

Model Review Related to the Effects of Teachers' Levels of Ecological Citizenship

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Abstract

This research has been handled for two purposes: First, determining the level of ecological citizenship of teachers; secondly, the level of curiosity about the environment, the frequency of participation in environmental activities, investigating the relationship between the dimensions of Ecological Citizenship Scale (ECS). In line with this aim, in 2017-2018 academic year, a total of 296 teachers working in different branches in the public educational institutions affiliated to the Ministry of National Education Ecological Citizenship Scale (ECS) developed by Karatekin and Uysal (2018) was applied. As a result of the study, it was determined that the teachers' ecological citizenship levels were low in the dimension of participation, moderate in the responsibility dimension, sustainability and high in the dimension of rights and justice. It was seen that teachers' ecological citizenship levels which were composed of all dimensions of the scale were at moderate level.

External variables in the structural equation model; the level of curiosity about the environment and the frequency of participation in environmental activities; and internal variables were formed from the variables of participation, sustainability, responsibility, rights and justice. Goodness of fit indexes of model ($\chi^2/sd=2.03$, $p=.13$ RMSEA=.059, % 90 RMSEA CI= .000-.014, AGFI=0,95, NNFI=0,97 ve SRMR=.016) show that the model is at acceptable level. According to the results of path analysis, the level of curiosity about the environment significantly affects the sustainability, responsibility, rights and justice dimensions of the ecological citizenship scale. It was determined that the frequency of participation in environmental activities directly affected all dimensions of ecological citizenship. The results showed that, they positively predicted the sustainability and responsibility dimensions of rights and justice, responsibility of sustainability dimension and participation of responsibility dimension as well.

Keywords: Ecological citizen, ecological citizenship education, teacher, environmental education.

1.Introduction

While the traces of the environmental disaster of the Exxon Valdez in 1989 still stood, humankind entered to the 21st century again with a great environmental disaster. In 2010, the petrol platform DeepWater Horizon exploded in the Gulf of Mexico and a large amount of oil began to flow into the ocean. This shows us that the fate of nature is left to the hands of big companies and that people cannot do much in this situation. As a matter of fact, many international meetings on the future of the world in the 20th and 21st centuries did not give any result. As long as the growth economy based on consumption economy continues, it will not yield any results. Since the resources of nature are not unlimited, consumption economy cannot be sustained (Kışlalıoğlu & Berkes, 2010).

The economic crisis must be the crisis of the economy (Simonnet, 1993). The economic crisis should not cause ecological crises. It is not possible to find a solution to the ecological crises with the decision makers of the capitalist economy, which causes ecological crises. This is because the current economic order imposes a citizen profile on society in order to maintain this order. This profile is a consumer-dependent citizen

profile, separated from its nature and roots (Simonnet, 1993). For the comfort and happiness of the citizen in this profile, the control of nature and the conquest of nature are required (Carson, 2011). It is not possible to get rid of environmental problems and save nature without getting rid of this citizenship profile. For this, there is a need for an effective citizenship concept in order to move from a wild capitalist society to a new social order from the traditional conceptualizations between the society and the state (Beck, 2003), which have lost its influence in dealing with the problems of today's world. The ecological citizenship concept (Karatekin & Uysal, 2018), which advocates living according to the rules of ecology and the harmony of human behavior with the basic principles of ecology, can help us to create a new social order.

Ecological citizenship is a new concept that emerges from the political ecology, in response to the need for global ecological risks, the theoretical rearrangement of democracy (Biagi & Ferro, 2011). The re-construction of the concept of liberal citizenship into an ecological citizenship emphasizes the role and responsibilities of the citizen in the framework of a sustainable society and the socializing role of conscious ecological citizens. (Saiz, 2005). Basically, ecological citizenship is a status that citizens have in relation to their natural environment rights and participation processes. (Crane, Matten & Moon, 2008).

