Environmental Health Engineering and Management Journal

Original Article

Investigation of students' environmental performance on improving the indicators of green schools: A perspective of sustainable development

Negar Zare Banadkooki[1] , Fatemeh Salehi Bahabadi[1] , Mohammad Hashem Khademi[2] , Fahimeh Teimouri[1]*

[1]Environmental Science and Technology Research Center, Department of Environmental Health Engineering, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

[2]Clinical Research Development Center, The Persian Golf Martyrs Hospital, Bushehr University of Medical Sciences, Bushehr, Iran

Abstract

Background: Environmental schools (green schools) are international programs related to environmental education, sustainable development, and environmental management. The main objective of the present study was to evaluate the impact of the environmental performance of the students in improving the green school indicators as a perspective of sustainable development.

Methods: The present study was performed on Bahabad school students (Yazd province) in 2023-2024. The environmental performance questionnaire was researcher-made, and its validity and reliability were evaluated. Cronbach's alpha was used to calculate the reliability coefficient of the questionnaire (0.7). The Kruskal-Wallis test and the Spearman correlation test were used to examine significant differences between groups and to determine the important relationship between variables.

Results: The results of this study showed that only 12.3% of schools were first-class schools. There was a significant relationship between the environmental performance and improvement of indicators of green schools ($P < 0.05$). Also, educational level played an important role ($P < 0.05$) in the environmental performance and green schools improving indexes, while there was no relationship as a gender variable ($P > 0.05$).

Conclusion: The green school grade had a direct relationship with the students' environmental performance. The first-grade green schools have the highest score in the students' environmental performance, which means that the students of schools that were closer to the standards of green schools, have an important role in improving and protecting the environment and had higher scores in locations that were different environmental dimensions (transportation, waste separation and green shopping, saving water).

Keywords: Questionnaires, Educational status, Student, Sustainable development

Citation: Zare Banadkooki N, Salehi Bahabadi F, Khademi MH, Teimouri F. Investigation of students' environmental performance on improving the indicators of green schools: A perspective of sustainable development. Environmental Health Engineering and Management Journal. 2025;12: 1383. doi: 10.34172/EHEM.1383.

Introduction

Environmental issues are an important fact all over the world, which has received serious attention in contemporary society and is on the agenda of the world because the environment will not only have a significant impact on the quantity and quality of human life in the national dimension, but it is also effective globally (1). At present, environmental problems have increasingly spread in the world due to the ever-increasing growth of the population and the excessive use of natural resources (2). Environmental Performance Index (EPI) supplied a data-driven summary of the state of sustainability worldwide. The EPI ranks 180 countries

on climate change performance, environmental health, and ecosystem vitality. The EPI highlights leaders and laggards in environmental performance and provides practical guidance for countries that move toward a sustainable future (3). According to the EPI report in 2006, Iran ranks 53 out of 133 countries in the world with an index number of 70. During the next evaluation period in 2008, the ranking of Iran's environmental performance dropped by 15 points to 68, and in the next ranking in 2010, Iran's environment dropped again by 10 points to rank 78 (4). Also, the 2014 EPI conducted by Yellow Columbia University and examined 22 environmental factors such as water resources, air pollution, biodiversity,

climate change, Iran ranked 83 out of 178 countries studied (5). According to the evidence of official statistics, one of the most important problems and obstacles in the field of environmental protection in Iran is the lack of environmental awareness and information among all layers of society (4). It is important to know the point of view and estimate the level of general knowledge of people in society about environmental issues because in many cases, the knowledge and attitude of people affect their behavior and performance (6). Therefore, raising public awareness and educating society about the value and importance of the environment is important for the continuation of human life (7).

Environmental schools (green schools) are international programs related to environmental education, sustainable development, and environmental management. Successful schools in this program among more than 56 member countries, 36 thousand schools, 10 million students, and 600 thousand teachers have been proposed (8). This program has been carried out in Iran since 2014 (8). Evidence has shown that if schools can follow the existing indicators for sustainability (Green Schools Index), it will have a significant effect on students' environmental performance. On the other hand, having a green index and effective environmental performance can create a safe place for students to learn, so they can focus more on daily activities (6). Such school buildings provide clean air, suitable temperatures, and plenty of natural light while limiting unwanted noise. They also maximize building efficiency, minimize pollution, and teach students the importance of environmental sustainability (9). Considering that schools are one of the most important places that are effective in the development and growth of students, by using green schools in the field of global education with an emphasis on the environment for children and teenagers, students will be able to protect and maintain a healthy environment for their children (10).

Even though many studies have been conducted in the field of green indicators in public places, a few studies have been conducted on the relationship between environmental performance and green indicators. On the other hand, because the students will form the future society, environmental education performance can guarantee a healthy environment. Therefore, the researchers decided to evaluate the impact of the environmental performance of school students in improving the indicators of green schools in Bahabad city, Yazd.

