

Article

Environmental Education: Ecological Wisdom of Indigenous Peoples in Western Siberia

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Abstract: The goal of environmental education is to form a respectful attitude towards nature in the interests of sustainable development. This paper describes the environmental education program at an ethnic camp, which enables visitors to become familiar with the ecological wisdom of the indigenous peoples of Western Siberia, Russia. This program illustrates how indigenous communities can participate in the global agenda as actors suggesting their responses to global environmental challenges. This paper aims to assess the content, form, and effectiveness of the environmental education program at the ethnic camp. The content and form were assessed in compliance with the elements of modern environmental education. To measure the effectiveness of the education program, the Theory of Planned Behavior (TPB) was used to study the students' intentions to engage in sustainable behavior after visiting the ethnic camp. The research participants were 210 university students. This program is rich in content and form, including traditional activities and the ecological wisdom of the indigenous peoples. However, the findings demonstrated that the program had little effect on their sustainable environmental behavior. No significant differences were found between the results of the experimental and control groups. The study suggests ways to improve the education program.

Keywords: environmental education; indigenous peoples; sustainable development goals; ecological wisdom of indigenous peoples; ethnic camp; theory of planned behavior



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1. Introduction

The impact of human activity on the natural environment and the increased population of the Earth have caused large-scale environmental problems in the last 70 years, such as the extinction of animal and plant species, climate change, environmental pollution, and the depletion of natural resources [1]. Many scholars state that the cause of the negative changes in the environment is long-term anti-environmental unsustainable social, economic, and political practices of separate social groups. The consequences of these changes can be much more painful and complicated than they seem to be [2,3]. Some environmental issues, such as biological or geological, are deeply rooted in various dimensions of the political agenda, social behavior, cultural values, and mental health [4,5]. Unraveling the complex connections between nature and society, some scholars have emphasized the necessity to change the prevailing system of unsustainable practices and underlying relationships, social norms, and values in order to overcome the environmental crisis [6–8]. Changing social norms and values at a personal level can be done through environmental education [9].

Sharing the scientists' beliefs that the ultimate goal of environmental education is to develop responsible environmental behavior [10] (p. 31), international organizations aim to promote the transformation of the behavior of entire communities towards the

biosphere [11]. Besides, the orientation of environmental education in the 21st century should differ from existing curricula. This education should include problem-solving activities focusing on local and specific problems and interdisciplinary forms of education [12]. Pedagogical innovation practices in environmental education should include non-formal environmental education, community-based environmental education, the experience of interaction between people and nature, and the emotional engagement of students in addressing different environmental issues [9]. The principles of environmental education proposed at the international level are implemented in national education programs, educational initiatives at a local level, and nature conservation strategies and activities of Non-Governmental Organizations (NGOs) [13,14]. NGOs are becoming more and more influential actors in designing environmental education programs. For example, the survey carried out by Palmer showed the substantial contribution of NGOs to creating training programs in Ecuador, Slovenia, Uganda, and Taiwan, which are consistent with the global agenda of the 21st century [9].

Researchers pay considerable attention to not only the content and forms of environmental education, but also to its effectiveness and appropriate evaluation tools to measure this effectiveness [15]. For example, a systematic analysis of 121 outcomes of environmental education programs led to the conclusion about their positive direct and indirect impact on ecosystems [16,17]. Another systematic review of studies included 105 studies reporting on the positive outcomes of environmental education and offering some recommendations for improving the effectiveness of environmental education programs [18]. Reviews of environmental education performance reports can help evaluate existing programs and guide the design of new education programs. However, some researchers indicate difficulties in measuring the effectiveness of environmental education. For instance, having assessed the environmental education programs for over the last 25 years, Thomas et al. [19] have noticed the gaps between the goals of the implemented programs and the metrics indicating their effectiveness. Thus, the selection and improvement of approaches to measuring the effectiveness of environmental education remains relevant today [20].

However, there is a lack of research that comprehensively evaluates environmental education programs designed by NGOs of the indigenous people. These non-formal environmental education programs are based on the traditional ecological wisdom of the indigenous people, their values, and knowledge for tackling the environmental crisis. A comprehensive analysis of the content, form, and effectiveness of these environmental programs might identify the key success factors and factors that need to be improved.

This paper analyzes the environmental education program at the ethnic camp, called “Uvas Mir Khot”, which means Home of the Northern Peoples in the Khanty language. This one-and-a-half-hour program enables visitors to become familiar with the ecological wisdom of the indigenous peoples of Western Siberia. Over the centuries, these peoples have been seeking a balance in their relationship with nature and maintaining it through folklore, artwork, and economic activities. This case illustrates how indigenous communities can participate in the global agenda as actors suggesting their responses to global environmental challenges. Visitors to the ethnic camp gain the experience of interacting with the agents of sustainable practices who are still maintaining a traditional way of life. Besides, the activities, such as participation in traditional games, communication with ‘spirits’, and a tea-drinking ceremony, take place in the open air, allowing visitors to gain a valuable and holistic experience of interacting with nature, which is a crucial element of effective environmental education [17]. The paper aims to assess the content, form, and effectiveness of the environmental education program at the ethnic camp “Uvas Mir Khot” (Home of the Northern Peoples). The content and form were assessed in terms of their compliance with the selected elements of environmental education [14–16,21–23]. The research participants were 210 students of Tyumen State University. To measure the effectiveness of the education program, the Theory of Planned Behavior (TPB) was used to study the students’ intentions to engage in sustainable behavior after visiting this ethnic camp, which is one of the markers of an effective education program. The TPB theory

has been widely used to explain the degree of human involvement in various types of pro-environmental behavior [24], and it is well supported by empirical data [20,25].

