

Effect of Ecopedagogy-Based Environmental Education on In-Service Teachers' Consumer Behaviour in Turkey: A Follow-Up Study After Seven Years

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Abstract: Ecoliteracy can be defined as an understanding of natural systems and connections between biotic and abiotic factors within sustainable future. Green consumerism is an observable side of ecoliteracy. The aim of this study is, therefore, to examine the long-term effect of environmental education programmes intended for in-service teachers in terms of behavioural change. The teachers were joined ecopedagogy-based education programmes funded by TUBITAK (The Scientific and Technological Research Council of Turkey) in Turkey and were followed up after seven years. The methodology of the study was mixed method within a case study. Quantitative data were collected by a survey and analysed by R statistics. Qualitative data were analysed by content analysis. It was found that the green consumer behaviours of in-service teachers have improved in the long term. However, it is needed more follow up studies within different time frames and country comparison studies in the future.

Keywords: Ecoliteracy, green consumer behaviour, ecopedagogy, in-service teachers, TUBITAK, R statistics

Introduction

Ecoliteracy is not an easy concept to define. However, one of the definitions is an understanding of natural systems and connections between biotic and abiotic factors within sustainable future (Disinger & Roth, 1992; Tursi, 2015). Capra (1996) emphasizes that sustainable future and sustainable community depend on how people understand the natural environment and its connections. According to Moseley (2000), there are three stages for ecoliteracy and the final stage refers to ecological behavioural change. In terms of ecological behavioural change, green consumer behaviour has been defined at the end of the research, therefore this paper focuses on 'green consumer behaviour (GCB)'. There are different models in order to explain green consumer behaviour (Chen, Chen&Tung, 2018; doPaço, Shiel&Alves, 2019; Jaiswal&Kant, 2018; Okur-Berberoglu, 2018; Tamulienė, Kazlauskienė,& Pilelienė, 2016; Ting, Hsieh, Chang,& Chen, 2019). However, most of these studies have marketing perspective despite the fact that Okur-Berberoglu (2018) has ecopedagogical perspective.

Green Consumer Behaviour

Due to increasing consumerism, people tend to spend and consume more regardless of thinking what they really need (Aracioglu & Tatlıdil, 2009; Esposito, 2009; Horkheimer& Adorno, 2002). However, they barely think over which raw materials have been used during the production of commodities and how the nature has been affected by this production process (Goleman, 2009). Goleman (2009) recalls that what needs to be done in order to minimize the damage is to purchase ecological products. This kind of behaviour will lead us to have harmonization with the nature. As a result, industrial production will not do any harm to the nature. What needs to be stressed here is collective action; in other words, public awareness on use of ecological products will be of great help. The collective action of green consumers is an observable side of ecoliteracy (Kapogianni, 2015; McBride et al., 2013).

Okur-Berberoglu (2018) has developed an ecoliteracy scale with five subsets: ecological intelligence, social intelligence, emotional intelligence, economy and GCB (App 1). Social intelligence, emotional intelligence and economy has connection with ecological intelligence while ecological intelligence has relationship with GCB. If social intelligence, emotional intelligence or economy subjects are improved, they might be effective on the development of ecological intelligence and thereby they might also be effective on GCB according to the alternative ecoliteracy model.(Okur-Berberoglu,2018) Chen et al (2018)'s research very interesting within this study because environmental awareness, that is evaluated under ecoliteracy, affects environmental attitude and environmental attitude has direct relationship on purchase intention according to their marketing research (Choice Behaviour) model. (Table 1)

Table 1. General Explanations of the GCB Models

Jaiswal&Kant,2018	Environmental concern	Green purchasing intention	GCB
Chen et al, 2018	Environmental awareness	Environmental attitude	Purchase intention
DoPaco et al,2018	Prosocial behaviour	Green value	GCB
Tamulienė et al, 2016	Ecological conscious	GCB	
Ting et al,2019	Environmental attitude	Green service attitude	Purchase intention

Green consumer behaviour is a very popular subject in marketing or business, as well. Marketing/Business studies are mostly based on quantitative approach. They mostly focus on prosocial behaviour, green value, product attitude, prosocial attitude, green consumption value, social influence, purchase intention, environmental concern, consciousness, attitude or awareness (Biner, 2014; Chen et al, 2018; doPaço et al, 2019; Groening, Sarkis, & Zhu, 2018; Jaiswal&Kant, 2018; Tamulienė et al, 2016;Ting et al,2019) (App 2).

