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Biology Teachers' Level of Recognition of Trees in Their Close Environment*

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Abstract

The purpose of this study is to determine how effectively biology instructors at high schools connected with the Ministry of National Education identify trees in their immediate surroundings in the context of trees, which are critical to the notion of biodiversity. The population comprises of biology instructors who worked in high schools in various regions of Turkey during 2020 and 2021 under the auspices of the Ministry of National Education. The research sampled 262 biology teachers volunteer using an accessible sampling technique. The research model is a relational one that is based on the general survey model, a quantitative research technique. Mercan and Köseoglu's (2019) "Given Tree Recognition (GTR) Test" was used to gather data for the study. The Mann Whitney U Test was used to compare matched groups and the Kruskal-Wallis H test was used to compare more than two groups in the analysis of the data collected throughout the study. According to the study's results, biology instructors' capacity to identify trees in their immediate surroundings is limited. It is deemed critical to ascertain biology instructors' degree of recognition of trees in their immediate surroundings, since the research's findings begin with an understanding of the importance of biodiversity, which is one of the most critical problems in the conceptual framework of biology teaching.

Keywords: Tree, biodiversity, environmental education, tree recognition test, biology teachers

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Biyoloji Öğretmenlerinin Yakın Çevrelerindeki Ağaçları Tanıma Düzeyleri*

Makale Türü	Başvuru Tarihi	Kabul Tarihi
Araştırma	14.09.2021	5.12.2021

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Öz

Bu araştırmanın amacı, Milli Eğitim Bakanlığı'na bağlı liselerde görev yapan biyoloji öğretmenlerinin biyoçeşitlilik kavramı içerisinde önemli bir kapsamı oluşturan ağaçlar kapsamında yakın çevrelerindeki ağaçları tanıma düzeylerinin incelenmesidir. Araştırmanın evreni 2020-2021 yılları arasında MEB'e bağlı Türkiye'nin farklı illerindeki liselerde yapan biyoloji öğretmenlerinden oluşmaktadır. Araştırmanın örneklemi, ulaşılabilir örnekleme yöntemine göre belirlenmiş 262 gönüllü biyoloji öğretmeninden oluşmaktadır. Araştırmanın modeli ise nicel araştırma yöntemlerinden genel tarama modelinde ilişkisel bir çalışmadır. Araştırmanın veri toplama aracı olarak Mercan ve Köseoğlu (2019) tarafından geliştirilen "Verilen Ağacı Tanı (VAT) Testi" kullanılmıştır. Elde edilen veriler parametrik olmayan test yöntemlerinden ikili grupların karşılaştırılmasında Mann Whitney U Testi ve ikiden fazla grupların karşılaştırılmasında Kruskal Wallis H testi kullanılarak analiz edilmiştir. Araştırmada elde edilen çıktılara göre; biyoloji öğretmenlerinin yakın çevrelerindeki ağaçları tanıma düzeylerinin düşük olduğu saptanmıştır. Ayrıca araştırma sonuçlarının hayati öneme sahip bir konu olan biyoçeşitliliğin öneminin yakın çevreyi tanımakla başladığı bilindiğinden biyoloji öğretmenlerinin yakın çevrelerindeki ağaçları tanıma düzeylerinin belirlenmesinin önemli olduğu düşünülmektedir.

Anahtar Sözcükler: Ağaç, biyoçeşitlilik, çevre eğitimi, verilen ağacı tanı testi, biyoloji öğretmenleri

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Introduction

Biodiversity is defined as a part of sustainable development, according to Lindemann-Matthies' research (2009), but it is a concept that both society and students are unfamiliar with. There is a need for a well-informed society that realizes the economic, social, and ethical value of biodiversity, recognizes its importance in sustainable development, and is sensitive to and aware of biodiversity protection (McCoy et al., 2007; Uzun and Sağlam, 2005). A new education program has also been proposed to promote biodiversity education (Sterling, 2009). In current programs, biodiversity issues are included in the environmental education course. The main purpose of environmental education is to make everyone environmentally literate, enabling them to acquire the knowledge, values, attitudes, commitments, and skills necessary to protect and improve the environment (Sterling, 2003).