Materials and Methods
Study area and sampling
This study was conducted as a cross-sectional study in the 2023-2024 semesters. The students and schools of Bahabad city were considered as a community, 22 schools (all grades) including 15 schools at the primary level and 7 schools at the secondary level (12 girls' schools and 10 boys' schools) were evaluated. Sample size calculation was achieved as Eq. (1).

$$n = \frac{Nz^2 pq}{Nd^2 + z^2 pq} \tag{1}$$

The amount of N = 2000, d = 0.05, Z = 1.96, and pq = 0.5 were considered. The total number of students was 316.

Questionnaires of green schools and environmental performance
The questionnaire on green school indicators was used (10,11). The questionnaire contains 90 questions related to the green schools. The scores of each question's options (0 to 3) are added together after scoring, and finally, the total score determines the grade of the green school (grades one to three). If the sum of the total scores is greater than 2958, it indicates that the school is considered a first-class green school, while the total scores between 1972 and 2957 represent the second-grade green schools, and scores between 1183 and 1971 show the third-grade green schools. The used green school index questionnaire has several characterizations, and each character has some sections. The characteristics include management specifications, energy saving, health and nutrition teacher, environmental education, student and teacher and parent attitude, waste separation and green buying, transportation, cooperation, noise pollution, design and building location, air quality, green space and power, and fuel consumption.

The environmental performance questionnaire was researcher-made and its validity and reliability have been evaluated (Table S1). To determine its validity, the questionnaire was given to professors and experts, and after checking and making corrections, it was implemented. Cronbach's alpha method was used to calculate the reliability coefficient of the questionnaire (0.7). The latter contains 28 questions related to the studied environmental performance. Answers were in 5 modes (not at all to always) and measured based on the Likert scale from always (5) to at all (1). The total scores obtained indicate the performance status of students in the field of school environment using the Likert scale. The green schools Questionnaire was completed by the researcher, while the environmental performance questionnaire was completed by the students. It should be mentioned that questionnaires were completed when the students were in the schools.

Statistical analysis
SPSS software version 26 was used for statistical analysis. The Kruskal-Wallis test was used to examine significant differences between groups, the Mann-Whitney U test was used to compare two independent groups, and the

Spearman correlation test was used to determine the significant relationship between variables.

Results

The status of Bahabad schools as green indexes

Table 1 shows the scores of the components of the green schools.

As shown in Table 1, in most schools, the bright colors to enable maximum daylight use were considered, but the natural ventilation and skylights were not considered. According to the average score of the maximum, this situation seemed well.

Water consumption, electricity consumption, fuel consumption, energy insulation, and new energies were implemented at the highest level in almost all the investigated schools. In addition, the usage of outdoor lighting and energy-saving lamps as well as the insulation of facilities were performed to increase their efficiency, but the use of double-glazed windows, electronic valves and smart equipment, separation of potable and non-potable water, new energies, and rainwater collection systems were at the lowest levels. According to the average score

from the maximum, the situation seemed well (Table 1). From the point of view of green space, to some extent flowers and plants were used in the classrooms, but there were no green roofs in the schools (Table 1).

Waste separation and the use of environmentally friendly compounds are being implemented well. Also, most schools had transportation services for the teachers and students. The spread of cycling and walking culture in boys' schools had a higher score than in girls' schools (Table 1).

The safety facilities such as the presence of fire extinguishers and first aid boxes, having window guards and safety of stairs, restrooms with ventilation systems, the number of restrooms in proportion to the number, had the highest grades, but in terms of building strength against earthquakes, standards and regulations related to electrical facilities in most schools from the range of grades (0-3), had the lowest grades. In terms of building orientation and noise pollution, the situation seemed well.