‘Environmental concern, consciousness, attitude, awareness or behavioural change’ concepts are common and popular in environmental education research, too (Hanna, 1995; Okur-Berberoglu, 2014, 2015a; 2015b; Yalcin& Okur, 2014). Follow-up process is also very important in terms of environmental education research (Piller, 2002). Some researchers may prefer to follow up the participants after 2, 3 or 4 months (Csobod, 2002; Pande, 2002) while the others may prefer after 6 months (Hanna, 1995; Okur-Berberoglu, 2014, 2015b; Yalcin& Okur, 2014). This depends on the scope and the fund of the research (Okur, 2012) because environmental education projects can be expensive because of outdoor activities (Okur-Berberoglu&Uygun, 2013). TUBITAK (The Scientific and Technological Research Council of Turkey) is one of the institutions which finances environmental education projects in Turkey.

Literature Review

TUBITAK has been financing professional development of in-service teachers in terms of environmental education since 1999 (Erentay&Erdogan, 2009). Misiaszek (2011), Morrow and Torres (2002) suggest that ecopedagogy can be used for environmental education programmes intended for in-service teachers. There are theoretical studies related to ecopedagogy (Hung, 2014; Lucksinger, 2014; Monani, 2009) even though there are a couple of application studies (Guler, 2009; Okur-Berberoglu, 2017) in ecopedagogy. The researcher only limited the literature review in terms of ecopedagogy- based TUBITAK projects in Turkey within this study and considered if they had follow-up process.

Eryaman, Yalçın- Özdilek, Okur, Çetinkaya ve Uygun (2010) examined the effect of ecopedagogy-based education programme on in-service teachers via participatory action

research. They found that the teachers could understand the relationship between economy-ecology-society for sustainable future and were intended to share their acquisitions with their families and students. There was no follow up process of this study.

Okur-Berberoglu (2014) studied the effect of an ecopedagogy-based education programme on behaviour change, direct and indirect actions of in-service teachers by qualitative approach. The data were collected before and after the programme and the participants were followed up after six months. She found that ecopedagogy-based education programme was successful in order to achieve ecological behaviour change, direct and indirect actions.

Yalcin and Okur (2014) aimed to determine the electromagnetic field awareness development of in-service teachers. Electromagnetism was mentioned within an ecopedagogy-based environmental education and the data were collected by mixed methodology. The participants were followed up after six months. It was found that the participants' awareness developed throughout the education and they tended to be careful about using of electrical devices in their daily lives.

Okur-Berberoglu (2015a) examined the impact of ecopedagogy-based education program intended for in-service teachers on holistic perspective by qualitative approach. The data were collected before and after the programme and the participants were followed up after six months. It was found that the ecopedagogy-based environmental education program was effective in order to develop holistic perspective of in-service teachers. The participants had ecopedagogic perspective rather than anthropocentric perspective.

Okur-Berberoglu (2015b) evaluated the short- and long-term effects of an ecopedagogy-based education programme on environmental knowledge gaining of the in-service teachers by quantitative approach. A knowledge test was carried out as pretest, posttest, and after 6 months as postpost test. It was found that the programme was effective on gaining knowledge in the short term as high level while it was effective on gaining population ecology knowledge in the long term.

