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ORIGINAL

Experiential environmental education program to strengthen environmental conservation attitudes among first-year students at a private university in the north, 2020

Programa de educación ambiental vivencial para fortalecer las actitudes de conservación del medio ambiente en estudiantes del primer ciclo de la universidad privada del norte 2020

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ABSTRACT

The present study was proposed in order to demonstrate that the application of the Experiential Environmental Education Program is a factor that contributes to the strengthening of environmental conservation attitudes in first-cycle students of the Universidad Privada del Norte, 2020. Methodologically, the study has a quantitative approach, with an experimental design in which we worked with a population made up of two groups, one control group made up of 30 students and another experimental group made up of 30 students from the first cycle of the Universidad Privada del Norte, both groups were I apply a questionnaire as an instrument which went through processes of reliability and validity. The data collected and interpreted allowed us to affirm that the experiential environmental education program as a didactic strategy improves the development of environmental conservation attitudes in first-year students of the Universidad Privada del Norte, 2020 is significant, therefore the general hypothesis is accepted. of research, when observing that in the posttest ρ =0,000 is less than the value of theoretical significance α =0,05.

Keywords: Environmental Education Program; Environmentalist Attitudes; Universitary Students.

RESUMEN

El presente estudio se realizó para demostrar que la aplicación del Programa de Educación Ambiental Vivencial es un factor que contribuye al fortalecimiento de actitudes de conservación del medio ambiente en estudiantes del primer ciclo de la Universidad Privada del Norte. Metodológicamente el estudio es cuantitativo, con diseño cuasi experimental. Se trabajó con una población de 60 estudiantes distribuidos en dos grupos: uno de control conformado por 30 estudiantes y otro experimental conformado por 30 estudiantes del primer ciclo de la Universidad Privada del Norte. En ambos grupos se aplicó un cuestionario que previamente fue sometido a procesos de fiabilidad y validez. Los datos recolectados e interpretados permiten afirmar que el programa de educación ambiental vivencial, como estrategia didáctica, mejora el desarrollo de actitudes de conservación del medio ambiente en estudiantes del primer ciclo de la Universidad Privada del Norte. La influencia es significativa por lo tanto se acepta la hipótesis general de investigación, al observarse que, en el post test, el ρ = 0,000, valor menor que el α = 0,05.

Palabras clave: Programa de Educación Ambiental; Actitudes Ambientalistas; Estudiantes Universitarios.

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INTRODUCTION

The planet is being degraded day by day by human action and, contradictorily, human beings are not acting to address and solve this serious problem. International organizations are becoming aware that environmental education and the training of responsible citizens in caring for their environment will play an important role in the coming years in the conservation of the environment and, possibly, in its rescue.

Environmental education, as a formative process, will inform citizens about the environmental reality in which we find ourselves, sensitizing them to take on a leading role in change, capable of promoting conservation attitudes and creating strategies for the care and protection of the environment. The UN, in the guidelines defined at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992, proclaimed December 20, 2002, as the Decade of Education for Sustainable Development 2005-2014. The UN proposals invited countries to prepare action plans and educational projects that contribute to social, economic, and environmental development, but it was up to the countries to choose the guidelines to follow.[1,2,3,4,5,6,7,8] The UN Agenda contains 17 sustainable development goals, including reducing inequalities, peace with justice, supportive institutions, and responsible production and consumption, among others.[2,9,10,11,12,13,14,15]

Since humans became aware that some of their activities cause damage to the environment, they have tried to heal this relationship by promoting a culture of living in harmony between their economic needs and nature. The advancement of technology and its application to the exploitation of natural resources went unnoticed for a long time. Whether due to human ill will, irresponsibility, greed, or simply ignorance, it is clear that many of our actions, however small, affect the natural order and aggravate the environmental crisis.[3] The cultural trend that drives general concern for the environment is relatively recent and gained greater importance after the 1992 Rio Summit. Since then, countries have begun to legislate environmental care and conservation policies.[4,16,17,18,19,20,21]

However, other major events laid the foundations for education. Skills in environmental care, conservation, and appreciation emerged as an alternative solution in environmental education, recognized for the first time under that name at the United Nations Conference on the Human Environment, held in Stockholm in 1972.