Environmental education, it has been explained, can serve as a bridge to biodiversity education, but it is not adequate (Alexandar, 2014; Sterling, 2009; Mayr, 2004). Teachers have an essential role in ensuring that biodiversity education is implemented successfully in schools (Borg, 2012; WCED, 1987). Biodiversity education should not be restricted to only conceptual learning; it should be designed such that students can comprehend the system as its whole, including its dynamics and processes (Tilbury & Calvo 2005; Stevenson, 2006; Van Weelie and Wals 2002; Mayer 1992; Barker and Slings 1998). Instead of being taught in the classroom, biodiversity education should be taught in ecological environments outside of the classroom. Out-of-class learning should complement and enhance classroom learning (Ramadoss & Moli, 2011). There is a need for a well-informed community that understands the economic, social, and ethical importance of biodiversity and is concerned about its maintenance (McCoy et al., 2007). Teachers, in this regard, carry the greatest responsibility for biodiversity and sustainable development education. Biodiversity training that teachers receive before service has a potential multiplier effect (Gayford, 2000; Kápylá & Wahlström, 2000; Powers, 2004). That is, each teacher both share their knowledge with their colleagues and trains a large number of students. Therefore, it is vital in ensuring the quality of the teacher education system (Barker & Elliot, 2000). Studies conducted in various countries have shown that there is not enough emphasis on biodiversity education in pre-service teacher education programs (Plevyak et al., 2001; Fiebelkorn and Menzel, 2013). Thus, a large part of pre-service teachers cannot receive proper biodiversity training during their education (Gayford, 2000; Barker & Elliot, 2000). This showed that they were not willing enough to provide biodiversity education as of the lack of self-confidence in their knowledge when they started their service (Lane et al., 1995; Lieber et al., 2000 Fullan, 2002; Gayford, 2000; Brewer, 2002; Howitt, 2007; Falkenberg, 2014; Dikmenli, 2010; Kassas, 2000).

The studies carried out within the scope of environment and biodiversity education in the related literature are examined. n the study, they selected students from different age groups as a sample, their study to investigate how they see (Tunnicliffe & Reiss, 2000) and perceive plants, it was determined that the students differ in terms of time and attention, and those with older age groups were more inclined to use the habitat features of plants (Tunnicliffe & Reiss, 2000; Gatt et al., 2007). While it was determined that primary school 8th grade students (Ulucanlı, 2009) and secondary school 9th grade students (Civelek, 2012) had low awareness levels about the plants around them (Nates et al., 2010; Yli-Panula & Matikainen, 2014), high school students' perceptions of biodiversity loss are high (Bilir &Özbaş, 2017), medical students do not know enough about plants used in health and their usage areas (Aktürk et al., 2006), and village people do not know enough about beneficial plant species (Guerreco, et. al, 2007), the students in Germany know better the tree species from popular local plants and trees than the plant species (Lückman & Menzel, 2013), within the scope of the "Dendrology Education for 9th Grade High School Students" project, the dendrology education project having an effect on the environmental awareness and tree recognition levels of the high school students positively and significantly (Köseoğlu, Mercan & Pehlivanoğlu, 2019), and the "Dendrology School for Preschool Students" Project, based on environmental responsibility awareness from an early age, having a positive effect on the level of recognition of trees by preschool teachers and preschool children (Köseoğlu et al., 2021), was detected. As a result, since biodiversity education, which is related to environmental education, is one of the most important subjects in the conceptual framework of biology education, the protection of biodiversity is implemented through an understanding of its importance. Based on this context, the focus of the research is to examine how well biology teachers at Ministry of National

Education-affiliated high schools recognize trees in their immediate surroundings within the context of trees, which play an essential role in the concept of biodiversity. In the related literature, it is considered that the concept of biodiversity is addressed in terms of plant (Ulucanlı, 2009; Civelek, 2012; Yüce, 2017) or animal (Şahin, 2018) species, but there is no previous research on tree species by biology teachers and the findings obtained as a result of the research are important in terms of guiding future research.

The Problem of Research

What are the biology teachers' levels of recognizing the trees they see in their close environment and their recognition levels according to various variables (gender, educational status, professional seniority, the most vital benefit of trees and whether it's attractive to walk through the forest and discover different types of trees) does it differ?

Method

E-76942594-6600-00001649842 approval number dated 13 July 2021 was obtained from the Ethics Committee of Hacettepe University for this research.

Research Design

The general survey method, which is one of the most extensively used research types in the field of educational sciences, involves studies conducted to quantify a phenomenon, orientation, or to set a theory to the test in real-life circumstances (Descombe, 2010). This study's model is a relational study based on the general survey model. Relational studies are research models that aim to investigate whether two or more variables change together and how much they change (Karasar, 2005). The relationship between the relational study model and the variables determined within the research's scope was evaluated.