As seen above, there are not many experiential studies related to ecopedagogy-based education programmes intended for in-service teachers. Okur-Berberoglu and Uygun (2013) point out that there are not enough publications related to TUBITAK projects despite the fact that the projects' costs are quite expensive. The aim of the study is to examine the long-term effects of ecopedagogy-based environmental education programmes on GCB development of in-service teachers. However, this research is different within two perspectives from the other studies:

- a. GCB is especially evaluated in terms of ecopedagogy.
- b. The research is a follow-up study. The main group of the study joined TUBITAK 4004 coded ecopedagogy-based environmental education programmes in Turkey and the participants were followed up after seven years. There is not any follow-up study yet after seven years for environmental education studies. It is known that there might be change in environmental knowledge, attitude or awareness in the short term however behavioural change might happen in the long term (Piller, 2002; Okur, 2012). It is also quite difficult to

define and observe environmental behavioural changes at the end of educational programmes in a short term (Bolstad, 2003; Lucas, 1972; Tilbury, 1995).

Methodology

The methodology of the study was mixed method within a case study. At the first stage of the study, the quantitative data were collected and at the second stage, the qualitative data were collected. After getting quantitative analysis, the researcher had contact with the participants once more via e-mail and asked them how their GCBs improved by the time. An ecoliteracy scale was used in order to collect the quantitative data. Participants' essays were used in order to collect the qualitative data. The data collection was completed between January 2017 and June 2018.

Quantitative Data Collection Stage

The scale which was developed by Okur-Berberoglu (2018) was used (App. 1) Explanatory and confirmatory factor analysis were carried out while developing the scale via SPSS and LISREL. The explanatory factor analysis gave entry factor loads as 0.30 and above, the KMO value as 0.830 and the Bartlett dimensionality test as less than 0.000, the Cronbach Alpha coefficient as 0.78. The adaptation figures were obtained as X^2 /sd : 4.09, RMSEA: 0.087, SRMR: 0.0783, CFI:0.828, IFI:0.830, GFI:0.854, AGFI:0.807 in the confirmatory factor analysis. It was concluded that the scale was consistent for the measurement of the ecoliteracy level of individuals (Büyüköztürk, 2007; Şencan, 2005) and that its theoretical foundation was strong and solid (Şimşek, 2007).

Quantitative Data Analysis

R statistics package programme was used in order to analyse the data. Whether the data retrieved out of the participants feature a normal distribution was tested by boxplot graphs. (Wickham&, Grolemund, 2016) The boxplot graphs showed normal distribution therefore it was concluded that parametric tests were suitable for the analysis. The analysis of the tests was evaluated by the independent sample t-test and ANOVA. These tests are suitable for comparisons of mean values if there are two (independent sample t-test) or more than two independent groups (ANOVA) (Büyüköztürk, 2007; Peers, 1996).

Qualitative Data Collection Stage

Case study was used in this study as a qualitative approach. After quantitative data analysis, the participants were asked to share their experiences in the GCSs and how their behaviour have changed over the last seven years. The researcher especially focused on GCB because if the ecoliteracy model is right, GCBs might explain something about the other themes. This particularly seeks to ensure that the participants make an independent and impartial comment on their experiences (Morgan, Hamilton, Bentley, & Myrie, 2009). Morgan et al., (2009) note that individuals may express themselves more accurately when they do this independently and freely, suggesting that this is allowing researcher to gather proper collection of data and

information. The participants were asked via e-mail. The e-mails have been analysed by reliance on content analysis.

It is noted that case study is a useful method to collect data about events and individuals (Yıldırım & Şimşek, 2006) and to draw definitive and explanatory conclusions (Morgan et al., 2009). Likewise, it is also underlined that case study is a reliable method in the literature to have deeper understanding of events (Mitchell, 2008; Robinson, 2008; Schmitt, 2005; Yıldırım & Şimşek, 2006). Yıldırım and Şimşek (2006) emphasize that qualitative research is an effective tool in order to understand better human behaviour.

Participants

There were two groups within this study. The first group comprised of TUBITAK participants who were in-service teachers. TUBITAK wanted to have common effect of environmental education programmes by in-service teachers because teachers might share their environmental knowledge and experience with students and own families. Students might also share their acquisitions with their families. By this way successive common effect might happen. (TUBITAK Call for Paper, 2018) The in-service teachers joined ecopedagogy-based education programmes between 2008 and 2011.