Dobson (2003) describes ecological citizenship as a lifestyle that goes beyond national boundaries and emphasizes the fulfillment of personal duties and responsibilities to protect the environment. Dobson's model of ecological citizenship is a model that extends its global responsibility to future generations (Martinsson & Lundqvist, 2010). Horton (2006) states that ecological citizenship is "a form of non-regionalized citizenship". According to Horton, environmental citizenship develops not within the boundaries of a nation-state but within the cultural and political boundaries of modern environmentalism. In this context, environmental citizenship has rights and responsibilities beyond national borders. In other words, the concept of ecological citizenship is based on an extended catalog of rights and responsibilities, taking into account the global effects of individual actions; implements the value of justice as the chief motivator to expand the public sphere including activities within the household and rethink individual lifestyle patterns (Jagers & Matti, 2010: 1057).

Dobson's notions of ecological citizenship are focused on the ecological footprint of Wackernagel & Rees (1996) (Crane, Matten & Moon, 2008). The current ecological footprint indicators show that current human development is unsustainable, so the concept of sustainable development suggests handling problems of intergenerational equality. (Moffat, 2000). According to Dobson (2003), our first obligation as an ecological citizen is to ensure that our ecological footprint is sustainable. If our ecological footprint is unsustainable, our obligation should be to reduce it. Ecological citizens not only seek to reduce their ecological footprints, but also act to challenge other actors' unsustainable patterns of production and consumption, and at the same time advocate that they need to reduce their footprints to promote a more equitable division of the ecological space (Humphreys, 2009: 173).

Today's citizens should consider protecting and improving all virtues of life as a universal responsibility (Ekinçi, 1994). The first virtue of the ecological citizen is justice. The virtue of ecological citizenship aims at the fair distribution of the ecological area and includes international duties and responsibilities (Dobson, 2003). The concept of environmental justice is an approach involving the source of global inequalities caused by the environmental problems that arise in the process of industrialization and development and their solution (Kılıç & Tok, 2014:220). Environmental justice; ecological equal opportunity (It is people's having the same rights in using natural goods and the consumption of natural resources), ecological human rights (each human being has the

right to live a healthy life) is closely related to the concepts of ecological regulation rights (Every human being has the right to participate in environmental decisions) (Leist, 2007; Cited: Kılıç, 2011: 6).

The way to ensure sustainability is to strengthen ecological citizenship. To do this, people should be encouraged to protect the environment and common good (Martinho, at al., 2010). This can be achieved by education (Bruner, 2009), the goal of perfect human raising. MacPherson (2005) argues that ecological values, interdisciplinary inquiry, and reflexing practice within compassion pedagogy must exist in ecological citizenship education. Dobson (2003), who advocates the integration of environmental education and citizenship education, points out the importance of rights and states that any curriculum that does not refer to it will be incomplete. Dobson says that secondly, an ecological citizenship curriculum should include international, inter-generational and inter-species obligations, so that justice is an essential component of ecological citizenship. Ecological citizenship education, which is a synthesis of environmental education and citizenship education, will be implemented by teachers in schools. Hence, teachers will play an important role in raising ecological citizens who advocate a new social order. Indeed, it has been argued by economics and education experts that there are relations between social change and teachers and it is stated that the leaders, intellectuals, statesmen, politicians and commanders of the future are the students of today's teachers (Akyüz, 1978). How effective today's teachers are in the ecological citizenship of students who will shape the future? This question is an important question in terms of the effectiveness of ecological citizenship education in schools. This research aims to find an answer to this question. Existing research has focused on environmental education in terms of knowledge, attitude, behavior and environmental literacy. Ecological citizenship is a result of environmental education and covers the objectives of environmental education (knowledge, attitude, behavior, environmental literacy). Studies on the ecological citizenship screening model are limited (Uysal, 2018; Erdilmen, 2012; Özden, 2011; Jagers & Matti, 2010; Jagers, 2009). The studies have been done with teacher candidates and students. This study was dealt with two purposes: First, to determine the level of ecological citizenship of teachers; secondly, the level of curiosity about the environment, the frequency of participation in environmental activities, the relationship between the dimensions of Ecological Citizenship Scale (ECS) and the path analysis.

2. Methodology

2.1 Research Model

This research is a research in descriptive survey model as well as a correlational research. The survey model is a research approach that aims to describe a situation that exists in the past or in the present as it exists (Karasar, 1999). Correlative research is a research approach used to reveal the relationships between variables, to determine the levels of these relationships and to provide the necessary clues for further research on these relationships (Büyüköztürk, Çakmak, Akgün, Karadeniz and Demirel, 2012).