Students' environmental performance situation

Figure 1 shows the scores related to sustainability

Table 1. Sustainability indexes and schools' scores

| Variable	Mean	Standard deviation	Minimum	Median	Maximum	Acquirable score
Design, architecture, and painting	93.65	25.098	45	90	135	0-135
Water consumption, electricity consumption, fuel consumption, energy insulation, and new energies	501.54	90.30	342	504	702	0-864
Green space	120.95	50.36	0	120	216	0-288
Waste separation and green shopping	127.5	29.18	75	135	180	0-225
Transportation	88.72	19.18	72	90	168	0-168
Safety facilities, sanitary facilities	264.09	27.083	210	266	294	0-294
Energy saving	191	30.65	132	181.5	253	0-264
Building orientation and noise pollution	89.31	3.19	75	90	90	0-90
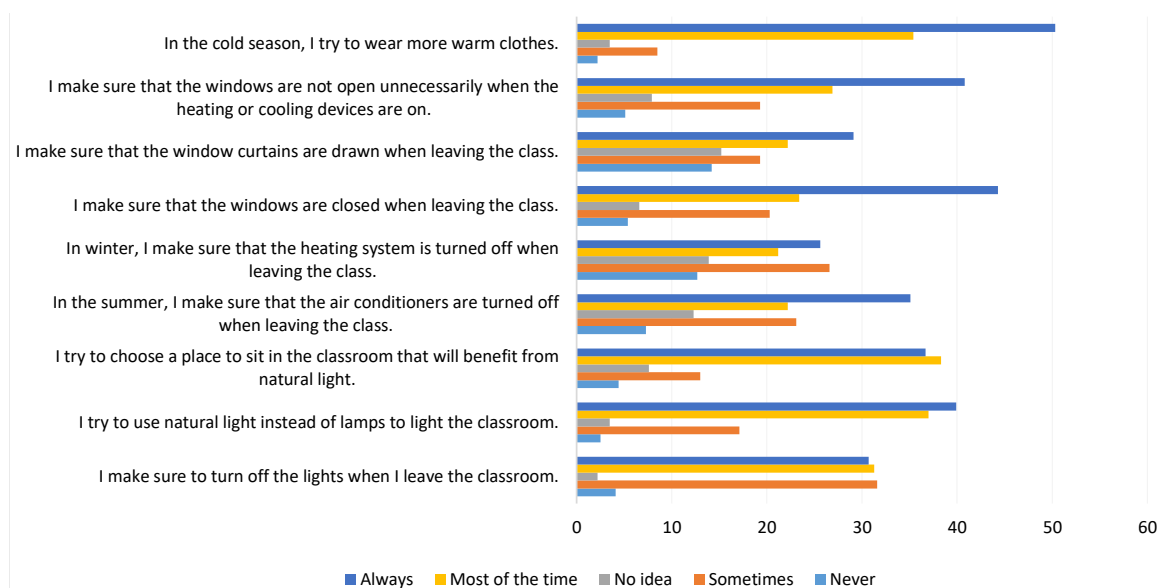
Figure 1. Saving energy criteria

indicators in terms of energy-saving criteria.

Saving energy termination includes turning off the lamps when leaving the classroom, using natural light instead of lamps, turning off the cooling devices and heating devices, closing the window when the cooling and heating devices are on, and turning off the extra lamps. In terms of saving energy consumption, wearing warm clothes had the highest scores (always and most of the time), while turning off the heating system while leaving the classroom in cold seasons had the lowest scores (always and most of the time). In general, these criteria had an average of 33.28, a standard deviation of 7.90, a minimum score of 15, and a maximum score of 45. Considering the distance of the average score from the maximum, the situation seemed well. Figure 2 shows the scores related to sustainability indicators in terms of transportation criteria.

The usage of bicycles and public transportation had the highest score. Using private cars had the highest answer of always and most of the time. In general, this dimension had an average of 7.76, a standard deviation of 2.84, a minimum score of 3, and a maximum score of 15. Considering the distance of the average score from the maximum, the condition of this parameter was not satisfactory.

Figure 3 shows the scores related to water consumption criteria.

As shown in Figure 3, closing the water tap has the highest score (12.54), with a standard deviation of 2.64. Considering the distance of the average score from the maximum, the situation seemed good. Figure 4 shows the scores related to waste separation and green purchasing criteria.

Using a personal instead of a disposable cup had the highest score. In general, this dimension had an average of 18.91 and a standard deviation of 4.59. Considering the distance of the average score from the maximum, the situation also seemed good. Figure 5 shows the environmental importance of students as the main parameter.

Accuracy in using both sides of the paper had the highest score while talking with a classmate about environmental protection subjects obtained the lowest score (Figure 5). This factor had an average of 28.01 and a standard deviation of 5.11.

The effect of environmental performance on improving the indicators of green schools

Table 2 shows the status of the environmental performance of students and indicators of green schools.

