



## Environmental education and behavior of elementary school students in green schools; Applying TPB theory

Hadis Esmaili<sup>1\*</sup>, Samaneh Sanjabi<sup>2</sup>, Shahpar Geravandi<sup>3</sup>

<sup>1</sup>M.Sc. student of sustainable Agriculture and Natural Resources Extension, Faculty of Agriculture, Department of Agricultural Extension & Education, Razi University, Kermanshah, Iran, Email:hadisesmaeilil368@gmail.com

<sup>2</sup>Ph.D. student of Agriculture Development, Faculty of Agriculture, Department of Agricultural Extension & Education, Razi University, Kermanshah, Iran, Email:samane.110.san@gmail.com

<sup>3</sup>Assistant Professor, Faculty of Agriculture, Department of Agricultural Extension & Education, Razi University, Kermanshah, Iran. Email:sh.geravandi1@gmail.com

### Article Info

#### Article type:

Research Article

#### Article history:

Received: May 2021

Accepted: May 2022

#### Corresponding author:

hadisesmaeilil368@gmail.com

#### Keywords:

Environmental behavior

Environmental education

Attitude

Subjective norms

Perceived behavioral control

### Abstract

The goal of this study was to analyze the environmental behavior of elementary school students in green schools using Ajzen theory of planned behavior (TPB). This quantitative study was conducted through a cross-sectional descriptive survey using a questionnaire developed by the researcher. The study had a statistical population of 229 elementary students. One hundred students were selected as the sample based on the table by Krejcie and Morgan. The collected data were analyzed using SPSS and AMOS software through Path Diagram Analysis. The findings indicated that attitude, subjective norms, and perceived behavioral control (self-efficacy) had positive and significant association with intention. However, there was no significant relationship between intention and frequency of environmental behavior. The findings in this model suggest that other undiscovered factors may be involved in environmental behavior. Modifying the three components of attitude, subjective norms, and perceived behavioral control will therefore lead to the development and enhancement of intention for environmental behaviors. Other effective factors on environmental behavior, however, should be explored in further studies to minimize environmental damage and modify the course of environmental damage.

**Cite this article:** Hadis Esmaili, Samaneh Sanjabi, Shahpar Geravandi. 2022. Environmental education and elementary school student's behavior in green schools; Applying TPB Theory. *Environmental Resources Research*, 10 (1), 1-8. DOI: 10.22069/IJERR.2022.6005



© The Author(s).

DOI: 10.22069/IJERR.2022.6005

Publisher: Gorgan University of Agricultural Sciences and Natural Resources

### Introduction

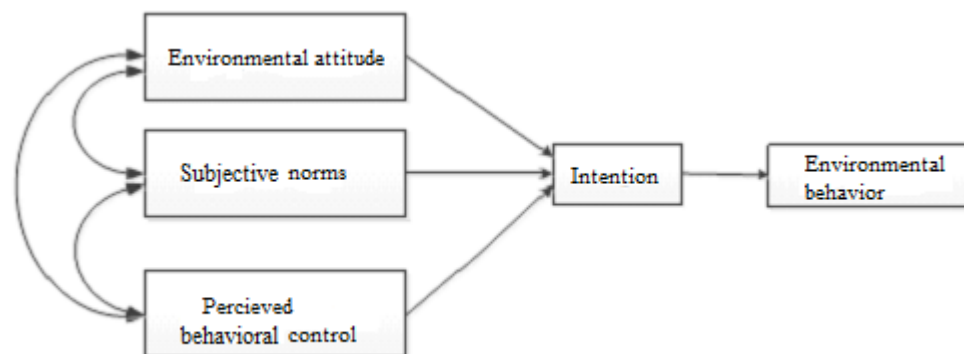
Environmental behavior refers to the interaction of a person with the environment. Each person's behavior toward the world is different, depending on their particular social, cultural, and personality. Such behaviors may either be environmentally friendly or not (Foroutankia et al., 2011). Many environmental problems and risks are

caused by human activity (Ahmadian and Haghghian, 2016). The modification of environmental behavior and attitudes can therefore help resolve multiple environmental problems at various levels of society (Naddafi et al., 2017). Most environmental scholars believe in a transition from physical and ecological sciences to the teaching of behavioral sciences in this area. They believe that