In this study, it was tried to determine the ecological citizenship levels of teachers from different branches and the level of curiosity about the environment, the frequency of participation in environmental activities and the 4 dimensions of Ecological citizenship scale. In the theoretical model, it was assumed that the level of curiosity about the environment and the frequency of participation in environmental activities directly affect the dimensions of participation, sustainability, responsibility, rights and justice. It has been assumed that the right and justice dimension have direct impact on sustainability

and responsibility aspects as well as indirect participation through sustainability and responsibility, while the sustainability dimension is influential on the dimension of indirect participation both directly and through the dimension of responsibility. However, it is thought that the dimension of responsibility will be a predictor of the direct participation dimension. The research was conducted within the framework of this model.

2.2 Working Group

The study group of this study consisted of 296 teachers from different branches in the educational institutions of the Ministry of National Education in 2017-2018 academic year. Of the participants, 159 (53.7%) were female and 137 (46.3%) were male. 118 (39.9%) teachers in the age range of 24-31, 121 (40.9%) teachers in the 32-39 age range, and 57 (19.2%) teachers in the 40-50 age group participated in the study. 66 of the teachers participated in the research (22.3%) in mathematics, 49 (16.6%) in science and 181 (61.1%) in social sciences.

2.3 Gathering Data

The ecological citizenship scale (ECS) developed by Karatekin and Uysal (2018) was used to determine the ecological citizenship levels of teachers. This scale consists of 24 items and 4 dimensions. Dimensions are named as participation, sustainability, responsibility and right and justice. The Cronbach Alpha internal consistency coefficient for all of the total is 0.901. The Cronbach Alpha internal consistency coefficient of the dimensions of the ecological citizenship scale is 0.865, the sustainability dimension is 0.762, the responsibility dimension is 0.745 and the rights and justice dimension is 0.636.

2.4 Analyzing Data

SPSS 21 (Statistical Package for Social Sciences) package program was used to analyze the data. Ecological citizenship scale is structured as 5-point Likert. In the scoring of the scale items, "almost never" was evaluated as 1 point, "rarely" expression as 2 points, "sometimes" expression as 3 points, "usually" as 4 points and "always" as 5 points. According to this scoring system, teachers' ecological citizenship level is evaluated in 5 categories. These categories are shown below.

Between 1-1.80Almost Never (Very Low)

Between 1.81-2.60 Rarely (Low)

Between 2.61-3.40Sometimes (Moderate)

Between 3.41-4.20Usually (High)

Between 4.21-5.00Always (Very High)

Arithmetic mean and standard deviation, percentage and frequency calculations were made from descriptive statistical methods to determine the ecological citizenship levels of teachers.

In addition, the path analysis technique was used to validate the structural model defining the effect of a set of variables on another set of variables. Path analysis is used to determine causality among variables and to test theoretical relationships (Çokluk, Şekercioğlu & Büyüköztürk, 2012). In this context, the partial effect of external variables on internal variables is shown with standardized regression coefficients. Path analysis is considered an extension of multiple regression models (Schumacker and Lomax, 1996).

In this study, the model based on the variables observed in the path analysis is tested. There are direct and indirect relationships in the path analysis showing the effect of external variables on internal variables. In this study, the level of curiosity for the environment and the frequency of participation in environmental activities for the hypothesised road model are exogenous variables; the dimensions of participation, sustainability, responsibility, rights and justice of the ecological citizenship scale are considered as endogenous variables. The dimensions of sustainability, responsibility, rights and justice in the model are included as mediator variables. The road model discussed in this study is a recursive route model in which the causal effects are unidirectional and the variants of the endogenous variables that cannot be explained by other variables (Disturbance) are unrelated. Since the degree of freedom of the generated path model is $sd > 0$, the model is overidentified. In the case of over-defined models theoretically, there are many possible solutions to each parameter, so it is necessary to test the compatibility of the default model with the data. In the Structural Equality Model (SEM) literature, many alignment indexes are used to indicate the mean or overall fit of the model (Tabachnick and Fidell, 2001). Since a single index reflects only a certain aspect of the model, the model fit should be evaluated with a holistic approach based on the value of more than one index (Yavuz Atar, 2017). In the study, the ratio of the chi-square value to the degree of freedom for the data fit of the established path model (χ^2 / sd), the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the comparative conformity index (CFI), the non-normalized fit index (NNFI), the root mean square errors of approximation (RMSEA) and the standardized residual averages (SRMR) values were taken into account. This goodness fit indices and recommended breakpoints are given in Table 1.