As shown in Table 2, the status of the environmental index of the school was at a good level. According to the
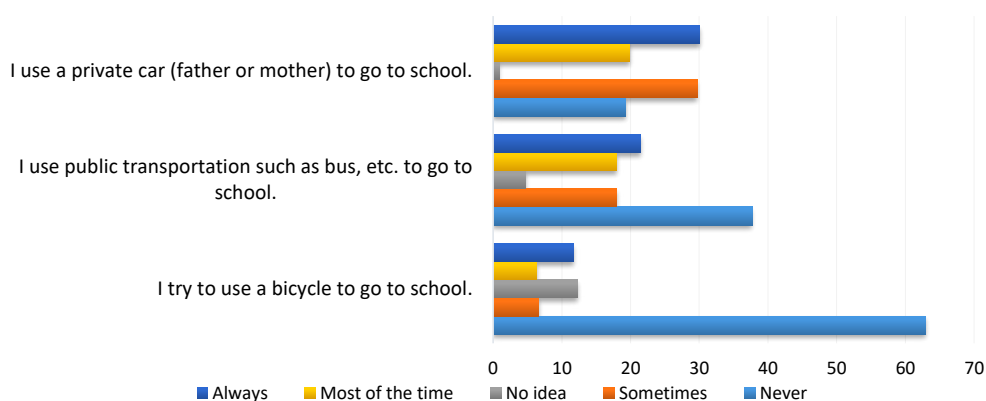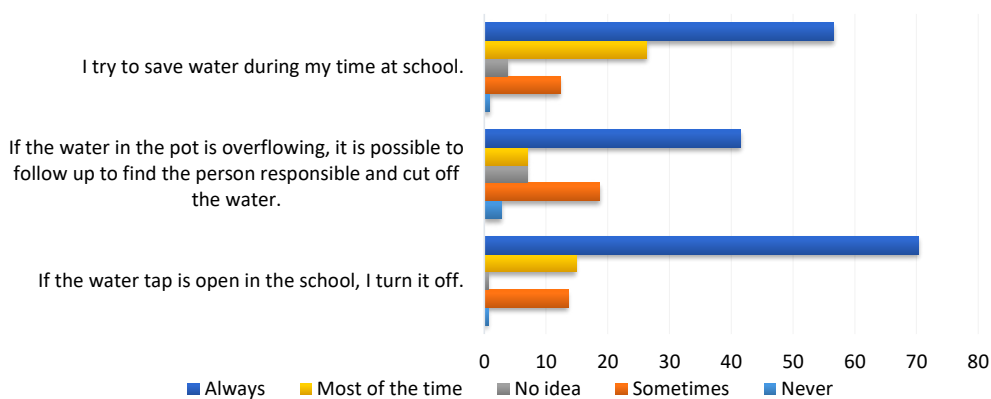

Figure 2. Transportation criteria

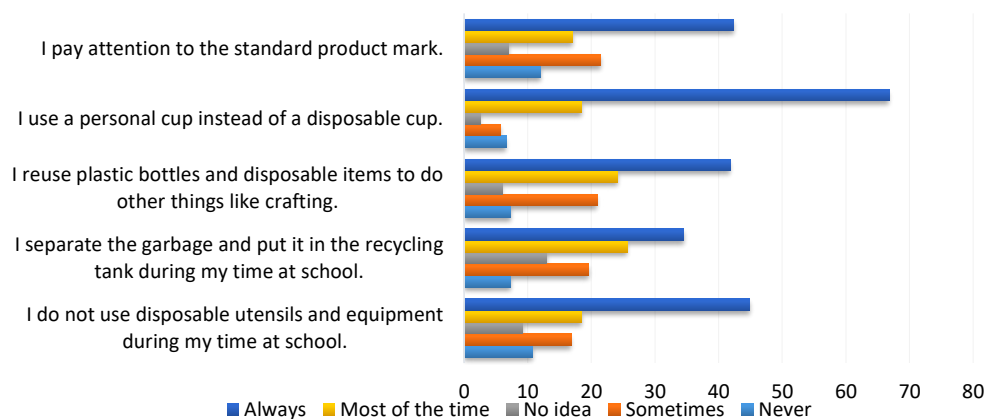**Figure 3.** Water consumption criteria
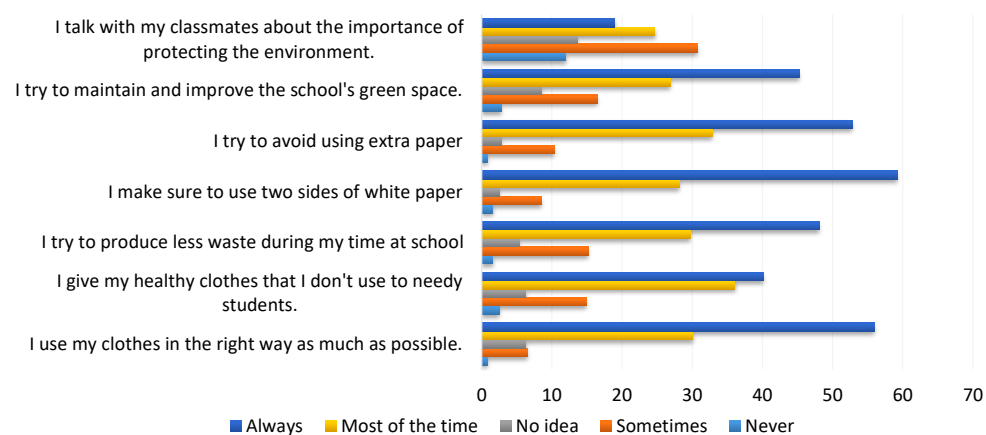
Figure 4. Waste sorting and green buying

Figure 5. Environmental protection of students' performance

results, 87.7% of schools were classified as second-grade schools and only 12.3% of schools were classified as first-grade green schools.