Research Sample / Study Group

Between the years 2020 and 2021, the study's universe included biology teachers who worked in high schools across Turkey under the Ministry of National Education. The study's sample, on the other hand, was chosen using an accessible sampling approach and consists of 262 biology teachers who volunteered to take part in the study between July and August 2021. The study's generalization to the accessible population is its limitation, and its external validity is weak. The research, on the other hand, has internal validity because the teachers who made up the study's sample did it voluntarily. Google Questionnaire Form was used to collect data in the research. The results of the frequency distributions related to the personal characteristics (gender, educational status, professional seniority, etc.) of the biology teachers who constitute the sample of the research are given in Table 1.

Table 1

Distribution of Demographic Characteristics of Biology Teachers

		Frequency (f)	Percentage (%)
Gender	Female	209	79,8%
	Male	53	20,2%
Educational status	Bachelor's degree	259	60,7%
	Master's degree	92	35,1%
	Doctorate (Ph.D.)	11	4,2%
Professional seniority	0-4 years	20	7,6%
	5-9 years	70	26,7%
	10-14 years	42	16,0%
	15-19 years	33	12,6%
	20 years and above	97	37,0%
The most vital benefit of trees	Human life	50	19,1%
	Climate	104	39,7%
	Air pollution	32	12,2%
	Other living things	76	29,0%
Whether it's attractive to walk through the forest and discover different types of trees	Yes	218	83,2%
	No	44	16,8%
Total		262	100,0%

Table 1 shows that women make up 79.8% of biology teachers and 20.2 % male of all biology teachers. More than half of biology teachers (60.7 %) are undergraduates, followed by those with Master's degrees (35.1 %) and Ph.D. (35.1%) (4.2%). When it comes to professional seniority, 7.6% have 0-4 years of experience, 26.7% have 5-9 years of experience, 16% have 10-14 years of experience, 12.6% have 15-19 years of experience, and 37.0% have 20 years or more of experience. When asked about the benefits of trees, 19.1% think they are useful to human life, 39.7% think they are beneficial to the climate, 12.2% think they are beneficial to air pollution, and 29% think they are beneficial to other living things. While the majority of teachers (83.2%) explore different tree species, 16.8% do not.

Research Instruments

Mercan and Köseoğlu (2019) developed the "Given Tree Recognition (GTR) Test" as the research's data collection tool. The Given Tree Recognition (GTR) Test is divided into two sections, the first of which includes three questions (gender, education level, professional seniority, the most important benefit of trees, and whether it is attractive to explore different tree species by walking in the forest) to determine the demographic characteristics of biology teachers. The second part of the test comprises photographs of 24 trees that biology teachers encounter most frequently in their daily lives. In the second part of the test, there are four photographs of each tree, and they are photographs taken during field trips by Necati Güvenç Mamıkoğlu, the author of the book Trees and Bushes of Turkey. These photographs consist of a view of the tree from afar, where its leaves, trunk, and fruit, if any, can be seen clearly.

Analysis of Data

The data was analyzed using the SPSS 22.0 program. Quantitative techniques were used to analyze the data collected throughout the study. The demographic characteristics and tree recognition levels of the teachers participating in the study were analyzed using descriptive analysis (frequency and percentage). The GTR Test scores did not have a normal distribution, they were analyzed using nonparametric test methods such as the Mann Whitney U Test and the Kruskal Wallis H Test.Table 2 shows the normality distribution of the scores received from the GTR Test.

Table 2

GTR Test normality distribution results

	Statistics	DF	p
GTR Test	0,100	262	0,000

DF: degrees of freedom; p: Significance value

The non-parametric test techniques were evaluated using the Mann Whitney U Test for comparison of paired groups and the Kruskal Wallis H test for comparison of more than two groups, as the GTR Test scores of the teachers were not adequate for the normality distribution ($p<0.05$), according to Table 2. GTRT test levels (cut points) determined that based on standart deviation scores of sample (SD = 4.32 in Table 3). There are 24 trees in the GTR Test, and each tree is evaluated as 1 point, and the maximum score that biology teachers who know all trees can get is 24, and the minimum score is 0. In relation to this, the tree recognition levels of biology teachers, according to the findings; 0-4 points were classified as very low level, 5-9 points as low level, 10-14 points as intermediate level, 15-19 points as good level and 20-24 points as advanced level.

Results

The results regarding the tree recognition scores of the biology teachers included in the study are shown in detail in Table 3.