Using the TPB theory, we designed a twelve-item questionnaire about sustainable behavior related to resource usage. Based on the analysis of the environmental education program, we put forward the hypothesis that this education program will contribute to students' willingness to participate in sustainable behavior. First, we believe that the traditional environmental values of the indigenous peoples are consistent with the Sustainable Development Goals [26], and familiarity with these values can foster more sustainable behavior of modern people. Second, the ultimate goal of environmental education should be to develop responsible environmental behavior [10] (p. 31), thus the effectiveness of the education program should be correlated with a growing commitment to sustainable behavior. The data for our study were collected through the students' questionnaires.

The paper unfolds as follows. The first section includes the theoretical foundations of the study. The second section describes the ethnic camp "Uvas Mir Khot" (Home of the Northern Peoples), the content and the form of the environmental education program. The third section contains an assessment of the program effectiveness and a description of the data collection procedure. Then, the results are discussed in the fourth section. The final section contains concluding remarks.

2. Theoretical Foundations of the Study

The formation of values underlying behavior that causes minimal harm to the environment or even has a positive impact on it [27] (p. 309) cannot occur in the old education paradigm [9,15,16]. The transition to a new paradigm assumes a change in the entire education system, which cannot take place as quickly as the urgency of environmental problems and their social consequences requires. Nevertheless, new environmental education initiatives, and non-formal education projects and programs are emerging, which attempt to integrate and use effective elements and new approaches to environmental education. These elements and approaches are successfully implemented in education programs based on the ecological wisdom of indigenous peoples that includes their long-lasting experience in natural resource management and environmental conservation [23,28]. These programs can incorporate elements of this wisdom and immerse students in indigenous peoples' way of life, which is characterized by interaction with nature, spiritual identity, and social relationships [14,29–31].

During the environmental crisis, there needs to be a greater recognition of the contribution of indigenous communities to the maintenance of biodiversity [28,32], water resources management [33], environmental protection [34], sustainable land use [23], and the development of environmental awareness [14]. We assume that environmental non-formal education is a great way to learn more about practices of these communities, since it has many advantages of effective education programs: Being in the open air, holistic impact, active events, immersion in local culture, and discussion of local environmental problems.

The territory of Western Siberia is a place of living for the indigenous small-numbered peoples of the North, who still maintain a traditional way of life: Khanty, Mansi, and Nenets. The environmental ethics of the indigenous peoples of Western Siberia, especially of those living in the forest-tundra and taiga zones, is considered developed. These peoples are characterized by having a "protective and deeply ritualized mindset" [35] (p. 207–208), assuming the equilibrium with the used natural resources. The researchers note that the idea of maintaining balance and equilibrium with the surrounding environment is at the heart of handling relationships between the indigenous peoples and nature. Given this idea, the key principles can be established: Deep knowledge of the environment, universal respect, lack of contrast (assimilation), and universal interconnection [36] (p. 205). As for nature management, some researchers identify various ways that the indigenous peoples use to preserve species diversity and a number of wild animals. For example, they organize sacred places, forbidden for any economic activity and sometimes even for people's presence. They establish strict rules of

fishing and hunting ethics associated with the cult of the spirits owning these places, bans and restrictions on hunting and using sacred animals having real commercial value (beavers, ermines, swans, loons, etc.), and regulations of hunting and fishing seasons [37,38] (p. 95), [39] (p. 93), [40]. Due to the advanced environmental ethics, the ecological wisdom of the indigenous peoples of Western Siberia can be an integral part of environmental education programs, and representatives of these peoples can organize educational events.

3. Content and Form of the Educational Program at the Ethnic Camp “Uvas Mir Khot” (Home of the Northern People)

Developing a responsible attitude towards nature and socio-cultural objects can be done through learning activities about the traditional way of life and the use of natural resources of the indigenous peoples of Western Siberia at the ethnic camp “Uvas Mir Khot” (Home of the Northern Peoples). Some volunteers, representatives of the indigenous peoples and NGOs, created this camp in 2017: The Tyumen Regional Public Association of the Indigenous Peoples “Kedr” and the Fund for the Indigenous Minorities Development of the Northern Siberia and the Far East.

The ethnic camp is located in the forest, 30 km from Tyumen, Russia (Figure 1), and it resembles the traditional camp of the peoples of the North.



Figure 1. Location of the ethnic camp “Uvas Mir Khot”.

The camp comprises the following traditional dwellings: The Khanty house and the Nenets tent called chum (summer and winter) with traditional decoration, and it shows the household life of the Nenets, Khanty, and Mansi (boats, sleds, etc.). On the territory of the camp, a sacred site with seven guardians of this land was recreated. During national celebrations, visitors can get acquainted with the traditional rituals and customs of the peoples of the North. The hunting trail, which is a route through the forest, equipped with different kinds of hunting self-activating traps along the way, offers the opportunity to learn about hunting activities. In the camp, there is a traditional bread-baking oven, and visitors can eat fresh bread during the tea-drinking ceremony. Besides, they participate in arts and crafts workshops and play national sports and games. To enhance the emotional and aesthetic impact, all the offered activities are filled with masquerade and performance elements. The environmental education program aims at children aged 4+, adolescents and adults, and the program lasts one and a half hours.

The peculiarity of this program is that the ethnic camp was established and decorated by representatives of the indigenous peoples. Visitors are welcomed by the guides wearing traditional costumes, who are the representatives of the indigenous peoples of the North (Nenets, Mansi, Khanty) living in the city now. They also keep the ethnic camp clean and tidy and carry out necessary repairs of objects and facilities. This not only ensures the authenticity of the objects but also serves as a way to maintain social connections and to earn money and, besides, helps the indigenous peoples living in the city to lighten their emotional load.

The program at the ethnic camp “Uvas Mir Khot” (Home of the Northern People) aims to develop a visitor’s responsible attitude towards nature and social and cultural objects of the indigenous peoples.