Table 3 shows the relationship between EPI and school scores as two parameters of students' gender and educational level for each environmental criterion.

As shown in Table 3, there is no significant relationship between students' environmental performance according to gender variable ($P > 0.05$), while there is a significant relationship between students' environmental performance and their educational level ($P < 0.05$). In other words, secondary-level students have better environmental performance than primary-level students. This means that environmental performance has a greater impact on improving the indicators of green schools at secondary and higher levels.

Discussion

The main objective of the present research was to evaluate the impact of students' environmental performance on improving the indicators of green schools.

School designs and architectures, the use of bright colors, and the design of classrooms in a way that enables the maximum use of daylight, were attended, but the use of natural ventilation and roof windows were not foreseen in the design of most schools. However, this indicator was in a favorable condition in most schools. Their results showed that 80.5% of the schools had desirable classrooms in terms of health, which shows attention to school architecture. Also, the study by Naimi Shirmard et al in 2021 on elementary schools in the third district of Tehran showed that the use of natural ventilation and roof windows was not foreseen in the design of almost half of the schools (12).

The study by Naimi Shirmard et al showed that more than 82% of the investigated schools had scored lower than the average in this field (12). This may be because the newly built schools have better health conditions than the old schools. In other words, the health status of schools and compliance with the principles of building insulation to prevent energy wastage had a significant relationship with the age of the school building (13).

The results of air quality and appropriate temperature of schools have shown that most schools were in good condition, which is consistent with the results of the study by Çakır et al in 2021 on existing school buildings in Turkey. The results of this research showed that 29.4% of the students, 42.9% of the teachers, and 35.9% of the

Table 2. Environmental performance status and indicators of green schools

Variable	Number	Mean	Standard deviation	Minimum	Maximum
School environmental index	316	135.00	56.00	18.50	100.53
Degree of schools		5801	2117	279.80	2698.97

Table 3. The relationship of environmental performance and green school indexes as two parameters of gender and educational level

Environmental dimensions			Mean	SD	Median	Min	Max	P value
Water saving	Gender	Female	33.28	7.71	33.5	15	45	0.987
		Male	33.27	8.62	34.5	16	45	
	Education level	Primary level	34.23	8.01	35.5	15	45	<0.001
		Secondary level	30.75	7.04	29	16	45	
Transportation	Gender	Female	7.88	2.8	7	3	15	0.17
		Male	7.35	2.93	7	3	15	
	Education level	Primary level	7.84	3.02	7	3	15	0.042
		Secondary level	7.54	2.28	7	3	15	
Water consumption	Gender	Female	12.44	2.66	13	4	15	0.203
		Male	12.9	2.57	14	5	15	
	Education level	Primary level	12.74	2.73	14	4	15	0.025
		Secondary level	12	2.33	12	6	15	
Solid waste separation	Gender	Female	18.75	4.66	20	6	25	0.24
		Male	19.48	4.3	21	10	25	
	Education level	Primary level	19.79	4.19	21	8	25	<0.001
		Secondary level	16.56	4.81	16	6	25	
Environmental protection	Gender	Female	27.90	5.02	28	13	35	0.448
		Male	28.42	5.42	30	16	35	
	Education level	Primary level	28.59	5.14	30	13	35	0.001
		Secondary level	26.48	4.73	26.5	16	35	

parents agreed with the appropriate temperature of the classrooms (14).

The results related to the condition of green spaces in schools, the situation seemed good. The findings of the research by Liu and Chen on 1597 students (9-12 years old) in 2021 showed that green spaces in Chinese schools strengthen the pro-environmental behavior of children (15). Also, the study of Geravandi et al in 2022 on the urban and rural schools of Andika city showed that 67.7% of the surveyed rural schools and 88.9% of the urban schools had observed the per capita amount of green space per student, which is consistent with the results of the present study (16).

The results of waste separation and recycling in schools in terms of green school indicators in the present study show that in most schools, waste separation, separation of paper waste, and the use of environmentally friendly consumables are being implemented well. This is not consistent with the results of the study by Azizi Mossello and Tarahi in 2020 on the citizens of Behbahan city, which showed the participation rate of 8.58% of people who participated very low (17). The reason for the inconsistency may be the greater attention paid by students from low-income cities to environmental behaviors, especially in terms of consumption, activity, and recycling in the present study (18).