Table 3

Descriptive Statistics on Tree Recognition Scores of Biology Teachers

	N	Min	Max	$\bar{X}$	SD
Tree Recognition Score	262	0,00	23,00	9,67	4,32

Min.: Minimum; Max.: Maximum; $\bar{X}$: Mean; SD: Standard Deviation

According to Table 3, the teacher who knew the most trees in the GTR Test of biology teachers knew 23 trees, while the teachers who knew the least is none (0). In addition, biology teachers' tree recognition scores were calculated to be 9.67±4.32. As a result, it is reasonable to conclude that biology teachers have a moderate level of tree recognition.

The results are shown in Table 4 as a distribution of the level of recognition of the aghas that biology teachers observe in their immediate environment, arranged from greatest to least.

Table 4

Distribution of Biology Teachers in order of Recognizing Trees They See in Their Immediate Environment, Ranked from Most to Least

Rank No.	Tree Name	Number of Biology Teachers Recognizing Trees (f)	Percentage (%)	Number of Biology Teachers Who Don't Recognize Trees (f)	Percentage (%)
1	Calabrian pine	225	85,9%	37	14,1%
2	Larch	222	84,7%	40	15,3%
3	Oak	212	80,9%	50	19,1%
4	Scotch pine	209	79,8%	53	20,2%
5	Whitewood	182	69,5%	80	30,5%
6	Lime	178	67,9%	84	32,1%
7	Silverberry	176	67,2%	86	32,8%
8	Chestnut	172	65,6%	90	34,4%
9	Cypress	159	60,7%	103	39,3%
10	Plane	143	54,6%	119	45,4%
11	Juniper	96	36,6%	166	63,4%
12	Maple	86	32,8%	176	67,2%
13	Spruce	80	30,5%	182	69,5%
14	White willow	65	24,8%	197	75,2%
15	Yew	57	21,8%	205	78,2%
16	Cedar	56	21,4%	206	78,6%
17	Fir	52	19,8%	210	80,2%
18	Birch	43	16,4%	219	83,6%
19	Beech	28	10,7%	234	89,3%
20	Sweetgum	27	10,3%	235	89,7%
21	Hornbeam	23	8,8%	239	91,2%
22	Ash	16	6,1%	246	93,9%
23	Hackberry	14	5,3%	248	94,7%
24	Alder tree	12	4,6%	250	95,4%

According to Table 4, it was found that no biology teacher recognizes all of the 24 trees in the GTRT Test. The first 5 trees that biology teachers know the most are Calabrian pine (85.9%), larch (84.7%), oak (80.9%), Scotch pine (79.8%) and whitewood (69.5%). On the other hand, if they are least familiar with the last 5 trees; sweetgum (10.3%), hornbeam (8.8%), ash (6.1%), hackberry (5.3%) and alder (4.6%). Additionally, there is no tree that none of the teachers recognized.

The results regarding the tree recognition levels of biology teachers are given in Table 5.

Table 5

Distribution of Biology Teachers' Tree Recognition Levels

Tree Recognition Level	Frequency (f)	Percentage (%)
Very Low Level	24	9,2%
Low Level	117	44,7%
Moderate Level	87	33,2%
High Level	28	10,7%
Advanced Level	6	2,3%

Total	262	100,0%

According to Table 5, when biology teachers' tree recognition levels are evaluated; it was found that 9.2% was very low, 44.7% had low, 33.2% was moderate, 10.7% was good and 2.3% was advanced.

Results that stand out from the similar names given by biology teachers to trees in the GTR Test are discussed in Table 6.

Table 6

Information on the Different Names that Biology Teachers Gave to the Trees in the GTR Test

Rank No.	Tree Name	Different Names Biology Teachers Give to Trees
1	Cypress	Juniper, Beech, Oak, Fir, Chestnut
2	White willow	Silverberry, Olive Tree, Linden, Cedar, Laurel
3	Chestnut	Oak, Beech, Hazelnut Tree
4	Sweetgum	Ash, Plane, Chestnut, Maple, Spruce, Oak
5	Juniper	Cedar, Spruce, Fir, Cypress
6	Alder	Acacia, Sweetgum, Plane, Fir, Oak, Ash, Birch
7	Hackberry	Walnut Tree, Ash Tree
8	Plane	Chestnut, Oak, Fir, Whitewood
9	Beech	Chestnut, Hornbeam
10	Spruce	Fir, Cedar, Cypress, Juniper, Calabrian Pine
11	Linden	Acacia
12	Hornbeam	Elm, Beech, Acacia, Chestnut
13	Whitewood	Willow, Oak, Cypress
14	Larch	Spruce, Cedar, Fir
15	Calabrian pine	Cedar, Spruce, Fir
16	Silverberry tree	Olive Tree, Dogwood, Cherry Tree, Linden Tree
17	Yew	Juniper, Spruce, Cedar, Fir, Dogwood
18	Birch	Willow, Whitewood, Maple
19	Oak tree	Hazelnut tree
20	Scotch pine	Juniper, Cedar
21	Ash	Willow, Plane, Maple, Acacia
22	Cedar	Juniper, Fir, Spruce, Cypress, Scotch Pine, Larch
23	Fir	Spruce, Cedar, Cypress, Juniper
24	Alder	Elm, Hazelnut Tree, Fir, Mulberry Tree