Table 1.

Fit indices and breakpoints for acceptance

Fit Indices	Breakpoints for Acceptance
(χ^2 / sd)	≤ 2.5 perfect fit ≤ 5 moderate fit
GFI-AGFI-CFI-NNFI	≥ 0.95 perfect fit ≥ 0.90 good fit
RMSEA-SRMR	≤ 0.05 perfect fit ≤ 0.08 good fit ≤ 0.10 weak fit

(Sümer, 2000; Tabachnick and Fidell, 2001)

The Maximum Likelihood Method was used to predict the relationships between the variables since the observed variables were at the level of the scale. The path model was analyzed by the LISREL 8.80 (Joreskog & Sörbom, 1993) package program.

3. Findings

3.1 Findings on Teachers' Ecological Citizenship Levels

Table 2.

Ecological citizenship levels of teachers

Ecological citizenship	n	Min	Max	\bar{X}	Sd
Participation	296	1	4,63	2,34	,740
Sustainability	296	1	5,00	3,84	,658
Responsibility	296	1	5,00	3,28	,722
Right and Justice	296	1	5,00	4,14	,692
Total Ecological Citizenship	296	1	4,88	3,23	,571

According to Table 2, the mean of the total scores of 296 teachers who participated in the study was examined; teacher's level of ecological citizenship levels are low in participation dimension ($\bar{X} = 2,34$), moderate in responsibility dimension ($\bar{X} = 3,28$), high in sustainability ($\bar{X} = 3,84$) and right and justice dimension ($\bar{X} = 4,14$). The level of ecological citizenship ($\bar{X} = 3,23$), which is composed of the components of all dimensions, is moderate.

Table 3.

Descriptive data on the participation dimension of ecological citizenship

Participation Dimension	N	\bar{X}	Sd
3. I write a petition to solve the environmental problems I face.	296	2,50	1,182
12. In order to live in a clean and healthy environment, I will ask the local authorities (green area, trash can, recycling bin, etc.).	296	3,20	1,212
14. I investigate the environmental policies of central and local governments.	296	2,69	1,053
16. I visit to check the living conditions of street animals living in shelters.	296	2,04	1,095
17. I try to create public opinion to solve environmental problems.	296	2,58	1,144
20. I try to create public opinion to solve environmental problems.	296	1,42	,741
22. I participate in legal demonstrations on environmental issues.	296	1,77	1,006
24. I follow the air pollution measurement results released for the city I live in.	296	2,24	1,190

According to Table 3, it is seen that teachers do not write about the environmental problems in local newspapers and almost never participate in the legal demonstrations related to environmental problems. Again, according to the table, it is observed that teachers rarely write petitions and try to create public opinion for the solution of the environmental problems encountered by them, they rarely visit street animals living in the shelters to check the living conditions and they rarely follow the air pollution

measurement results in the city they live in. These findings can be interpreted as the fact that teachers show very little participation behaviors required for the solution of environmental problems.

Table 4.

Descriptive Data on the Sustainability Dimension of Ecological Citizenship

Sustainability Dimension	N	\bar{X}	Sd
1. I pay attention to which raw material (cotton, acrylic, polyester, wool, etc.) is produced when buying clothes.	296	3,94	,995
9. I pay attention to whether the products I buy are included GMO's or not.	296	3,96	1,023
13. When I spend an unnecessary expense, I think of the citizens of poor countries.	296	3,57	1,058
15. Since I know that many people in the world cannot reach clean water, I avoid excessive water consumption.	296	3,99	,964
19. I make a list of needs before shopping.	296	3,79	1,107
21. I consider the energy consumption when buying an electric product.	296	3,86	1,151
23. I consume organic foods without additives in.	296	2,49	1,190

In the sustainability dimension, the item that teachers get the lowest points is “I consume organic foods without additives in.” In this item, it is seen that participants rarely consume organic foods. It is observed that teachers generally do the behaviors in other items of sustainability dimension.