In the field of checking safety facilities, restrooms, and food storage areas, the presence of fire extinguishers and first aid boxes, the presence of window guards and the safety of stairs, restrooms with ventilation systems, students had the highest scores, but in terms of building strength against earthquakes, standards and regulations related to electrical installations in most schools, they had the lowest scores, which is consistent with the results of the study by Rastgoo and Aghazadeh Pir on secondary schools in 2019. The second period of Ardabil city showed that in 65 schools (92.9%), the toilets were healthy and equipped with ventilation (19), and also, with the study of Mazloomi et al on the schools of Salehabad-Shahristan district (20).

The situation of building orientation and noise pollution in schools seemed good, which is consistent with the results of the study of Omidvar et al (21), however, is inconsistent with the results of the study by Çakır et al on school buildings in Turkey (14). The reason for this difference could be related to the insufficient green space

in the discussed area of the mentioned study (quantity and quality).

The status of transportation did not seem good, which is consistent with the results of a study conducted by Mehni et al, which was located in the last grades of indicators (22). Also, according to the study by Müderrisoglu and Altanlar in Turkey, students had relative participation (73%) in environmental consumption, the highest of which was related to the use of the public transportation system (23); this result is not similar to the results of the present study. One of the factors that cause an unfavorable situation in the transportation of students could be related to security problems that make parents less interested in the sustainable transportation campaign (24).

Water consumption was in a good situation. A study performed by Mehni et al showed that in environmentally comprehensive schools, the water consumption of buildings had a suitable condition (22). The reason for this discrepancy could be seen as the difference in the variables of religious beliefs of water consumption, informal control, attitude towards water limitation, environmental value, official control, civic participation, and social base (25).

In the field of student environmental protection measurements, it seemed to be in a good situation, which is consistent with the study of Asad Atai et al., with an average of 15.3, had an average status (26).

The results of this study showed that 87.7% of schools were not second-class schools and only 12.3% of schools included first-class green schools, which is consistent with the results of the study by Naimi Shirmard et al that reported most of the schools (82.1%) were second-class, and only 17.9% were in the first-class green school category (12).

Aggarwal and Agarwala conducted a study on the relationship of green HRM with environmental performance. In this study, 278 employees from private and public sector organizations located in India were surveyed. This study provides practical insights for researchers and managers seeking to adopt sustainability goals in organizations. The findings have the potential to encourage human resource managers to adopt green human resource management practices to promote a greening culture in the organization, which is consistent with the results of the present study (27).

Also, Al-Alawneh et al conducted a study on the impact of green human resource management on environmental performance in higher education with the mediating role of management support and green culture. The results showed that there was a direct relationship between green human resource management practices and environmental performance in universities. This study showed that the implementation of green human resource management practices positively increases environmental performance (28).

The results of the present research regarding the relationship between the green school grade index and the students' environmental performance showed that there is a significant relationship between the indicators. In other words, the green school grade has a direct relationship with the students' environmental performance. Based on this, the first-grade green schools have the highest score in the students' environmental performance, meaning that the students of schools that were closer to the standards of green schools, have an important role in improving and protecting the environment and had higher scores in locations, which were different environmental dimensions (transportation, waste separation and green shopping, saving water). Similar studies have been conducted to investigate the relationship between the green school index and students' environmental performance. For example, Efiariza et al in a research on the Indonesian students found that green school affects environmental behavior (12.3%), which is consistent with the results of the present study (29).

The results showed that there was no significant relationship between the green school index and students' environmental performance as a gender variable. Similar studies have been conducted to investigate the relationship between the green school and environmental behavior index at the educational level. For example, the study by Ahmadi et al on the citizens of Shiraz and Mónus, the students of 14 secondary schools in Hungary, and the study by Shafiei on Iranian students in 2020 also showed that the gender of students is the factor, but has no effect on students' environmental performance (30,31), which is inconsistent with the results of the study.

Also, the results showed that there was a significant relationship between the green school index and students' environmental performance as an educational level variable. In 2020, Shafiei et al. concluded that the average pro-environmental behavior of master's degree students (18.97%) was higher than that of undergraduate students (18.03%), which is consistent with the results of the present study (32).