The program objectives are to:

1. Demonstrate the importance of the human–nature relationship for the indigenous peoples of the North;
2. emphasize the role of animals, plants, landscape, climate, and natural phenomena in the mindset and economic life of the Khanty, Mansi, Nenets;
3. familiarize visitors with the nature-aligned technologies of the indigenous peoples of the North;
4. demonstrate responsible consumption, which implies caring for future generations while meeting the needs of the current generation;
5. highlight the role of social interactions—family values, mutual support, cooperation, exchange—in the mindset and economic life of the Khanty, Mansi, and Nenets.

These objectives based on the traditional relations of the indigenous peoples with the surrounding world are consistent with the Sustainable Development Goals [41]. This link is important because it shows the common ground between the ancestors’ experience and the current environmental agenda, leading to an increased commitment to sustainable behavior (Figure 2).

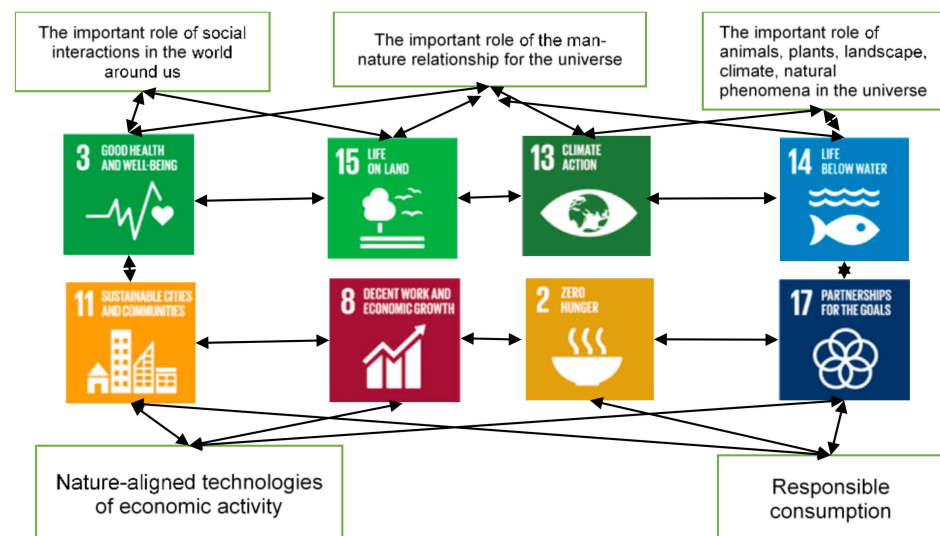


Figure 2. Connections between the objectives of the environmental education program and the Sustainable Development Goals.

Figure 2 demonstrates the relations between the objectives of the environmental education program and the Sustainable Development Goals (SDGs). On the one hand, the direction of the arrows shows how the SDGs determine the significance of the objectives of the designed education program. On the other hand, the arrows show how the program motivates sustainable behavior through the activities, which contributes to the implementation of specific SDG. For example, the objective of the program “to demonstrate responsible consumption, which implies caring for future generations while meeting the

needs of the current generation” is related to the SDGs aiming to make human settlements resilient and sustainable today and in the future, end hunger and the needs of indigenous communities, and develop partnerships to achieve the SDGs. The arrows between the Sustainable Development Goals highlight their conceptual relationship as a cohesion of social, environmental, and economic dimensions.

The objectives of the environmental education program are achieved through the content of the environmental education program. For example, to demonstrate the importance of the human–nature relationship, the program includes a story about nanny dogs helping to take care of children. When adults leave the chum, the nanny dogs do not allow the children to leave a safe place and to approach the fire. Adults feel calm when their children are under the supervision of the nanny dogs. These dogs are well regarded and treated like family members; they can live in the chum and eat from the common table. Another example is that the Nenets also take care of food resources for reindeer, which is why they do not live in the same place for a long time, thus providing the opportunity to restore the vegetation cover, which implies a concern for future generations while meeting the needs of the current generation. The program demonstrates the role of social interactions in the life of the indigenous peoples of the North through examples illustrating the interdependence and mutual assistance between members of the same family. For instance, when the younger children go away to study, their brothers and relatives graze their reindeer. They take care of reindeer and nomadize together with their father and grandfather. This makes it easier to cope with difficulties, to care for reindeer, and to preserve the herd. The nature-aligned technologies of the Northern peoples deserve separate attention. For example, skis padded with fur increase the stability of the hunter during the shot. Thus, this program highlights a particular feature of the culture and economic life of the indigenous peoples of the North to achieve the program objectives.

The form of the implementation of educational activities is also of great importance. The guides use interactive ways of engaging program participants, such as solving riddles, referring to the visitors’ personal experience, or making a wish at a sacred site. For example, addressing the spirits with a request makes a strong impression on visitors, since the ritual is accompanied by creating a special atmosphere that emotionally and aesthetically affects visitors. While participants are playing the national games of the indigenous peoples, the guides are explaining what skills these games develop, what they teach, and what functions they perform in the community. For instance, throwing rings on sticks is an important exercise for future reindeer herders, who handle reindeer by throwing a loop of ropes over their horns. Visiting the Khanty house and the Nenets chum, the participants and representatives of the indigenous peoples are engaged in a friendly conversation on various topics: Economic features, hygiene issues, relations between the genders, an attitude towards children, and some others. The fire that visitors can see twice during their walking around the camp enhances the emotional impact. The first fire is made in the Nenets chum, and the second one is made at the end of the program when the tea is being prepared according to traditional recipes. Drinking tea with fresh bread, wild berries, and candies in the open air is a particularly pleasant moment of this program.