Table 5.

Descriptive Data on the Responsibility Dimension of Ecological Citizenship

Responsibility Dimension	N	\bar{X}	Sd
4. I complain to the authorities and individuals and organizations that cause noise pollution.	296	2,59	1,149
5. I help street animals to find food and drink.	296	3,52	,967
7. I visit national parks to get to know the nature.	296	3,46	1,014
8. I participate in environmental campaigns (blue cap collection, signature, seedlings donation etc.).	296	3,69	1,034
11. I do food aid for starving countries around the world.	296	3,09	1,118
18. I complain about those who torture animals.	296	3,32	1,216

Participants rarely complain about people and organizations that cause noise pollution, sometimes help food for starving countries, sometimes complain about those who torture animals, while street animals often help them to find food and drink; and environmental campaigns. According to these findings, it is seen that teachers sometimes do behaviors that require responsibility of ecological citizenship.

Table 6.

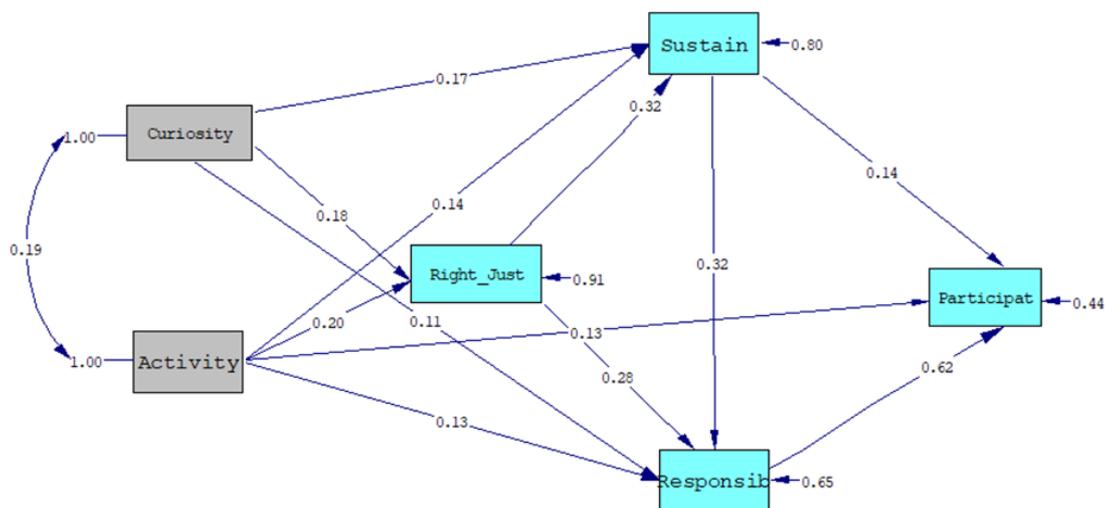
Descriptive Data on the Rights and Justice Dimension of Ecological Citizenship

Rights and Justice Dimension	N	\bar{X}	Sd
2. I am concerned about a lake would dry out noo matter where it is in the world.	296	4,44	,995
6. I oppose a thermal power plant that harms the environment, in whatever city it is located.	296	3,54	1,291
10. I feel sorry for forest fires in other countries.	296	4,45	,801

Within the dimensions of ecological citizenship, it is seen that teachers get the highest score from the right and justice dimension. Participants in this dimension had high and very high scores.

3.2 Concern for the Relationship between Environmental Awareness Level, Frequency of Participation in Environmental Activities, Ecological Citizenship Scale Dimensions

The fit indices for the established road model were $\chi^2/sd= 2.03$, $p = .13$, RMSEA = .059, 90% RMSEA CI = .000-.014, AGFI = 0.95, NNFI = 0.97 and SRMR = .016. When these values are compared with the breakpoint values recommended for the model fit in Table 1, the model shows good fit with the data. The Path diagram for the established path model is given in Figure 1.