Conclusion

The main objective of this study was to investigate the relationship between green schools and student environmental performance because green schools are international programs related to environmental education, sustainable development, and environmental management. The green school had a direct relationship with the students' environmental performance. In other words, the first-grade green schools had the highest score for the students' environmental performance, which means that the students of schools that were closer to the standards of green schools, have an important role in improving and protecting the environment and

had higher scores in locations, which were different environmental dimensions (transportation, waste separation and green shopping, saving water). This study also had some limitations such as the smaller number of boys' schools compared to girls' schools, and the balance of the statistics was heterogeneous. Also, due to the small number of gifted and non-governmental schools, the difference and relationship between the indicators of green schools and their environmental performance has not been surveyed, so it is suggested to investigate gifted and non-profit schools in future studies. The results of the studies have shown that the green degree of schools could help improve the environmental performance of students. Therefore, increasing the budget of schools to provide insulation, using natural ventilation and skylights, changing the policy government investments for the use of double-glazed windows, electronic valves and smart equipment, separation of potable and non-potable water, as well as the use of new energies, the expansion of the culture of cycling and walking could be considered as the valuable policies for the improving student performances.

Authors' contributions
Conceptualization: Fahimeh Teimouri, Mohammad Hashem Khademi.
Data curation: Fahimeh Teimouri, Mohammad Hashem Khademi.
Formal analysis: Fatemeh Salehi Bahabadi, Mohammad Hashem Khademi.
Investigation: Fatemeh Salehi Bahabadi.
Methodology: Fahimeh Teimouri, Fatemeh Salehi Bahabadi, Mohammad Hashem Khademi, Negar Zare Banadkooki.
Project administration: Fahimeh Teimouri, Negar Zare Banadkooki.
Resources: Fahimeh Teimouri, Negar Zare Banadkooki.
Supervision: Fahimeh Teimouri.
Validation: Mohammad Hashem Khademi, Fahimeh Teimouri.
Writing–original draft: Negar Zare Banadkooki.
Writing–review & editing: Fahimeh Teimouri.

Competing interests
The authors confirm that they do not have any conflicting financial interests that could influence the findings presented in this article.

Ethical issues
This study was approved by the Ethics Committee of Shahid Sadoughi University of Medical Sciences (Ethical code: IR.SSU.SPH.REC.1401.142).

Supplementary files
Table S1. The self-administered environmental performance questionnaire

References
1. Vestena CL, Piske FH. Knowledge and morality of school-age children and adolescents regarding environmental issues and moral dilemmas. Creat Educ. 2017;8(2):177-88. doi: 10.4236/ce.2017.82015.
2. Grear A, Grant E. Thought, Law, Rights and Action in the Age of Environmental Crisis. Edward Elgar Publishing; 2015.
3. Yale Center for Environmental Law and Policy, Natural Earth. OpenStreetMap contributors. https://epi.yale.edu/.
4. Mohammadi Dehcheshme M. The strategies of environmental empowerment in human settlements (study of Delfan, Lorestan province). Spatial Planning. 2024;14(1):1-20. doi: 10.22108/sppl.2023.138376.1735. [Persian].
5. Miles J. Tolerance and variance inflation factor. In: Balakrishnan N, Colton T, Everitt B, Piegorsch W, Ruggeri F, Teugels JL, eds. Wiley StatsRef: Statistics Reference Online. John Wiley & Sons; 2014. doi: 10.1002/9781118445112.stat06593.
6. Ramezani SG, Tahsini H. Assess the knowledge, attitude and practice of students in Kurdistan University regarding environmental issue. Human & Environment. 2018;16(4):103-17. [Persian].
7. Hooshmand Firoozabadi F, Poorsaiedi M, Salamatian S, Sodaiezadeh H. Investigation of Knowledge and attitudes of Yazd students the environment and its function in society. J Environ Sci Technol. 2019;21(10):217-29. [Persian].
8. Hens L, Wiedemann T, Raath S, Stone R, Renders P, Craenhals E, et al. Monitoring environmental management at primary schools in South Africa. J Clean Prod. 2010;18(7):666-77. doi: 10.1016/j.jclepro.2009.11.001.
9. Bourke N, Simmons K, Ousley M. Green schools: an examination of practices and possibilities in Alabama. Interdiscip J Environ Sci Educ. 2022;18(4):e2292. doi: 10.21601/ijese/12144.
10. Meiboudi H, Lahijanian A, Shobeiri SM, Jozi SA, Azizinezhad R. Development of a new rating system for existing green schools in Iran. J Clean Prod. 2018;188:136-43. doi: 10.1016/j.jclepro.2018.03.283.
11. Mazaheritehrani M, Alvani M, Vaezi R, Zahedi S, Qorbanizadeh V. The model of green management for Iranian public organizations. Iranian Journal of Management Sciences. 2023;17(68):1-43. [Persian].
12. Naeimi Shirmard A, Sadeghian H, Gghaneian MT, Jambarsang S, Meiboudi H, Hejazi Shirmard M. Assessment of elementary schools in district three of Tehran based on the sustainable school indicators. The

Journal of Tolooebehdasht. 2020;19(5):1-11. doi: 10.18502/tbj.v19i5.5174. [Persian].