Thus, we analyzed the content and form of the environmental education program at the ethnic camp “Uvas Mir Khot” (Home of the Northern Peoples) in compliance with the elements of the contemporary environmental education. Table 1 shows the results of the analysis. The sign “+” marks the elements that were identified during the analysis. The sign “-” marks the elements that could not be identified or were not clearly expressed.

Table 1. Comparison of content elements of the contemporary environmental education and the environmental education program at the ethnic camp “Uvas Mir Khot” (Home of the Northern Peoples).

Content Elements of Environmental Education	Education Program at the Ethnic Camp	Forms of Educational Activities	Education Program at the Ethnic Camp
Multidisciplinarity [16,23]	+	Outdoor activity [42]	+
Direct, place-based experiences [7,22]	+	The integrity of the experience of cognition and self-knowledge [43]	+
Use of traditional knowledge and environmental wisdom of the indigenous peoples [44]	+	Engagement in discussing issues [15]	+
Building a responsible attitude towards the environment [42]	+	Interactivity [45]	+
Fostering environmental values [43]	+	Emotional and aesthetic impact through visual arts and music [17]	+
Emphasizing the importance of social solidarity in solving environmental problems [21]	+	Non-formal character of education [29]	+
		Discussion with students [18]	–
		Discussion of the content of the programs with all stakeholders [15,16]	–
Focus on real environmental issues [46]	–	Lifelong learning [9]	–

After having compared the content and form of the environmental education program at the ethnic camp “Uvas Mir Khot” (Home of the Northern Peoples) with the elements of the contemporary environmental education (Table 1), we concluded that the main content element of the program was a story about the traditional use of natural resources of indigenous peoples, their ecological values, and attitude to nature. The content elements are also presented by the interdisciplinary and local nature of the problems mentioned in the program. The program emphasizes the importance of social cohesion for coping with difficulties. However, there is no problem-oriented approach that could assess the general significance of the considered problems. The forms of educational activity marked in the table with a “+” sign are represented by outdoor activities, elements of self-knowledge, and the interactivity of the program. The education program assumes an emotional and aesthetic impact on visitors to enhance the educational effect. However, the content of the program was not expected to be discussed with the visitors; and stakeholders and scientists were not involved in the program design. Besides, the environmental education program does not include repeated events.

Measuring the effectiveness of the environmental education program at an ethnic camp “Uvas Mir Khot” (Home of the Northern Peoples) is described in the next section.

4. Materials and Methods

The experiment was organized as follows. The experimental group comprised 70 people who took part in a one-and-a-half-hour environmental education program at the ethnic camp “Uvas Mir Khot” (Home of the Northern Peoples). 140 people made up the control group; they did not participate in the program. All the participants were students of the Institute of State and Law of Tyumen State University aged 18–24. Among them, 160 were females and 50 were males. The control and experimental groups are balanced by gender, age, and education. We measured students’ participation, intention, and attitude to sustainable behavior via the online questionnaire.

To measure the effectiveness of the environmental education program, we used a ten-item questionnaire [24] (p. 619) based on the Theory of Planned Behavior (TPB), which was established by Ajzen [25,47]. This theory aiming to explain the influence of various factors on social behavior includes three social psychological factors such as attitudes, norms, and perceived behavioral control (PBC).

Environmental education aims to change people’s behavior towards nature. The described education program also focuses on behavior change. TPB was chosen as a tool for measuring the program effectiveness, which allows noticing a change in intentions to behave sustainably, even if such behavior has not yet become a social norm. TPB argues that attitudes, subjective norms, and perceived behavioral control are associated with corresponding sets of meaningful behavioral, normative, and control perceptions about behavior [25,47]. According to this theory, beliefs do not depend either on the amount of information available to the individual, or on its reliability [24,47]. However, they direct intentions and behavior through a shared belief in the success of the activity: “people’s behavior is strongly influenced by their confidence in their ability to perform it (i.e., by perceived behavioral control)” [47] (p. 102). Perceived behavioral control in this theory is associated with intention, which is a synthesis of attitudes, individual norms, and perceptions of control.

TPB has become the most influential attitude–behavior model in socio-psychological and environmental psychology [20] (pp. 25–26). Comparing this model with others, the researchers came to the conclusion that TPB gives an adequate description of the relations between the concepts used [48,49]. In fact, many researchers use TPB efficiently while examining the influence of social norms on consumer behavioral intention [50,51] and pro-environmental behavior [52,53].

The questionnaire used by Heeren et al. [24] was extended by adding two items about two types of sustainable behavior that have become widespread in recent years: “sorting out the garbage” and “participating in the exchange of books, clothes, toys” (Appendix A). The items were divided into three blocks of 12 each: (1) Reflection on sustainable behavior, (2) intentions to follow sustainable behavior, (3) an attitude to behavior. The responses to the items about own behavior were ranked on a 10-point scale: From “never” (0 points) to “always” (10 points). The responses to the items about intentions were ranked from “I am unsure if I would do that” (0 points) to “I am sure if I would do that” (7 points). The responses to the items about acceptability of behavior were ranked from “this behavior is unacceptable for a modern person” (0 points) to “this is what a modern person should do” (7 points).

Data was collected via email during the period from October 2019 to March 2020. The study finished during the pandemic, which had an impact on its results. The participants of the experimental group filled in the questionnaire on the same day after visiting the ethnic camp. The statistical data processing was done using the program SPSS 19. We used the T-test (Student’s test) that is a statistical test to assess the differences between two independent samples. This parametric highly sensitive criterion is suitable for comparing unrelated groups that are normally distributed. Thus, we used it to compare the control and experimental groups, since they were normally distributed and sufficiently large (N).

5. Results

Comparison of data on individual items of the questionnaire between the experimental and control groups can be seen in Table 2.

Our hypothesis about the impact of visiting the camp on the change in the Attitude Norm PBC was not confirmed. We found that the respondents in the control group gave more environmentally friendly answers to a number of items of the questionnaire than the respondents of the experimental group did.