Table 2. The Number and Percentage of TUBITAK Teachers According to Years

Project years	All participants within projects (N)	Followed-up participants(N)	%
2008	27	7	25
2009	40	9	22
2010	24	12	50
2011	24	18	75
Total	115	46	40

As seen in the Table 2, there were respectively 27, 40, 24, and 24 in-service teachers within education projects. The researcher could only reach 40% of the participants after seven years. Of the participants, 50 % (23) were female and 50% (23) of the participants were male. (Table 3)

The second group was the control group and comprised of in-service teachers who had not had any environmental education before. The researcher could reach 62 in-service teachers. Of the in-service teachers, 53 were females and 9 of the in-service teachers were males. All in-service teachers were classified according to the age groups. Most of the teachers were in 'Under 30' age group while the lowest numbers were in 'Over 41' age group. (Table 3)

Table 3. The Comparison Between TUBITAK Teachers and the Control Group

	TUBITAK teachers	The control group	Total
N	46	62	108
Gender			
Male	23	9	32
Female	23	53	76
Age groups			
Under 30	23	34	57
31 to 40	16	18	34
Over 41	7	10	17

Ecopedagogy-based Environmental Education Programme

The TUBITAK education programs was designed as an academic programme for 10 days in line with the ecopedagogic approach. The goals of the academic programme are to ensure that the participant becomes part of the knowledge, perceives the nature as a whole and thinks like a scientist (McNeil, 1996). Within the academic program, knowledge and information are disseminated from simple to complicated version and connection with the other disciplines (McNeil, 1996). Bruner (1966) also expresses support for an academic perspective for the programs. The biggest criticism to the academic program is that every teacher cannot be as knowledgeable as a scientist in any given subject (McNeil 1996). However, the educators were chosen in terms of community of practice. Different scholars from 21 different disciplines were brought together to create a learning environment of social and cognitive perspectives within the same goal. The main idea of the ecopedagogy was to evaluate environmental subjects with a critical perspective (Kahn, 2010). These 21 different subjects, therefore, were discussed within social, economy, cultural and political aspects. The detailed ecopedagogy-based education programme might be seen in the article of Okur-Berberoglu (2015c).

Results

At the first stage of the analysis, the data of TUBITAK participants were analysed in terms of gender and age group. The researcher compared gender and total scores of each theme and whole scale by independent sample t-test. It was found that there was a meaningful difference between genders and total score of green consumer theme. ($p < 0.05$) The mean level of female participants was higher than the mean level of male participants. It was evaluated that female participants developed more GCB than male participants. (Table 4)

Table 4. The comparison Result of Gender and Total Score of the GCB

Gender	N	Mean	sd	df	t	p
Male	23	12.43	0.5	38.831	-2.5839	0.01365
Female	23	14.91	0.5			

According to qualitative data, female participants also mentioned more GCB than males. One of them was 42 years-old female teacher from 2010 project:

“I do not use chemical products. I buy ecologic soaps, detergents and herbal cosmetic products. I cannot afford to buy organic fruit, vegetables or legumes, they are so expensive. I only buy fruits and vegetables in their seasons and do not buy imported products. I do not use any canned food and buy anything if I do not need it.

I try to be careful while consuming water and power. I try to use words, sentences or text which include ecologic themes while lecturing. I warn students to turn off all devices (lights, computer or projector) before leaving the classroom. I try to educate my daughter in terms of environmental awareness. Her teacher also mentions environmental subjects at school. We try to do some ecologic activities at home. I can do all these things but there is also something I am not able to do:

I cannot find nice and quality texts which have environmental themes. Sometimes I think the world will be destroyed whatever we do. I have no idea and do not know how to live if technology disappears just for one day. I do not know how to plant a vegetable, fruit or even a flower. I think I am not able to live in a house built in a rural environment.”

Another female teacher, who was 35 years-old from 2009 project, mentioned similar behaviours:

“I prefer not to buy chemical cleaning products and also ecological friendly products. I could not get good results from ecological friendly cleaning products and they are also quite expensive. I use the mixture of yellow soap, vinegar and sodium bicarbonate for cleaning. I also buy herbal cosmetic products.” However, one another female teacher, who was 30 years-old from 2011 project, said she bought organic products even they were expensive.