Chi-Square=4.06, df=2, P-value=0.13134, RMSEA=0.059

Figure 1. *Standardized solutions for path analysis*

Abbreviations used in the model: Curiosity: *The level of curiosity about the environment*, Activity: *Frequency of participation in environmental activities*, Right_Just: *Right and Justice dimension*, Sustain: *Sustainability dimension*, Responsib: *Responsibility dimension*, Participat: *Participation dimension*

When the results of the analysis were examined, it was determined that all of the model's t "values" were significant at 0.05 level. In other words, every causality relationship established in the model is meaningful. Figure 1 presents the standardized coefficients of the model. In the Path Diagram model, the level of curiosity about the environment positively predicts the sustainability, responsibility, rights and justice dimensions of the Ecological citizenship scale; the frequency of participation in environmental activities positively predicts all dimensions of ecological citizenship. When the causality relations between the dimensions of the ecological citizenship scale are examined, the predictor of the sustainability and responsibility behaviors of the right and justice dimension; It was determined that sustainability is the predictor of responsibility behaviors and the responsibility dimension is predictive of participation behaviors.

Table 7.

Standardized and non-standardized solutions for the path model

Parameters	Non-standardized	SE	Standardized
	Direct Impact		
Curiosity - Right and Justice	0.69*	0.21	0.18
Activity - Rights and Justice	0.51*	0.14	0.20
Curiosity - Sustainability	1.41*	0.45	0.17
Activity - Sustainability	0.76*	0.30	0.14
Curiosity - Responsibility	0.83*	0.39	0.11
Activity - Responsibility	0.67*	0.26	0.13
Activity - Participation	0.93*	0.29	0.13
Rights and Justice - Sustainability	0.70*	0.12	0.32
Rights and Justice - Responsibility	0.58*	0.11	0.28
Responsibility - Participation	0.85*	0.062	0.62
Sustainability - Participation	0.18*	0.058	0.14
Sustainability - Responsibility	0.30*	0.049	0.32

*p < .05

When standardized solutions are analyzed in Table 7, it can be said that the dimension of responsibility is an important predictor of the participation dimension ($\beta = 0.62$, $t = 3.06$, $p < .05$). It was also determined that the sustainability dimension of right and justice dimension ($\beta = 0.32$, $t = 5.79$, $p < .05$) and the responsibility dimension ($\beta = 0.28$, $t = 5.40$, $p < .05$); the sustainability dimension significantly predicted the responsibility dimension ($\beta = 0.32$, $t = 6.16$, $p < .05$). Accordingly, it can be stated that responsibility dimension in predicting the participation points; sustainability dimension in the prediction of responsibility points are the most important variable. It is seen that the most important variable for sustainability is right and justice. Kline (2005) states that for standardized coefficients, values less than .10 indicate minor effects, values around .30 indicate moderate effects and values above .50 and above indicate major effects. In this respect, it can be said that the responsibility has a medium level effect on the sustainability behaviors, and the sustainability and responsibility behaviors of the sustainability and responsibility dimension on the responsibility level of sustainability at a moderate level.

When the R^2 values for each equation in the path model were examined, the R^2 value for the participation dimension was estimated to be 0.56. This value indicates that approximately 56% of the variance in participation dimension is explained by the frequency of participation in environmental activities, and by the predictors of

responsibility and sustainability. For the responsibility dimension, R^2 was estimated as 0.35. This value shows that approximately 35% of the variance in responsibility dimension is explained by the level of curiosity about the environment, frequency of participation in environmental activities, and the predictors of rights and justice and sustainability. The R^2 value for the sustainability dimension was estimated as 0.20. This value indicates that approximately 20% of the variance in the sustainability dimension is explained by the level of curiosity about the environment, the frequency of participation in environmental activities and the predictors of rights and justice. However, about 9% of the total variance for the right and justice dimension was explained by the level of curiosity about the environment and the frequency of participation in environmental activities.

When the standardized indirect effects of path model are examined, it is seen that the level of curiosity about environment and frequency of participation in environmental activities have indirect effects on the participation, sustainability and responsibility dimensions of ecological citizenship scale. It was determined that the level of curiosity about the environment and the frequency of participation in environmental activities showed the most significant indirect impact on participation scores ($\gamma_{\text{curiosity}} = 0.17$, $\gamma_{\text{activity}} = 0.18$).