In Table 2, the questionnaire items, for which significant differences were found, are underlined.

Let us consider them in more detail, using Figure 3.

The respondents of the control group ride a bicycle or walk short distances significantly more often than the respondents of the control group, preferring these means of transport to others (norm), and they plan to do so in the future (Attitude).

The respondents, who did not visit the camp, are willing to be more careful with paper, save it, print on both sides of the paper (Attitude), and believe that this practice is right and appropriate in the modern lifestyle (PBC).

Unlike the respondents in the control group, the respondents in the experimental group were less likely to make choices about purchasing organically grown food (PBC).

The respondents in the control group are significantly more likely to sort out the garbage before throwing it away (norm).

The comparison of data on individual items of the questionnaire between groups of men and women showed a large number of significant differences. In Table 3, the questionnaire items, for which significant differences were found, are underlined.

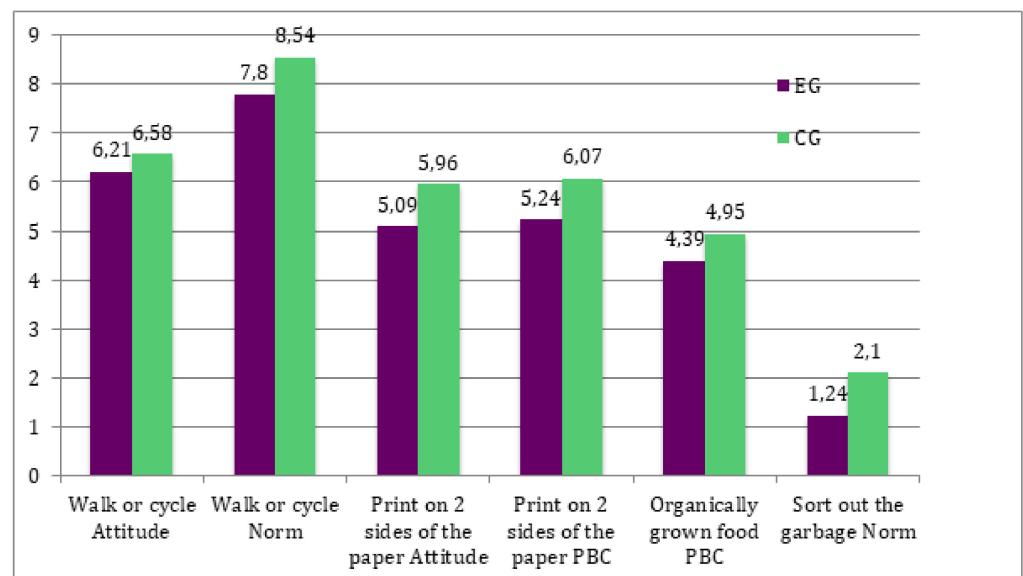


Figure 3. Significant differences in the control and experimental groups.

Table 2. Comparison of the experimental and control groups by Student's test.

Model	Experimental Group (N = 70)			Control Group (N = 140)		t-Test	p-Value
	M	SD	M	SD			
1. I turn off the lights in my room if it is empty.	Attitude	6,69	1,08	6,53	1,23	0,95	0,37
	Norm	8,71	1,95	8,35	2,51	1,16	0,29
	PBC	6,53	1,15	6,62	1,10	-0,56	0,57
2. I use a reusable water bottle.	Attitude	5,37	2,35	5,25	2,24	0,36	0,72
	Norm	5,56	3,57	5,23	3,03	0,66	0,49
	PBC	5,37	2,20	5,58	1,95	-0,67	0,49
3. I try to encourage people to turn off lights.	Attitude	6,09	1,65	5,91	1,95	0,67	0,53
	Norm	7,11	3,26	7,07	3,26	0,09	0,93
	PBC	6,07	1,64	6,04	1,75	0,12	0,91
4. I take the stairs instead of an elevator.	Attitude	5,70	2,01	5,87	1,79	-0,60	0,53
	Norm	6,16	3,28	6,46	3,27	-0,64	0,52
	PBC	5,86	1,85	6,07	1,54	-0,83	0,38
5. I walk or ride a scooter/bicycle if the destination is not far away.	Attitude	6,21	1,52	6,58	1,11	-1,78	0,05
	Norm	7,80	2,74	8,54	2,13	-1,97	0,03
	PBC	5,94	1,78	6,35	1,25	-1,71	0,06
6. I use paper for writing or printing on both sides.	Attitude	5,09	2,20	5,96	1,77	-2,91	0,00
	Norm	6,09	3,28	6,85	3,13	-1,62	0,10
	PBC	5,24	2,09	6,07	1,48	-2,97	0,00
7. I join fellow travelers for long journeys by car.	Attitude	2,90	2,65	2,40	2,58	1,30	0,19
	Norm	2,43	3,18	2,19	3,05	0,51	0,60
	PBC	3,24	2,40	3,26	2,49	-0,06	0,95
8. I buy organically grown food/grow food.	Attitude	4,20	2,44	4,68	2,19	-1,39	0,15
	Norm	3,54	2,88	3,96	3,06	-0,98	0,34
	PBC	4,39	2,16	4,95	1,90	-1,86	0,05
9. I use a reusable cloth bag.	Attitude	5,06	2,47	5,14	2,32	-0,24	0,81
	Norm	4,59	3,85	4,39	3,71	0,35	0,73
	PBC	5,70	2,16	5,74	1,95	-0,14	0,89
10. I buy or accept second-hand clothing donations more often than buying new ones.	Attitude	1,39	2,16	1,50	1,83	-0,38	0,69
	Norm	1,00	1,88	0,89	1,75	0,40	0,68
	PBC	2,23	1,90	2,40	2,01	-0,61	0,55
11. I sort out the garbage before throwing it away.	Attitude	3,49	2,50	4,05	2,45	-1,55	0,12
	Norm	1,24	1,90	2,10	2,83	-2,60	0,02
	PBC	5,36	2,18	5,89	1,78	-1,76	0,06
12. I participate in books, clothes, toys exchanges.	Attitude	3,00	2,55	3,50	2,61	-1,33	0,19
	Norm	1,60	2,29	1,94	2,57	-0,98	0,35
	PBC	4,29	2,47	4,34	2,30	-0,14	0,88

Table 3. Comparison of men and women by Student's test.