Table 5. The Comparison Result of Age Group and Total Score of the GCB Theme

	df	Sum suq	Mean sq	F value	p
Age-group	2	91.4	45.71	4.42	0.018
Residuals	43	444.7	10.34		

It was also compared age groups and total scores of each theme and whole scale by ANOVA. It was found that there was a meaningful difference between age groups and total score of GCB theme ($p < 0.05$, Table 5). According to the post-hoc Tukey test, the difference was

between 'Over 41' and '31 to 40' groups. The teachers of 'Over 41' had the highest mean level (X:16.14) while the other group had the lowest mean level (X: 12). (Table 6&7)

Table 6. Post-hoc= Turkey Result According to Age-Groups

	Under 30	31-40	Over 41
Mean	14.09	12	16.14
N	23	16	7

Table 7. P Values of Age Groups

Age-group	diff	lower	upper	p
31 to 40-Under 30	-2.086	-4.625	0.454	0.12
Over 41-Under 30	2.055	-1.313	5.425	0.30
Over 41-31 to 40	4.14	0.608	7.682	0.018

As seen above and below, the qualitative data came from under 30 and over 41 years old. A male participant, who was 46 years-old from 2011 project, expressed his GCB as:

“The project education I had affects my consumer choices. I take into consideration while buying something its packaging condition and whether it is organic, locally produced or not. I also consider the price, but the price is the last point I thought while planning to buy something.

I am also interested in sustainable agriculture and producing natural seeds. I have a project to produce natural seeds and am still discussing this project with my family and colleagues. I also follow some NGOs on social media.”

Another male in-teacher, who was 42 years-old, indicated his behaviours in a similar way:

“I am working as a volunteer for an NGO (TEMA) and share my acquisitions from the project and TEMA with my students. I have also been doing bee-keeping last eight years. It is 100% organic and pure honey. I consume my own honey. I plant my own vegetables and fruits in my garden just for my kitchen. I have a foldable bicycle and it is always in the back of my car. If there is no rush, I prefer to go everywhere by my bicycle.” It was understood that this teacher has been selling the honey as individual production.

One another female participant, who was 29 years-old from 2009 project and a daughter of a farmer, also mentioned the same subject, sustainable agriculture:

“I talked to my dad when I went back home. He said he could see how agricultural chemicals damaged to soil and bugs, but he did not know how to use the soil without chemicals. I think you should organise an environmental education project for farmers. I think this is important to develop environmental awareness.”

At the second stage of the analysis, it was compared TUBITAK participants with the control group by independent sample t-test. There were meaningful differences between teacher groups and the total scores of economies, emotional intelligence, GCB themes. ($p < 0.05$) TUBITAK participants' mean levels were higher in emotional intelligence and GCB themes while the control group's mean value was higher in economy theme. (Table 8)

Table 8. The Comparison Results Between the Total Scores of Sub-Themes (Economy, Emotional Intelligence, GCB) and Teacher Groups

	Groups	N	Mean	sd	df	t	p
Economy	TUBITAK	46	15.86	2.23	92.52	-2.3784	0.019
	Control	62	16.87	2.18			
Emotional	TUBITAK	46	14.73	1.6	105.93	3.1826	0.0019
	Control	62	13.67	1.8			
Green	TUBITAK	46	13.67	3.2	95.135	2.2119	0.029
	Control	62	12.20	3.4			

A female participant, who was 29 years-old from 2011 project, expressed her GCB and feeling as:

“Me and my students have started to bring our lunch from home and used same water bottle, we do not throw them away. We prefer to buy locally produced products. Me and my husband prefer to live in a rural area for two months every summer. We are away from technology and urban lifestyle. It is so nice to see many wild plants and animals and to live without technology. I understand how enjoyable rural life is. Unfortunately, there is a dam construction on the river in the village. Nobody likes it but we do not know what we should do. The dam is destroying the river.”

As seen above, three female participants from 2009, 2010 and 2011 projects expressed that they have been doing something as green consumers. However, they have been also feeling despair about some ecologic problems, what they should do or how they should think.

Discussion

It has been found three important results at the end of the research:

- a. Female TUBITAK participants develop more GCB than male participants.