13. Rahmanian Koshkaki R, Poorgholami F, Kargar Jahromi M, Rahmanian Koshkaki A. A study of the status of environmental health at the junior high-schools. Jokull Journal. 2015;65(8):2-7.

14. Çakır S, Tuna Taygun G. The re-evaluation of existing school buildings in Turkey within the context of 'green school'. ICONARP International Journal of Architecture and Planning. 2021;9(1):192-219. doi: 10.15320/iconarp.2021.156.

15. Liu W, Chen J. Green spaces in Chinese schools enhance children's environmental attitudes and pro-environmental behavior. Child Youth Environ. 2021;31(1):55-87. doi: 10.7721/chilyoutenvi.31.1.0055.

16. Geravandi S, Dastoorpour M, Goudarzi G, Karimi F, Mohammadi MJ. A survey study on safety and environmental health condition of Andika city schools. Jundishapur Sci Med J. 2021;20(4):312-23. doi: 10.32598/jsmj.20.4.2275.

17. Azizi Mossello A, Tarahi R. Survey on public awareness and participation in waste separation from Behbahan city. Iranian Journal of Wood and Paper Industries. 2020;11(2):269-79. [Persian].

18. Pazokinejad Z, Salehi S. An analysis of social factors influencing students environmental attitudes and performance. J Appl Sociol. 2014;25(3):71-88. [Persian].

19. Rastgoo A, Aghazadeh Pir H. Environmental health survey of secondary schools in Ardabil city and comparison with national standards and indicators in 2018. Journal of Health. 2020;11(4):529-40. doi: 10.29252/j.health.11.4.529. [Persian].

20. Mazloomi S, Akbari Y, Nourmoradi H, Eslami F. Study of environmental health status of schools in Saleh Abad district - Mehran city - using national indicators in 2017: a short report. J Rafsanjan Univ Med Sci. 2022;20(10):1157-68. doi: 10.52547/jrums.20.10.1157. [Persian].

21. Omidvar K, Ali Zadeh Shuroki Y, Zareshahi A. Determining the desirability Yazd schools based on bio-climatic parameters. Journal of Architecture in Hot and Dry Climate. 2012;1(1):101-17. [Persian].

22. Mehni O, Mokhtari S, Mashayekhi M, Ahmadvand AL. An examination of the performance of the comprehensive eco-schools: a case study of Tehran. School Administration.

2019;7(4):134-21. doi: 10.34785/J010.1398.838.

23. Müderrisoglu H, Altanlar A. Attitudes and behaviors of undergraduate students toward environmental issues. Int J Environ Sci Technol. 2011;8(1):159-68. doi: 10.1007/bf03326205.

24. Nasrudin N, Nor AR. Travelling to school: transportation selection by parents and awareness towards sustainable transportation. Procedia Environ Sci. 2013;17:392-400. doi: 10.1016/j.proenv.2013.02.052.

25. Salehi S, Ebrahimi H. An analysis of students' knowledge and behavior toward water (case study: secondary schools in Mazandaran). Environ Sci. 2020;18(2):41-58. doi: 10.29252/envs.18.2.41. [Persian].

26. Ataei Asad M, Movahdi R. Investigation of pro-environmental behavior of girl's students (case study of senior secondary schools in Hamadan city). Human & Environment. 2022;20(4):87-102. [Persian].

27. Aggarwal P, Agarwala T. Relationship of green human resource management with environmental performance: mediating effect of green organizational culture. Benchmarking: An International Journal. 2023;30(7):2351-76. doi: 10.1108/bij-08-2021-0474.

28. Al-Alawneh R, Othman M, Zaid AA. Green HRM impact on environmental performance in higher education with mediating roles of management support and green culture. Int J Organ Anal. 2024;32(6):1141-64. doi: 10.1108/ijoa-02-2023-3636.

29. Efiariza RR, Dewi OC, Panjaitan TH, Felly R. The green-based school and the creation of student's environmental attitude and behavior. ARTEKS: Jurnal Teknik Arsitektur. 2021;6(2):249-58. doi: 10.30822/arteks.v6i2.715.

30. Mónus F. Environmental education policy of schools and socioeconomic background affect environmental attitudes and pro-environmental behavior of secondary school students. Environ Educ Res. 2022;28(2):169-96. doi: 10.1080/13504622.2021.2023106.

31. Ahmadi A, Salamatian D, Roosta F. An investigation of attitude and enviromental behavior of Shirazi citizens. Urban Sociological Studies. 2020;10(36):55-80.

32. Shafiei A, Maleksaeidi H. Pro-environmental behavior of university students: application of protection motivation theory. Glob Ecol Conserv. 2020;22:e00908. doi: 10.1016/j.gecco.2020.e00908.