Model		Male Group (N = 50)		Female Group (N = 160)		t-Test	p-Value
		M	SD	M	SD		
1. I turn off the lights in my room if it is empty.	Attitude	6,36	1,26	6,65	1,16	-1,45	0,13
	Norm	8,14	2,36	8,58	2,33	-1,14	0,25
	PBC	6,04	1,55	6,76	0,87	-3,14	0,00
2. I use a reusable water bottle.	Attitude	4,68	2,57	5,48	2,15	-1,99	0,03
	Norm	5,04	3,08	5,43	3,26	-0,77	0,45
	PBC	4,68	2,18	5,77	1,92	-3,17	0,00
3. I try to encourage people to turn off lights.	Attitude	5,38	2,26	6,16	1,67	-2,25	0,01
	Norm	6,72	3,23	7,20	3,26	-0,92	0,36
	PBC	5,22	2,19	6,31	1,45	-3,31	0,00
4. I take the stairs instead of an elevator.	Attitude	5,82	1,79	5,81	1,89	0,03	0,98
	Norm	6,38	3,21	6,36	3,29	0,05	0,96
	PBC	5,94	1,82	6,02	1,60	-0,27	0,77
5. I walk or ride a scooter/bicycle if the destination is not far away.	Attitude	6,06	1,79	6,58	1,04	-1,96	0,01
	Norm	8,14	2,40	8,34	2,37	-0,51	0,61
	PBC	5,88	1,70	6,32	1,36	-1,67	0,06
6. I use paper for writing or printing on both sides.	Attitude	4,44	2,46	6,06	1,60	-4,37	0,00
	Norm	5,30	3,26	7,00	3,07	-3,26	0,00
	PBC	4,86	1,98	6,09	1,56	-4,01	0,00
7. I join fellow travelers for long journeys by car.	Attitude	2,72	2,82	2,52	2,55	0,45	0,64
	Norm	2,28	2,91	2,27	3,16	0,02	0,98
	PBC	3,18	2,58	3,28	2,42	-0,25	0,80
8. I buy organically grown food/grow myself.	Attitude	3,70	2,31	4,78	2,21	-2,90	0,00
	Norm	3,18	2,74	4,03	3,06	-1,85	0,08
	PBC	4,18	2,24	4,94	1,89	-2,18	0,02
9. I use a reusable cloth bag.	Attitude	4,34	2,29	5,36	2,34	-2,72	0,01
	Norm	4,08	3,66	4,58	3,78	-0,83	0,42
	PBC	5,04	2,20	5,94	1,92	-2,61	0,01
10. I buy or accept second-hand clothing donations more often than buying new ones.	Attitude	1,38	2,26	1,49	1,84	-0,31	0,73
	Norm	0,60	1,39	1,03	1,89	-1,75	0,14
	PBC	1,92	1,95	2,48	1,96	-1,76	0,08
11. I sort out the garbage before throwing it away.	Attitude	3,54	2,60	3,96	2,44	-1,02	0,29
	Norm	2,20	2,70	1,69	2,54	1,17	0,23
	PBC	5,18	2,31	5,88	1,78	-1,95	0,03
12. I participate in books, clothes, toys exchanges.	Attitude	2,16	2,65	3,70	2,47	-3,64	0,00
	Norm	1,06	1,78	2,07	2,62	-3,10	0,01
	PBC	3,34	2,50	4,63	2,23	-3,26	0,00

Let us consider them in more detail, using Figure 4.

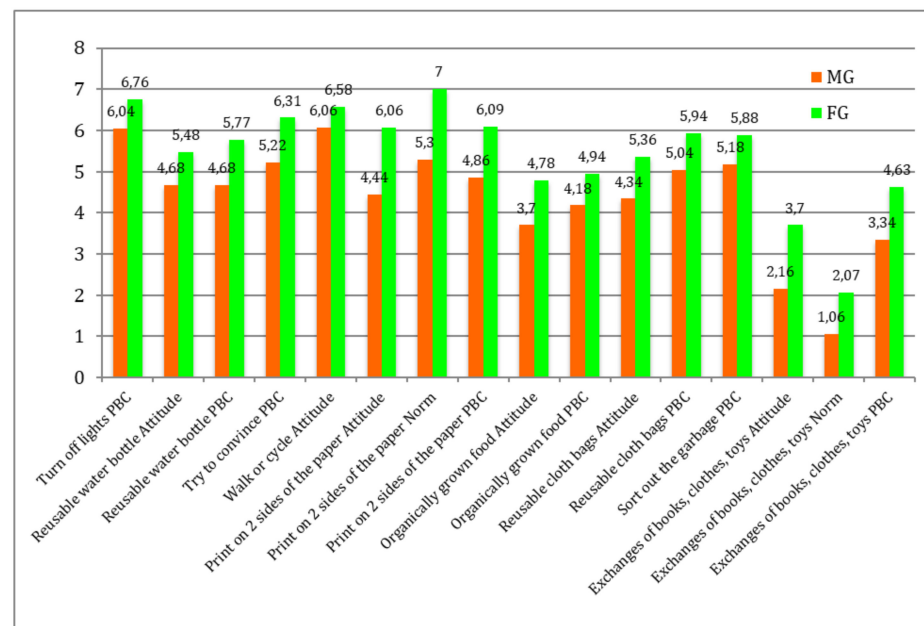


Figure 4. Significant differences in the male and female groups.