people should be encouraged to follow environmentally responsible behaviors (Safa et al., 2017). Several studies have highlighted the importance of training and its effects on environmental behavior (Ertepinar et al., 2017; Erdogan, 2015; Salehi et al., 2012; Shirvani Bidabadi et al., 2013; Zsoka et al., 2013). Indeed, documents also show that behavior change will influence peoples' attitudes and knowledge (Azadkhani et al., 2016; Jafarnia and Afrooz, 2018 and Rajaeianet al., 2014). In other words, disposition during such a process leads to an increase in the compatibility of the intentions or actions of the participants towards the environment. This training also promotes environmental awareness among individuals and develops environmentally friendly behaviors (Levine & Strube, 2012). Now the question is which classes to start training with? Elementary schools definitely have a special role in environmental education, because of their ability and flexibility (Ertepinar, 2013).

A review of literature suggests that, in addition to attitude, intention can also be effective in environmental behaviors of people. The results of Hejazi and Eshaghi

(2014), Hejazi et al. (2017), and Ajan & Fishbeing (1980) indicated a positive and significant relationship between the intention of individuals and environmental behaviors; modification of intention develops and strengthens environmental behaviors, thereby minimizing environmental damages and altering their pattern. The values have also a considerable role in the formation of environmental behavior at the societal level (Salehi and Karimzadeh, 2014). Given the importance of the subject, this study aims to analyze the environmental behavior of elementary school students using Ajzen's theory of planned behavior model (TPB). This theory addresses the aspects of attitude, subjective norms, self-efficiency, environmental intention and behavior (Figure 1). The aim of this study is to answer four hypotheses:  
 H1: There is a connection between environmental attitude and intention.  
 H2: There is an association between subjective norms and intention.  
 H3: There is a correlation between perceived behavioral control and intention.  
 H4: There is a relationship between intention and environmental behavior.



**Figure 1.** Research model  
 Adopted from the research of Ajzen (1991)

## Materials and Methods

### Study area

There are 180 state elementary schools in Kermanshah, of which four (Shahed, Nazparvarian, Basij, and Shahid Bakhtiari) began to educate their students on various environmental aspects. There are 229 girl students in these schools, studying in grades four and five. Other environmental

programs had already been conducted in the fields of waste separation, paper, water, electricity, and gas.

### Methodology

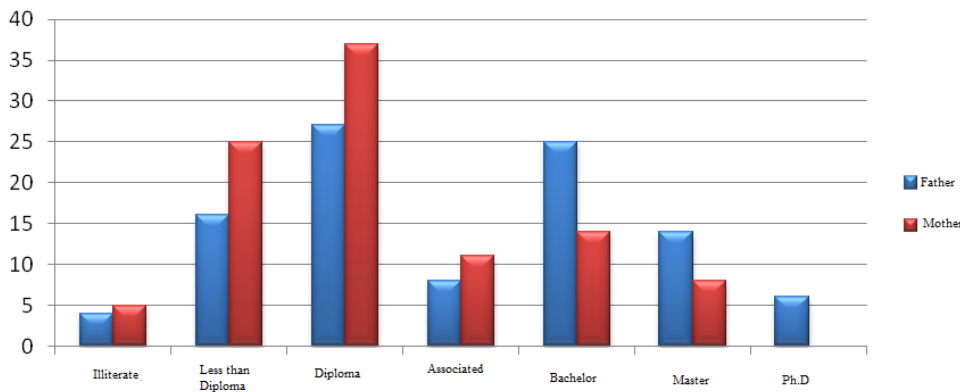
A cross-sectional descriptive survey was conducted to assess the environmental behavior of elementary school students in Kermanshah green schools, located in the

west of Iran. The overall statistical population consisted of 229 students from 4 green schools, of whom 100 were studied using Krejcie and Morgan table and stratified random sampling (63 from 4th grade, and 37 from 5th grade). For the research a self-designed questionnaire was developed using the Ajzen's theory of planned behavior (1991). The questionnaire contained 34 questions and was split into five sections: attitude (5 items), subjective norms (7 items), perceived behavioral control (5 items), intention (8 items), and student's environmental behavior (8 items). The questionnaire showed acceptable reliability ( $\alpha > 0.7$ ) and validity. The data

gathered through the questionnaire was analyzed using SPSS and AMOS software.

**Results**

The average age of the participants was 11.5 years. Specifically, 58% of students lived with the families of two or fewer, and 42% lived in families of three or more. Also, 52% of participants were the first-born and 44% - third- born, fourth-born, or fifth-born. Further, 80% of the participants enjoyed good and very good economic status, while an average 13% showed a weak and 7% very weak status. The level of education of the parents is shown in Figure 2.