According to Table 6, when the results of the different names given by the biology teachers to the trees in the GTR Test were examined, it was observed that the tree names were generally close to each other (such as juniper, beech, fir for cypress; oak, beech for chestnut; silverberry, olive for white willow; cedar, spruce, fir for juniper).

The findings regarding the relationship between the GTR Test tree recognition scores according to the gender of the biology teachers are shown in Table 7.

Table 7

Biology Teachers' Results on the Relationship between GTR Test Trees Recognition Scores by Gender

	Gender	N	Mean rank	U*	p
Tree recognition score	Female	209	131,17	5470,00	0,88
	Male	53	132,79		

Mann Whitney U Test; $p < 0,05$

According to Table 7, the mean rank of GTR Test tree recognition scores of female biology teachers was 131.17; the number of male biology teachers is 132.79. There is no significant difference between biology teachers' scores for recognizing trees by gender (p>0.05) and it can be claimed that their scores are close to each other.

The results regarding the relationship between the GTR Test tree recognition scores according to the education levels of the biology teachers are given in Table 8.

Table 8

The Results of the Biology Teachers on the Relationship between the GTR Test Tree Recognition Scores according to Their Educational Background

	Educational status	**N**	**Mean rank**	**Chi-Square**	**DF**	**p**	
Tree recognition score	Bachelor's degree (1)	159	130,29	10,29	2	0,00*	**Difference** 1-3, 2-3
	Master's degree (2)	92	125,15				
	PhD (3)	11	202,09				

p<0,05

According to Table 8, the mean rank of GTR Test trees recognition scores among Bachelor's degree of biology teachers was 130.29, 125.19 for master's graduates, and 202.09 for Ph.D. degrees. There is a statistically significant difference in tree recognition scores among biology teachers based on their educational status (p<0.05). Biology teachers with doctorates are said to know trees better than both undergraduate and graduate students.

The results regarding the relationship between the GTR Test tree recognition scores according to the professional seniority of the biology teachers are given in Table 9.

Table 9

The Results of the Biology Teachers on the Relationship between the GTR Test Tree Recognition Scores according to Their Professional Seniority

	Professional seniority	**N**	**Mean rank**	**Chi-square**	**DF**	**p**	**Diff.**
Tree recognition score	0-4 Years (1)	20	102,35	12,43	4	0,01*	1-5, 2-5
	5-9 Years (2)	70	115,79				
	10-14 Years (3)	42	138,67				
	15-19 Years (4)	33	120,94				
	20 Years and above (5)	97	149,34				

p<0,05

According to Table 9, the mean rank of GTR Test tree recognition scores of 0-4 years senior biology teachers was 102,35; 115,79 for those with 5-9 years of experience; 138,67 for those with 10-14 years of experience; 120,94 for those with 15-19 years of experience; and 149,34 for those with 20 years or more of experience. There is a significant difference in tree recognition scores among biology teachers based on their professional seniority (p<0.05). Biology teachers with a seniority of 20 years or more have a superior recognition of trees than those with 0-4 years and 5-9 years of experience.

The results regarding the relationship between the GTR Test tree recognition scores according to the opinions of the biology teachers about the benefits of trees are given in Table 10.

Table 10

Results on the Relationship between GTR Test Tree Recognition Scores according to Biology Teachers' Opinions about the Benefits of Trees

	Benefits of trees	N	Mean rank	Chi-square	DF	p
Tree recognition Score	Human life	50	137,43	0,50	3	0,91
	Climate	104	131,94			
	Air pollution	32	128,64			
	Other living things	76	128,80			

p<0,05

Table 10 shows that the rank average of the GTR Test tree recognition scores of biology teachers who answered "human life" about the benefit of trees was 137.43, 131.94 for those who answered "climate," 128.64 for those who answered "air pollution," and 128.80 for those who answered "other living things." There is no significant difference in the tree recognition scores (p>0.05), according to the biology teachers' opinions on the benefits of trees, and the scores are close to each other.