In general, the profiles of adherence to sustainable behavior in men and women have an identical pattern; however, adherence to sustainable behavior in women is more developed. Unlike men, women are significantly more likely to save paper and use exchangers (Norm), consider these activities a good practice (PBC), and intend to continue to do so more often (Attitude). In their Attitude intentions, the willingness to use reusable bottles and bags is more often noted. They believe that it is a right and careful attitude to nature, so it is necessary to do so (PBC). Women, unlike men, find it right to control the use of light (PBC).

In addition, women would like to buy organically grown products more often than men and approve of this attitude towards the problem (Attitude, PBC). In almost all items of block 3—approval of sustainable behavior, except for items 4 (stairs instead of an elevator), 7 (car sharing), and 10 (second-hand), women chose high scores significantly more often than men. Thus, we can note that, according to most parameters, women are more interested in sustainable behavior (PBC), demonstrate it in their behavior, and intend to show it in the future.

6. Discussion

Awareness of the environmental problems threatening humanity has led to the need to create mechanisms resulting in sustainable development and sustainable environmental behavior. In particular, great attention is paid to environmental education and awareness. The environmental education program at the ethnic camp “Uvas Mir Khot” (Home of the Northern Peoples) is based on the principle that effective environmental education is not just the transfer of information, but a set of activities [18] related to the traditional culture of the northern peoples and used to develop and strengthen environmental attitudes, values, and knowledge. These activities include using game elements and art practices, stimulating self-knowledge, and emphasizing some universal values. This approach to environmental education might be efficient for two reasons.

The first reason is the existence of traditional environmental values, such as responsibility, care, compliance, as the main characteristics of the practical behavior of indigenous peoples [33] (p. 1). Thus, the environmental education program at the ethnic camp demonstrates moderation and thrift in the use of water, food, and natural resources. The experience of the indigenous peoples contains a system of values that can and should be used as the pillars for education and training, leading to sustainable behavior. The traditional

culture keeps a variety of strategies to preserve the ancestral experience to protect biodiversity, including integrating indigenous cultural experiences into the education program and demonstrating custom rules concerning nature that will not only harmonize human–nature relations, but also support indigenous culture [43] (p. 540). Learning about the culture and the experience of the indigenous people through forms of educational activities such as playful, aesthetic, and emotional activities (Table 1) allow for the transmission of these values and contribute to knowledge internalization. This is the main content of the environmental education program (Table 1).

The second reason is the informality and peculiarity of environmental education at the ethnic camp. The ethnic camp is widely used to promote environmental education. For example, the goal of Eco Learning Camp near Tahura Djuanda (Indonesia) is to foster a respectful attitude towards nature in the younger generation, cultivating care and love for nature and the local community [14] (p. 103). “When sharing, we will find ourselves meaningful and happy” [14] (p. 104). This simple truth is difficult to grasp in today’s individualized society. According to our research findings, the exchange is not a common social practice, as well as sharing. It is important that the format of an ethnic camp assumes a direct contact with nature, which is a non-trivial experience for modern students. [33] (p. 2). During the visit to the camp, the students could walk in the forest, sit by the fire, and drink herbal tea in the open air. The unique experience of interacting with the natural environment forms environmental responsibility and values [42,45,54]. Besides, the students participated in national outdoor games, which enhance the effect of connecting with nature [43] because they had to think about air resistance, wind force, and the weight of things made of wood.

Thus, the environmental education program at the ethnic camp contains several elements corresponding to contemporary environmental education. However, the study of the effectiveness of this program showed that the intention of the students of the experimental group to sustainable behavior is not higher in comparison with the control group. Moreover, the students in the control group demonstrate higher indicators on a number of questionnaire items: Using a bicycle, double-sided printing, buying organically grown food. We assume that this can be explained due to the global factor of influence of the pandemic, because the questionnaire of the experimental group was conducted before the pandemic, and the questionnaire of the control group was conducted during the pandemic, which made students think and revise their environmental behavior. During the lockdown, people began to use resources more carefully (Norm, PBC), avoid public transport, prefer bicycles and walks (Norm, Attitude), and order local products for home delivery (PBC, Attitude). The data obtained show a change not only in social norms and attitudes towards behavior, but also in ideas about the effectiveness of their behavior. This situation raises the need for further research on the program effectiveness in order to obtain new results and fully use potential of TPB to assess the impact of the program on sustainability intentions.

At the same time, it was shown that gender significantly differentiated sustainable behavior: Women demonstrated a more careful attitude to resources than men. These results are consistent with similar findings of other researchers [55,56]. Women likely tend to take a constructive position and to value life more than men because they can create it by giving birth to children. Women participate in social activity, volunteering, and cooperation, while men are more prone to competition and power (including over nature). The idea of conquering nature is a masculine idea. In addition, the researchers note that gender socialization can result in that women focus on children’s health, and men focus on children’s economic well-being, with opposite consequences for the environment [57] (p. 200). Probably, women’s willingness to sustainable behavior can be used as a resource for the development of the environmental movement. Additionally, it may be assumed that some new motivators and tools are needed, rather than those implemented in the program so that men can reconsider their attitude towards sustainable behavior [58].

There are general trends for men and women in both groups. For example, the most unpopular type of eco-activity is the use of second-hand clothes. Perhaps young people

are concerned with issues of fashion and attractiveness due to age characteristics, while old clothes seem unattractive to them.