Environmental education is a set of practices that, in formal education, aim to create attitudes that are respectful of the environment and that manifest themselves in behaviors that favor its conservation.[27,28,29,30,31,32] In 1975, in Belgrade, the fundamental objectives of environmental education were established: first, that all students should become aware of and acquire knowledge that will serve as a basis and reference; second, to generate attitudes; third, to develop skills in different areas; and fourth, to build the capacity for participation and evaluation of all of the above.[4,33,34,35,36,37,38,39]

The Regional Report on Human Development in Latin America and the Caribbean by the United Nations Development Programme [5,40,41,42,43,44,45,46] refers to the adoption of the 2030 Agenda for Sustainable Development: "At the heart of this agenda is a simple but radical imperative: to end poverty in all its forms while caring for and protecting the planet. This universal and holistic agenda will be implemented in each country according to the specific priorities established in national plans and policies. As a multidimensional agenda par excellence, this report is considered to be a contribution to the process of adapting the Agenda to the specific characteristics of each country."[5,47,48,49,50,51,52,53,54]

What effects does the implementation of the Experiential Environmental Education Program have on strengthening environmental conservation attitudes among first-year students at the Universidad Privada del Norte?

Objective

To demonstrate that the implementation of the Experiential Environmental Education Program is a factor that contributes to strengthening environmental conservation attitudes among first-year students at the Universidad Privada del Norte.

METHOD

Type and design of the research

This is an applied research project that seeks to explain how to act, build, and modify environmental behaviors. We are concerned with immediate action on a circumstantial reality rather than the development of knowledge.[6]

This research is carried out in an interdisciplinary field such as education, sociology, and applied psychology. The research is applied, as it involves the practical application of scientific knowledge. It constitutes the first effort to transform knowledge into technologies, which is what we want to achieve.[6]

Level or scope

This research is explanatory in scope, as it goes beyond concepts, phenomena, or the establishment of relationships between concepts.[6]

Study design

The research was conducted based on a quasi-experimental design, which allowed us to manipulate one variable to see the effects it produces on another.[7] This research is quasi-experimental because the subjects are already established. We have worked with an experimental group and a control group, applying the independent variable (the Environmental Education Program) to one of them.[6]

Achievement is monitored through a pre-test and post-test design with a control and experimental group. The following sequence was used to help demonstrate the hypotheses:

G.E: $\underline{O_1 \quad X \quad O_2}$

G.C: $O_1 \quad - \quad O_2$

Dónde:

O_1 = Pre test

X = Tratamiento, consistente en la aplicación del programa.

O_2 = Post test

G.E. = Grupo experimental

G.C. = Grupo de control

In this design, the subjects are already established.

Study population

We have worked with DEVELOP.

Sample

The sample for our work is DEVELOP.

Sample selection

The sample consists of 60 first-year students, who were divided into two groups
Control group, consisting of 30 students.
Experimental group, consisting of 30 students.

Data collection instruments

Environmental Conservation Attitude Inventory.

Technical data sheet

Name: inventory of environmental conservation attitudes.
Adapted by: Ítalo Andres Diaz Horna.
Location: Universidad Privada del Norte.
Objective: to determine the level of development of environmental conservation attitudes among students
Duration: approximately 30 minutes.
Content: a Likert scale questionnaire has been developed with a total of 30 items, divided into three dimensions.

Hypothesis testing strategy

The technique used was a questionnaire that consisted of collecting information from the study sample. The questionnaire contains questions based on the indicators of the variable. The structured questionnaire is designed to measure the variables.[6]

Validity and reliability of the measurement instrument

The instrument has been validated and subjected to reliability tests. To this end, we have applied a pilot test to measure reliability. Validity was established through expert opinion, which was gathered using a questionnaire.

RESULTS

Descriptive results

Table 1. Application of the experiential program improves the development of environmental conservation attitudes in first-year students at the Universidad Privada del Norte, 2020

	High	Regular	Low
Environmental conservation attitude	(112 -150)	(71 - 111)	(30 - 70)
Emotional attitudes	(37 - 50)	(24 - 36)	(10 - 23)

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Cognitive attitudes	(37 - 50)	(24 - 36)	(10 - 23)
Affective dispositional attitudes	(37 - 50)	(24 - 36)	(10 - 23)

Table 2. Development of attitudes toward environmental conservation

	Control group (n=30)		Experimental group (n=30)	
Indicator	**Frequency**	**Percentage**	**Frequency**	**Percentage**
		Pre-test		
High				
Average	5	16,7	4	13,3
Low	25	83,3	26	86,7
Average	63,96		65,16	
Standard deviation	6,1222		15,8660	
		Post test		
High	1	3,3	6	20
Average	8	26,7	24	80
Low	21	70		
Average	71,9000		104,8333	
Standard deviation	22,7858		6,8636	

The results shown in the table regarding the pre-test show that 16,7 % of students in the control group consider the development of environmental conservation attitudes to be at a regular level, 83,3 % consider it to be at a low level, while 13,3 % of those in the experimental group consider it to be at a regular level and 86,7 % consider it to be at a low level.

