raw material; and thus, sowing economic benefits among the reasons for recycling. In the literature on the recycling of environmental waste, it was observed that most preschool children (Can-Yaşar, İnal, Kaya, & Uyanık, 2012), primary school students (Gönüllü, Doğan, & Çelik, 2015; Ural Keleş & Keleş, 2018), middle school students (Çimen and Yılmaz, 2012; Yalçın & Kara, 2017), and adults (Gürer & Sakız, 2018) had high level awareness about the concept of recycling environmental waste. As seen in Table 4, important findings were obtained in the study on the measures that should be taken to raise individual and social awareness about the concept and process of recycling. It could be argued that all study participants proposed significant measures to raise awareness. Exemplary projects, organization of programs and activities that would be supported by written and visual media, academic meetings are just a few of these recommendations. As seen in Table 4, it could be argued that the findings on recycling were based on learning by doing, experiences and observations. Thus, increasing the number of participatory activities supported by individuals and the society could lead to permanent awareness about recycling. It could be suggested that the outcomes of the projects and beneficial results should be presented to the society concretely and clearly to raise awareness. This present study finding was also emphasized in a study by Baumann and Tillman (2004): the projects on processing each raw material should be conducted based on recycling planning; and also in a study by Erikson et al.: different recycling processes should be implemented for each plastic product or waste.

It could be argued that the awareness of 162 pre-service social studies teachers who participated in the study about recycling was high based on their responses to the interview questions and the acrostic poems they wrote. These findings were consistent with the results reported by Cici et al. (2005); however, they were not consistent with those reported by Karatekin (2014). In that study, Karatekin reported that the awareness of pre-service social studies teachers about recycling was low. In various studies conducted with pre-service teachers (Soran et al., 2000; Can Yaşar et al., 2012; Demircioğlu, Demircioğlu, & Yadigaroğlu, 2015; Ak & Genç, 2018), it was reported that plastic, paper, glass, metal products could be recycled. These findings supported the present study results.

The education system aims to train a human model who meets the requirements of higher education institutions, life and the nation. Teachers play an important role in achieving this systemic goal. In a study conducted with students, Çelik (2011) reported that recycling knowledge was often provided by teachers. Recycling became an increasingly important phenomenon due to globalization. High awareness of pre-service teachers about recycling would ensure that they would train individuals with similar awareness levels. Thus, both compulsory or elective courses should be included in college curricula and non-governmental organization programs to provide instruction on the importance and necessity of recycling and to raise the awareness of pre-service teachers.

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