We assume that the research results were influenced by different attitudes towards non-humans—animals, plants, rivers, etc. The experience of indigenous peoples include interaction, respect, and cooperation with all things around them [32]. The education program at the ethnic camp contains some examples illustrating this cooperation, for example, the story about the dog nanny and some others. The basis for this attitude towards non-humans is animism, which is the perception that all natural entities have a soul. Such perception might be difficult to understand for modern people because their mindset is built on hierarchy and anthropocentrism. Perhaps this difference in mindsets is one of the reasons why we did not find a significant impact of the environmental education program on the students' willingness to follow sustainable behavior. A deeper study of the conceptual foundations of traditional environmental values and sustainable development goals is required to synchronize and harmonize them within the framework of education programs.

The study of the effectiveness of the program at ethnic camp was carried out immediately after attending the educational event. However, some researchers note that the effects of environmental education can be long-term; most ecological problems in the short term cannot be solved [16,18]. In addition, environmental education focuses on the transformation of experience; this is also the reason why, therefore, quick results cannot be received. Perhaps, the students will feel the effect of the education program later; thus, it makes sense to re-measure the effectiveness after a while, using a longitudinal follow up questionnaire.

According to some researchers, the decrease in the effectiveness of environmental education programs is facilitated by the focus on information and insufficient attention to competencies and behavior [16]. Students receive information about the sustainable behavior of indigenous peoples, which imposes on their ideas about the current environmental crisis; but they do not receive advice on how they should change their behavior in this regard. From this point of view, the questionnaire on sustainable behavior is a kind of clue about the application of behavioral strategies in the modern world, although the connection between the information received and the proposed examples of behavior is not obvious to them. Meanwhile, the ultimate goal of environmental education should be the acquisition of responsible environmental behavior [10], so the connection between the education program and the daily practices of modern people should be clearly identified.

In addition, the studied education program did not reveal such important elements as discussions with students on the issues, suggesting a problem-oriented approach, a discussion of the content of education programs with all stakeholders, and the repetition of educational events [9,18]. The collaboration with scholars while designing this environmental education program could have expanded the discussed agenda and integrated real behavioral situations and global problems into the education program.

At the same time, the study made it possible to create a scientific basis for adjusting the content and forms of the environmental education program. In the future, the questionnaire can be used for constant monitoring of the visitors' primary attitudes and for targeted interaction with visitors, discussing the issues of the relationship between the environmental practices of the indigenous peoples of the North and the daily sustainable practices used by visitors.

We consider this program as one of the conditions for changing the environmental behavior of people. The main role of this program is to foster the belief among city dwellers that it is possible to change their daily practices through familiarization with other environmental experiences. A number of factors contribute to this: The unusual content of the program arouses cognitive interest, the forms of educational activities promote engagement, etc.

The identified limitations require the alteration of the studied environmental education program, but do not diminish the importance of such initiatives. Non-formal educational

initiatives, described in the paper, are an effective way to search for new educational forms and content elements, while formal environmental education is changing slowly and does not correspond to the current environmental agenda.

7. Conclusions

In this paper, we assessed the form, content, and effectiveness of the environmental education program at the ethnic camp “Uvas Mir Khot” (Home of the Northern Peoples), and identified the strengths and weaknesses of the program.

This program is rich in content, including the traditional knowledge and ecological wisdom of the indigenous peoples. The program contains several examples illustrating the real life of the Khanty, Mansi, and Nenets, shows local environmental problems and possible ways to solve them with the help of social solidarity, and demonstrates users’ attitude to nature.

Based on the analysis of the environmental education program, we put forward the hypothesis that this program will increase students’ readiness to participate in sustainable behavior, but the study of the effectiveness of this program showed that the intention of the students of the experimental group to sustainable behavior is not higher in comparison with the control group. The results in the control group were influenced by the pandemic factor, since the questionnaire in the experimental group was conducted before the pandemic, and the questionnaire in the control group during the lockdown. The pandemic forced many practices to be reconsidered, including everyday ones. In this situation, the short-term impact of the environmental education program at the ethnic camp could not be assessed. This encourages us to continue assessing this program effectiveness.

The limitation of the study is related to the fact that three groups of factors—attitudes, norms, and perceived behavioral control (PBC)—were studied only using the questionnaire. Perhaps the study should have been supplemented with focus group work and semi-structured interviews to understand how individual resources, capabilities, and knowledge might influence the decision to engage in sustainable behavior. However, due to the pandemic, these possibilities were limited.

A significant limitation of the study is the specificity of the group that comprised young people aged 18 to 24 getting a higher education. Therefore, the results cannot be extrapolated to other age groups. In addition, the students were not given any environmental problems to solve, so a problem-solving approach was absent, and the program did not offer a discussion as an effective educational technique. Besides, the transformation of experience is impossible in a very short time, and the effect of environmental education can be postponed in the time since this requires awareness and deep inner reflection.

Perhaps, the alteration of the environmental education program, taking into account the identified limitations, can be considered as a useful addition to the set of elements of environmental education used by public organizations aiming at the formation of sustainable behavior. The study demonstrates the possibilities for indigenous communities to be engaged in the global agenda to solve the environmental crisis and for the government to involve NGOs in the development of non-formal environmental education.

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Institutional Review Board Statement: The ethical review and approval of this study was canceled because no personal data was used. Students filled out the questionnaires anonymously and voluntarily, which automatically meant that they agreed to participate in the study.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

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Appendix A

The questionnaire contains the following items:

1. Turn off lights in empty room where they live
2. Use a reusable water bottle
3. Try to convince someone to turn lights off
4. Use the stairs instead of the elevator for the first floor
5. Walk or cycle when going somewhere nearby
6. Print on both sides of the paper
7. Take transit when going somewhere far away
8. Buy organically grown food/Grow food
9. Use reusable cloth bags when shopping
10. Buy second-hand clothes rather than new
11. Sort out the garbage
12. Participate in exchanges of books, clothes, toys

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