**Figure 2.** Educational status of the parent of the students in the study

The values for goodness fit are listed in Table 1. The chi-square ratio was 0.702, indicating fitness of the model. The normal fit index (NFI) was 0.973, suggesting appropriate model fitness. The comparative

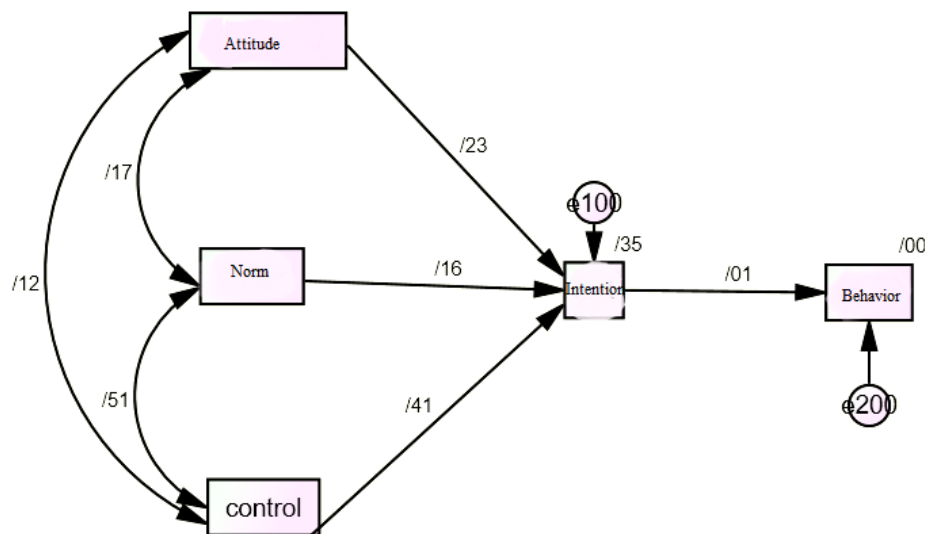
fit index (CFI) was also 1, confirming the model properness. Finally, given the RMSEA index 0.000, the model is evaluated as fit.

**Table 1.** The values of goodness of fit

Model fit summary								
Absolute			Comparative		Parsimony			
CMIN	Df	P	NFI	CFI	CMIN/df	PNFI	PCFI	RMSEA

The model fit obtained is shown in Figure 3. In this figure, the digits on the paths are coefficients of path or beta coefficients, while the digits on the rectangles indicate the rate of explained variance. In the following model, the variables of environmental attitude, mental norms, and perceived behavior control regulation only explain 35% of intention, meaning 65% of intention in the population

will be explained by other variables not included in the current study. Environmental behavior was not explained by intention as shown in Figure 3. Table 2 shows that the research hypothesis focused on the intention-behavior relationship has been rejected as well. It can therefore be concluded that the factors in the model have not led to the occurrence of environmental behavior in the students.



**Figure 3.** Research model retrieved from AMOS

After model confirmation, two partial indices of critical ratio (CR) and P were used to check the significance of the hypothesis. The values smaller than 0.05 for P indicate a significant difference in the calculated value at 95% for zero regression weights. If the value of the critical ratio of each variable is at 5% level within the range -1.96 to 1.96, it indicates that its effect on the dependent variables is not significant (Momeni et al., 2013). Accordingly, the results indicate that the critical ratio of the relationship between subjective norms and intention as well as environmental intention is less than 1.96,

and the rest of relationships are significant. In addition, the results of research hypotheses are summarized in Table 2. As seen, there is a positive and significant relationship between environmental attitude and perceived behavior control with the intention of 95% environmental behavior. The study's first and second hypotheses are thus verified but the third and fourth hypotheses are dismissed based on the positive and significant relationship between subjective norms and intention, as well as between environmental intention and environmental behavior.