- b. 'Over 41' age group in TUBITAK group has more GCB than the other groups.
- c. The mean level of economy theme in the control group is higher than the TUBITAK group while the mean levels of emotional intelligence and GCB themes are higher in the TUBITAK groups.

The results of female participants make sense for the researcher. The domestic roles of women have not changed very much after joining working life. They are still responsible for cleaning, cooking, looking after children (Horkheimer & Adorno, 2002). Female participants emphasize the same domestic responsibilities while buying something therefore they might reflect their GCBs by their domestic responsibilities (eg. buying organic foods, cleaning or cosmetic products).

Life responsibilities may also change over the years, especially after getting married and having child/ren. The other interesting result is related to age groups. 'Over 41' age group has the highest mean level for GCB even though the participant number of the group is the lowest. In-service teachers' life experiences might be effective on GCBs. The female participant, who is 42 years-old, seems anxious according to her expressions. She explains very well what she is/is not able to do and tries to educate her daughter. She might be anxious about her daughter's future. The male participant, who is 46 years-old, does not seem anxious however he has a project in order to produce seeds. He discusses his idea with his family members and colleagues. The other 42 years-old male teacher has started to produce and sell own honey and plant own vegetables/fruits. Teachers over-40 might think more about future generations because of their lifestyles and family experiences. Especially, two female participants (42 and 29 years-old) reflect their anxieties in their expressions. There is no age-group comparison according to ecopedagogy-based education research but there is a research related to being anxious.

Okur-Berberoglu (2017)'s finds that in-service teachers show anxiety about their future after having ecopedagogy-based education. According to her research model, first in-service teachers will have anxiety and interest, second, they will be curious about ecological subjects and change their behaviour at the end of the model. There is no follow-up process for this study so there is no result related to behavioural change. One another results is related to emotional intelligence, too. The TUBITAK teacher's emotional intelligence level is higher than the control group. When we combine these two studies, Okur-Berberoglu's (2017) model might be right in order to reach behavioural change especially for GCB. However, this model should be tested by different studies.

The other interesting result is related to the economy theme. The meaningful result is in favour of the control group. This result makes sense in terms of Turkey's economic and political situations. There has been a war in Syria since 2011. There are over three million refugees in Turkey now and some of the refugees are registered employee while some refugees, especially children, work as unregistered. (UNHCR Report, 2017) Kaygisiz (2017) emphasizes that Syrian employees have positive effect on Turkish local businesses because they, especially children, are cheap labour. However Syrian refugees complain about discrimination they see from Turkish employees. The items of economy theme are related to global companies, immigration, cheap labour. The control group might be evaluated economy

within one aspect. They might think it is very good to have cheap labour. However, the TUBITAK group might be evaluated economy within different aspects such as Turkish economy as well as Syrian refugees' life struggle.

This study is based on Okur-Berberoglu's (2018) ecoliteracy and green consumer behaviour evaluation. As seen in introduction, there might different subsets of ecoliteracy or GCB. Researchers might evaluate ecoliteracy and GCB from different perspectives. This study might be repeated for different age and school groups.

According to literature, behavioural change might happen in long term therefore researchers suggest following up learners (Piller, 2002; Okur, 2012). This study is very important in terms of follow-up process because it could not be seen yet a follow-up study after seven years for ecopedagogy-based education programmes. Researchers should try to follow-up their learners/participants in long terms. It is hard to give a proper follow-up time because this might depend on researcher's workload or project funds.

This research is very important for me in terms of two aspects. Firstly, there is not enough experimental study related to ecopedagogy. Yalcin and Okur's (2014) and Okur-Berberoglu's (2014) studies especially focus on direct and indirect actions and they find positive outputs after six months. Ecopedagogy-based education programmes might be effective in order to have behavioural changes (Okur, 2012; Okur-Berberoglu, 2014; Yalcin&Okur, 2014). Behavioural change might happen in long term (Bolstad, 2003; Lucas, 1972; Tilbury, 1995) and the researcher could get positive results from in-service teachers after seven years. However, these studies, as seen in literature review, are conducted in Turkey. Placed-based learning is very important for ecopedagogy (Bolstad, 2003; Okur-Berberoglu, 2015a,2015b) therefore researchers, from different regions of Turkey and different countries, might test our education programmes and share their results by academic papers. TUBITAK funded ecopedagogy-based educations mostly happen in outdoors and are quite expensive projects (Okur-Berberoglu&Uygun, 2013). TUBITAK should set up a rule in order to publish programme outputs. We may reach more reliable results if we are able to compare our education outputs.