The results regarding the relationship between GTR Test tree recognition scores according to biology teachers' discovery of different tree species are shown in Table 11.

Table 11

Results on the Relationship between GTR Test Tree Recognition Scores according to Biology Teachers' Discovery of Different Tree Species

	Discovery of different tree species	N	Mean rank	U	p
Tree recognition score	Yes	218	140,37	2862,00	0,00*
	No	44	87,55		

p<0,05

According to Table 11, the mean rank of GTR Test tree recognition scores of biology teachers who discovered different tree species was 140.37; those who did not discover it were found to be 87.55. There is a significant difference between the scores of recognizing trees according to the biology teachers' discovery of different tree species (p<0.05). It can be considered that biology teachers who discovered different tree species knew trees better than those who did not.

Discussion, Conclusion and Recommendations

According to the study's results, biology teachers were unfamiliar with the names of a large number of trees in their local area, suggesting a poor degree of awareness for trees in their immediate context. The results of tests performed by Ulucanl (2009) and Civelek (2012), in which they compared the identification levels of plants in a near setting using various samples, indicated that the study is genuine. Additionally, Bast (2010), Demirezen (2012), Şenel (2015), Şahin (2018), Mercan & Köseoglu (2019) all shown poor knowledge of biodiversity in their environments, which is consistent with the results of this research.

The first five trees that biology teachers are most familiar with are calabrian pine, larch, oak, scotch pine, and whitewood. On the other side, they are least acquainted with the following five trees: sweetgum, hornbeam, ash, hackberry, and alder. Additionally, when the results of the GTR Test were compared to the various names provided to the trees by biology instructors, it was discovered that the tree names were usually similar (such as juniper, beech, fir for cypress; oak, beech for chestnut; silverberry, olive for white willow; cedar, spruce, fir for juniper). Ulucanlı (2009), Bastı (2010), Civelek (2012), Türkmen et al. (2016), and Şahin (2018) conducted studies with various sample groups and discovered that while individuals have a high level of recognition for the fruits they consume at home, they do not recognize trees whose fruits they do not consume; while Nates et al. (2010) discovered that

while individuals have a high level of recognition for the trees whose fruits they do not consume, they do not recognize the trees whose fruits they do

There was a strong connection between biology teachers' tree identification scores and their educational level, with biology teachers with doctorates doing higher than those with bachelor's and master's degrees in tree recognition. Additionally, there was a substantial difference in tree identification ratings between biology instructors with 20 years or more of professional experience and those with 0-4 years and 5-9 years of experience. Due to the absence of comparable study findings in the literature, the findings may be deemed unique. However, studies conducted by Ürey and ahin (2010), Gök (2012), Özsevgeç and Artun (2012), and Çavuş (2013) with diverse sample groups contradict the findings of the research, as they concluded that knowledge-based environmental education has no effect on individuals' ability to transform information into behaviors and associate it with daily life.

There was no significant correlation between the biology teacher applicants' tree recognition scores and their location of birth and upbringing (village/city). However, in studies conducted by Civelek (2012), Lückmann and Menzel (2013), and Şahin (2018), the level of plant and tree recognition in the immediate environment was compared to those living in villages or city centers.

While there is no significant difference in scores for identifying trees depending on biology instructors' views on the advantages of trees, there is a significant difference in scores for recognizing trees based on their discovery of new tree species. It is conceivable that biology instructors who discovered new tree species had a greater understanding of trees than those who did not. Individuals' perceptions of the significance of plant identification were assessed in a study performed by Civelek (2012) with various sample groups in order to ascertain the health advantages and risks, and they partly coincide with the research findings.

According to the results of the research, the following recommendations are given:

1) It is a cross-sectional study because the sample of the study was selected by the accessible sampling method. For this reason, mixed method research can be applied by using quantitative and qualitative research with different study groups and sampling methods. By this way, in-depth results can be obtained within the scope of the research purpose.
2) By adding different variables within the scope of the research, the relations between concepts can be handled by different teacher groups.
3) Researchers need to plan the application times well. It is significant to choose the periods when teachers are not busy in order to increase participation in the applications to be made in educational institutions.
4) It is advised that researchers interact with experts in systematic botanic when conducting educational research on systematic botanic.

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