**Table 2.** The values of model significance

Index		variables	Estimation	CR	P	Explanation
Intention	<---	Attitude				Accepted
Intention	<---	Norm				Rejected
Intention	<---	Control				Accepted
Behavior	<---	Intention				Rejected

### Discussion

The results generally showed that the model is fit based on indices such as CMIN, NFI, CFI, and RMSEA. Based on the results obtained from two partial indices of CR and P, the study's first hypothesis has been confirmed, so that has a positive effect on the intention of environmental behavior. That is with higher optimism in the attitude of the individual towards the environment,

the intention to perform environmental behavior becomes more likely. A large body of literature has documented the impact of attitude on behavior (Azadkhani et al., 2016; Ajzen, 2012; Jafarnia and Afrooz, 2018; Levine & Strube, 2012; Rajaeian et al., 2015; Salehi and Ghaemi, 2013).

Based on the study's second hypothesis, which was rejected, subjective norms

towards environmental behavior cannot have a positive and significant effect on the intention of environmental behaviors. In general, subjective norms reflect the social pressures that the person receives from society for doing a particular behavior (Zalli et al., 2010). The set of person's beliefs and values, their consistency and specific values with environmental behavior cannot, however, increase the intention for environmental behavior. Yet et al., (2014) discovered a positive and significant relationship between subjective norms and intention.

The study's third hypothesis was confirmed, where the perceived influence of attitudes toward environmental behavior had a positive and significant effect on environmental behavior intent. This indicates that students with strong beliefs and positive environmental thoughts have stronger intentions for environmental behavior. In other words, such a feeling and perception is seen as a powerful prerequisite for occurrence of environmental behavior. Similarly, the results of studies by Zare Shahabadi et al. (2016) and Wilvoit (2009) indicated a positive and significant relationship between perception and the supporting behavior for the environment.

The results showed that the study's fourth hypothesis was rejected and there was no significant relationship between intention and environmental behavior. In other words, the intention for environmental behavior will not lead to such behavior. However, Hejazi et al., (2017), Fishben and Ajzen (1980), Hejazi and Eshaghi (2014) discussed that intention of behavior will lead to its occurrence.

### Conclusion

This study examined the role of environmental education in intention and environmental behavior of elementary

school students. The researchers' main motive was first to answer the degree to which environmental education in green schools influences the intention of environmental behavior, and then what factors pave the way for environmental behavior in elementary school students. We used the Ajzen model to investigate the case. Since there was no similar study in Iran in this regard, the results of this study offered a profound insight to the planners, experts, teachers, and managers of elementary schools. The research data typically suggested that society's mentalities towards environmental behavior could not have a positive effect on the students' intention for doing environmental behaviors and any intention will not lead to the same behavior. In other words, although the students' attitude is positive towards environmental behavior and they feel empowered for environmental behaviors, the occurrence of environmental behavior may not be probable. The result may indicate that something other than what was described in this study is effective in the occurrence of environmental behaviors. This means that other factors not captured in this model can be effective when environmental behavior occurs. Modifying and changing the three components of attitude, subjective norms, and perceived behavior control will therefore lead to the development and reinforcement of intent for environmental behavior. Other effective factors on environmental behavior occurrence, however, are to be explored in further studies to reduce environmental damage and modify the course of environmental crisis. To control the training variable, it is recommended that researchers examine the behavior of the students so that they can comfortably see to what extent the behavior has been effective in the training process of school pupils.

### References

- Ahmadian, D., and Hacgighatian, M. 2016. A Sociological Analysis of the Role of Cultural Factors on Urban Environmental Behaviors (Case of Study: Residents of the City of Kermanshah). 6(18), 51-79.
- Ajzen, I. 2012. Martin Fishbein's legacy: The reasoned action approach. *The Annals of the American Academy of Political and Social Science*. 640(1), 11-27.