Secondly, affective impact of ecopedagogy is very remarkable. Ecopedagogy is a critical philosophy. Researcher might expect learners to change something in their lives however researchers should be open to change themselves, too (Hung, 2014; Kahn, 2010; Lucksinger, 2014; Misiaszek, 2011; Monani, 2009). As a researcher, I feel the same way of TUBITAK participants. I am more anxious and more unhappy for my future after starting to read publications related to ecopedagogy and philosophy. As seen in introduction, GCB is very popular subject in marketing however they do not mention philosophical or affective perspectives (Biner, 2014; Chen et al, 2018; doPaço et al, 2019; Groening et al, 2018; Jaiswal&Kant, 2018; Tamulienė et al, 2016; Ting et al, 2019). I think, ecopedagogy and philosophy can guide people to think much more about everything and thinking can make people unhappy. Technology improve over the centuries however the thinking capacity of people has been declining (Horkheimer & Adorno, 2002; McCulloch, 2009). There is much more media effect, and everything is based on consuming (Horkheimer & Adorno, 2002). If we are happy, unhappy or anxious, we must consume. Opposite of this situation,

ecopedagogy wants us to think whether we need to consume or not. I think, that is why ecopedagogy makes me unhappy. This is one life option. There are more options in our lives, and we should choose humble life options. I do not want to give up because thinking rather than consuming makes me more human.

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Appendix 1. The Ecoliteracy Scale

		Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Themes	Items					
Economy	1. I cannot afford sustainably produced goods.					
	6. Global companies flourish at the expense of local businesses.					
	7. Local businesses lay off workers when trying to compete with global companies, which is one of the reasons for migration to urban centres.					
	8. Immigration serves as a source of cheap labour for global companies.					
Social intelligence	2. I avoid cheap goods from overseas if I am aware that their production involves unjust labour conditions.					
	3. I avoid cheap goods from overseas if I am aware that their production involves the use of child labour.					

	14. I prefer to buy local produced vegetables and fruits.					
	17. I don't feel good when I learn that the production of a good I bought involved unjust labour conditions.					
Emotional intelligence	4. I try to emulate individuals who live sustainably.					
	5. I believe that environmental education is one of the ways to combat obesity.					
	18. I feel bad when I notice that nature has the power to defeat human progress.					
	23. I would be a much more laid-back person if I knew nothing about environmental issues.					
Green consumer behaviour	9. I try to reuse plastic bags.					
	10. I try to avoid using plastic bags when I go shopping.					
	11. I always have my own water bottle with me.					
	15. I try to extend the life of my clothes by sewing and patching them.					

Ecological intelligence	12. Environmental disasters can unfold in several parts of the world simultaneously.					
	13. The effects of an environmental disaster are not limited to the area where it took place.					
	16. I worry when I learn about increase in incidents of cancer among people living in industrial areas					
	28. It is obvious that economic development cannot happen without natural resources.					

Appendix 2. Some Subsets of Different Models in order to Explain Green Consumer Behaviour.

	Jaiswal&Kant , 2018	Chen et al, 2018	doPaço et al, 2019	Tamulienė et al, 2016	Ting et al,2019
Research country	India	Vietnam, Philippines, China, Pakistan	Portugal	Lithuania	Taiwan
Prosocial behaviour			X		
Green value			X		
Ecological conscious				X	
Environmental concern	X				
Environmental attitude		X			X
Environmental awareness		X			
Perceived consumer effectiveness	X				
Attitude towards green products/ services	X				X
Perceived environmental knowledge	X				
Purchase intention	X	X			X
Purchasing behaviour	X		X	X	