Results and Discussion

The solution of chronic environmental problems is possible with the construction of a new social order. This can be achieved by teachers who are the pioneers of social change. If teachers play this role well, the balance between the generations that they will raise and human and nature can be restored. Ecological citizenship is a new understanding of citizenship that has emerged in order to establish a healthy balance between man and nature. The results of this study examining the ecological citizenship levels of teachers who will have an effect on individuals becoming ecological citizens and the variables affecting these levels are important.

As a result of the study, it was determined that the teachers' ecological citizenship levels were low in the dimension of participation, moderate in the responsibility dimension, sustainability and high in the dimension of rights and justice. The teachers' level of ecological citizenship, which is composed of components of all dimensions, is moderate. A teacher who is an intermediate ecological citizen cannot be expected to cultivate high levels of ecological citizens. This result is due to the low score of the teachers from the dimension of participation and the responsibility dimension of the ecological citizenship scale. However, participation plays a key role for ecological citizenship (Steenbergen, 1994). Participation means that individuals play a role in the environmental management process, influence them and direct this process that will affect and shape their own lives (Keleş, Metin & Sancak, 2005). Environmental actions may include actions that directly contribute to environmental improvement and actions that may motivate others to contribute to the solution of environmental problems (Jensen, 2002). In this study, participants directly address environmental issues (*I participate in legal demonstrations related to environmental issues*) and indirect (*I write to the local newspaper about environmental issues that I encountered*) as a part of the actions that require to contribute to the very small. When the literature is examined, it is seen that the environmental behaviors that require participation for the solution of environmental problems individuals displayed very little as in the results of this research (Kibert, 2000; Yavetz, Goldman & Pe'er, 2009; Mcbeth & Volk, 2010; Altınöz, 2010; Karatekin, 2011; Karatekin, Kuş and Merey, 2014; Karatekin, Salman, Uysal, 2017; Uysal, 2018). In the

study of Kanbak (2015), it was concluded that although the environmental attitudes of the participants were high, their participation in environmental activities was poor. In this study, the level of ecological citizenship of teachers was found to be high in terms of sustainability and rights and justice.

Explanations on Path Analysis Results

- The level of curiosity towards the environment positively predicted the sustainability, responsibility, rights and justice dimensions of the ecological citizenship scale. This finding shows that the level of curiosity towards the environment leads to the emergence of sustainability, responsibility, rights and justice behaviors. The frequency of participation in environmental activities positively predicted all dimensions of ecological citizenship. This finding shows that the frequency of participation in environmental activities is a significant predictor which should be taken into account in explaining the ecological citizenship behaviors of teachers. This situation shows that the level of curiosity towards the environment and the frequency of participation in environmental activities are the variables that should be taken into consideration in increasing the attitudes towards participation. Again, for the right and justice dimension, approximately 9% of the total variance of the environment is explained by the level of curiosity about the environment and the frequency of participation in environmental activities. Karatekin (2011) also found that the level of curiosity about the environment and the frequency of participation in environmental activities increased responsible environmental behaviors in his research with preservice teachers. These results show us that ecological citizenship education should be an education that will increase the level of curiosity of individuals towards the environment and enable them to participate more in environmental activities.

- When the causality relations between the dimensions of the ecological citizenship scale are examined, it is determined that the right and justice dimension positively predicts the sustainability and responsibility behaviors. It was determined that the sustainability dimension positively predicted the responsibility behaviors and the responsibility dimension positively predicted the participation behaviors.

- When standardized regression coefficients are examined, the order of importance for the variables affecting participation is in the form of responsibility, sustainability and frequency of participation in environmental activities. It was determined that the most important variable directly affecting the participation dimension behaviors was responsibility.

- It can be said that the most important variables that directly affect the teachers' responsibility behaviors are the sustainability and environment-related behaviors that are under the right and justice dimension. It can be said that the most important factor affecting the teachers' sustainability behaviors is the environmental behaviors that are under the right and justice dimension. This indicates that changing behavior towards the environment in the right and justice dimension of teachers will be effective in increasing responsibility and sustainability behaviours (Jagers, Matti & Martinsson; 2014). In ecological citizenship, this inner moral motivation is a sense of right and justice. Therefore, it can be said that the right and justice dimension for ecological citizenship serves as a catalyst.