- Ajzen, I. 1991. The theory of planned behavior. *Organizational behavior and human decision processes*. 50(2), 179-211.
- Azadkhani, P., Sadatnejad, M., and Sharafkhani, J. 2018. The Investigation of Environmental education and environmental protection behaviors of Ilam high school girl students. *Human and Environmental Quarterly*. 44(97), 139-153.
- Barakpoor, Jahan seir, F. 2016. Environmental Citizenship and Citizenship Behavior Analysis in Qazvin City identity. No. 28, Tenth Year, Pages 53-66.
- Erdogan, M. 2015. The Effect of Summer Environmental Education Program (SEEP) on Elementary School Students' Environmental Literacy. *International Journal of Environmental and Science Education*. 10(2), 165-181.
- Fishbein, M., and Ajzen, I. 1980. Understanding attitudes and predicting social behavior.
- Foroutankia, Sh., Rezadoost, K., Porter Karooni, M., and Heydari, A. 2011. Investigating the Role of Media in Shaping Citizens' Environmental Attitudes and Behaviors, Media Seminar and Citizenship Education Page 64-83 Tehran, Tehran Citizenship Education General Office. (Pp. 64-83).
- Hejazi, S.Y., Karami darabkhani, R., Hosseini, S.M., and Rezaei, A. 2017. Investigating the effective factors on environmental behavior of environmental NGOs members in Tehran Province. *Journal of Environmental Studies*. 43(1), 17-30.
- Hejazi, E. 2014. Explaining the environmental behavior of villagers in western provinces of Iran based on planned behavioral model. *Iranian Journal of Agriculture of Economic and Development Research*. 45(2), 257-267.
- Jafarnia, Gh., and Afrooz, S. 2018. The Impact of Environmental Attitude on Citizens' Environmental Behaviors, *Regional Planning Quarterly*, eighth year, Consecutive Number 30.
- Levine, D.S., and Strube, M.J. 2012. Environmental attitudes, knowledge, intentions and behaviors among college students. *The Journal of Social Psychology*. 152(3), 308-326.
- Momeni, M., Dashti, M., Bayramzadeh, S., and Soltanmohammadi, N. 2013. Structural Equation Modeling: Emphasizing Reflective and Constructive Structures. Tehran: Author.
- Naddafi, K., Nouri, J., Nabizadeh, R., and Shahbod, N. 2017. Green Management System in the National Library of Iran, *Environmental Technology Science*, 10(4): 262- 269.
- Otto, S., and Pensini, P. 2017. Nature-based environmental education of children: Environmental knowledge and connectedness to nature, together, are related to ecological behaviour. *Global Environmental Change*. 47, 88-94.
- Özsoy, S., Ertepinar, H., and Sağlam, N. 2012. Can eco-schools improve elementary school students' environmental literacy levels?.
- Paitakhti Oskouei, A., Babazadeh, M., and Tabaghchi Akbari, L. 2019. The Impact of Educational Factors on Environmental Behaviors in Iran. *Sociological Studies*, Eleventh Year. (42), 23-39.
- Rajaeian, N., Keshtiaray, N., and Nadi, M. 2018. The Business Life of Elementary School Students on the Water Consumption Phenomenon. *Journal of Environmental Education and Sustainable Development* Sixth year.3 (1), 47-60.
- Salehi, S., and Karimzadeh, S. 2014. The Impact of Environmental Values on Environmental Behavior, *Iranian Social Issues*, Fifth Year. 2, 61-76.
- Salehi, S., and Ghaemiasl, Z. 2013. Investigating the relationship between environmental education and environmental protection behaviors. *Journal of Environmental Education and Sustainable Development*. First Year. 3 (1), 67-78.
- Salehi, S., and Hemmati Goyemi, Z. 2012. The Role of Environmental Education in Electronic Waste Management. *Journal of Environmental Education and Sustainable Development*, Year One. Issue 1, Fall (2012).
- Salehi, S. 2010. Environmental Behaviors, Environmental Knowledge and Education. *Journal of Educational Sciences of Shahid Chamran University of Ahvaz*, Fall & Winter 2011, Volume 6, 18<sup>th</sup> year.2, 201-220.

- Shirvani Bidabadi, A., Larijani, M., and Farojolahi, M. 2013. Effect of Urban Environment Education on Environmental Assessment and Behavior of Girl Students, *Journal of Education and Environment and Sustainable Development*.
- Willuweit, L. 2009. Promoting Pro-Environmental Behavior: An Investigation of the cross-cultural environmental behavior patterns. The Case of Abu Dhabi.
- ZareShahabadi, A., SayyarKhalaj, H., and Mahootforous., A. 2016. Factors Related to Eco-Friendly Behaviors in Urban Environment, *Journal of Environmental Education and Sustainable Development*, Fifth Year, Issue 1, Fall 2016.
- Zalli, M., Razavi, S.M., Yadollah Farsi, J., and Kord Naeij, A. 2010. *The Assessment of Entrepreneurship Status in Iran*. Tehran: Institute of Labor and Social Security Publication.
- Zsóka, Á., Szerényi, Z.M., Széchy, A., and Kocsis, T. 2013. Greening due to environmental education? Environmental knowledge, attitudes, consumer behavior and everyday pro-environmental activities of Hungarian high school and university students. *Journal of Cleaner Production*. 48, 126-138.