- Approximately 56% of the variance in the participation dimension was explained by the incidence of participation in environmental activities, and the predictors of responsibility and sustainability. This finding indicates that the frequency of participation in environmental activities has a significant impact on the determination of the behaviors related to the participation dimension of responsibility and sustainability. In other words,

a significant portion of the variability in the participation behaviors is explained by the frequency of participation in responsibility, sustainability and environmental activities.

- Approximately 35% of the variance in responsibility dimension was explained by the level of curiosity about the environment, the frequency of participation in environmental activities, and the predictors of rights and justice and sustainability.
- Approximately 20% of the variance in sustainability dimension was explained by the level of curiosity about the environment, frequency of participation in environmental activities, and predictors of rights and justice. As a matter of fact, ecological citizenship has been associated with sustainability, by advocating a fair share between now and future generations (Dobson, 2006). This brings the responsibility of ecological citizens to work in activities such as recycling, reuse and conservation for a sustainable society (Dobson, 2007).

These results show us that all aspects of ecological citizenship should be taken into account in ecological citizenship education. In order to raise the level of ecological citizenship of teachers and students, variables that affect ecological citizenship need to be employed in environmental education, which is part of both formal education and lifelong learning. It should also be noted that ecological citizenship education is a synthesis of environmental education and citizenship education.

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Öğretmenlerin Ekolojik Vatandaşlık Düzeylerinde Etkili Olan Etmenlere İlişkin Model İncelemesi

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Özet

Bu araştırma iki amaç çerçevesinde ele alınmıştır: İlki, öğretmenlerin ekolojik vatandaşlık düzeylerinin belirlenmesi; ikincisi, çevreye karşı duyulan merak düzeyi, çevresel aktivitelere katılma sıklığı, Ekolojik Vatandaşlık Ölçeği (EVÖ) boyutları arasındaki ilişkilerin incelenmesidir. Bu amaç doğrultusunda, 2017-2018 eğitim-öğretim yılında Milli Eğitim Bakanlığına bağlı eğitim kurumlarında farklı branşlarda görev yapan toplam 296 öğretmene Karatekin ve Uysal (2018) tarafından geliştirilen Ekolojik Vatandaşlık Ölçeği (EVÖ) uygulanmıştır. Araştırmanın sonucunda öğretmenlerin ekolojik vatandaşlık düzeylerinin, katılım boyutunda düşük, sorumluluk boyutunda orta, sürdürülebilirlik ve hak ve adalet boyutunda ise yüksek olduğu tespit edilmiştir. Öğretmenlerin, tüm boyutların bileşeninden oluşan ekolojik vatandaşlık düzeylerinin ise orta seviyede olduğu görülmüştür.

Yapısal eşitlik modelinde dışsal değişkenler çevreye karşı duyulan merak düzeyi ve çevresel aktivitelere katılma sıklığı; içsel değişkenler ise EVÖ'nün boyutları olan katılım, sürdürülebilirlik, sorumluluk, hak ve adalet değişkenlerinden oluşturulmuştur. Modelin uyum iyiliği indeksleri ($\chi^2/sd= 2.03$, $p=.13$ RMSEA=.059, % 90 RMSEA CI= .000-.014, AGFI=0,95, NNFI=0,97 ve SRMR=.016) modelin kabul edilebilir düzeyde olduğunu göstermektedir. Yol analizi sonuçlarına göre çevreye karşı duyulan merak düzeyinin ekolojik vatandaşlık ölçeğinin sürdürülebilirlik, sorumluluk, hak ve adalet boyutlarını anlamlı düzeyde etkilediği; çevresel aktivitelere katılma sıklığının ise ekolojik vatandaşlık ölçeğinin tüm boyutlarını doğrudan etkilediği belirlenmiştir. Sonuçlar, hak ve adalet boyutunun sürdürülebilirlik ve sorumluluk boyutlarını, sürdürülebilirliğin sorumluluk boyutunu, sorumluluk boyutunun ise katılım boyutunu pozitif yönde yordadığını göstermiştir.

Anahtar Kelimeler: Ekolojik vatandaş, ekolojik vatandaşlık eğitimi, öğretmen, çevre eğitimi.