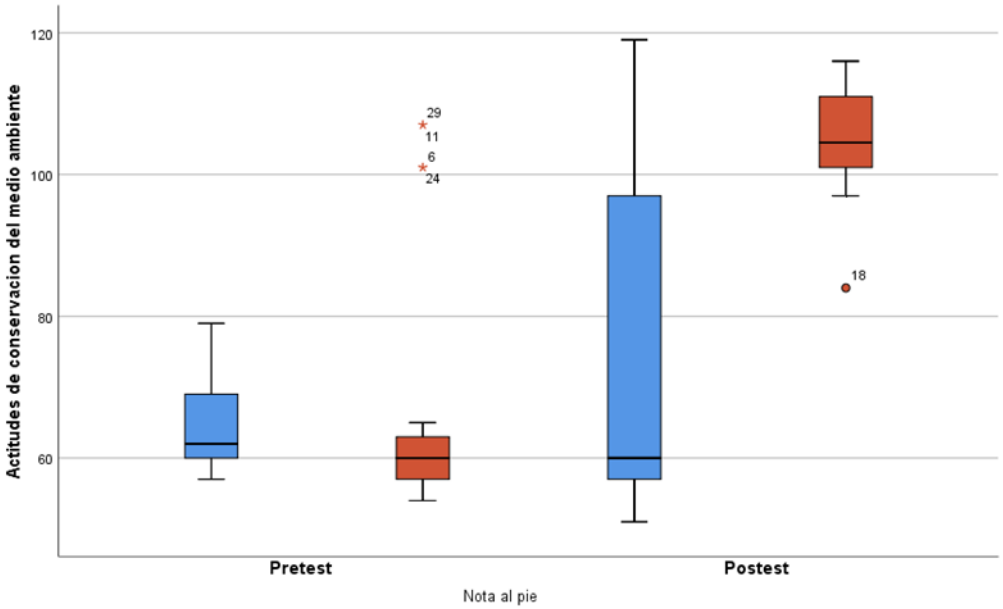

Figure 1. Application of the experiential program as a teaching strategy improves the development of environmental conservation attitudes in first-year students at the Universidad Privada del Norte, 2020

Similarly, with regard to the post-test results, 3,3 % of students in the control group considered their level to be high, 26,7 % considered it to be average, and 70 % considered it to be low, while 20 % of students in the experimental group considered their level to be high and 80 % considered it to be average.

Figure 1 shows that, with regard to the development of environmental conservation attitudes in the pre-test, the students in the experimental group were similar to those in the control group, while in the post-test, the students in the experimental group had a significant advantage over those in the control group thanks to the application of the experiential program developed for the students in the experimental group.

Table 3. Application of the experiential program as a teaching strategy improves the development of affective attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte, 2020

	Control group (n=30)		Experimental group (n=30)	
Indicator	**Frequency**	**Percentage**	**Frequency**	**Percentage**
		Pre-test		
High				
Average	6	20	4	13,3
Low	24	80	26	86,7
Average	21,433		21,5667	
Standard deviation	2,25424		5,26984	
		Post test		
High	3	10	5	16,7
Average	7	23,3	25	83,3
Low	20	66,7		
Average	24,7		34,6	
Standard deviation	7,70199		2,41547	

The results shown in the table regarding affective attitudes in the pretest show that 20 % of students in the control group considered the development of affective attitudes toward environmental conservation to be at a fair level, while 80 % considered it to be at a low level. while in the experimental group, 13,3 % considered it to be at a regular level and 86,7 % considered it to be at a low level.

Similarly, with regard to the post-test results, 10 % of students in the control group considered it to be at a high level, 23,3 % at a regular level, and 66,7 % at a low level, while in the experimental group, 16,7 % were at a high level and 83,3 % at a regular level.

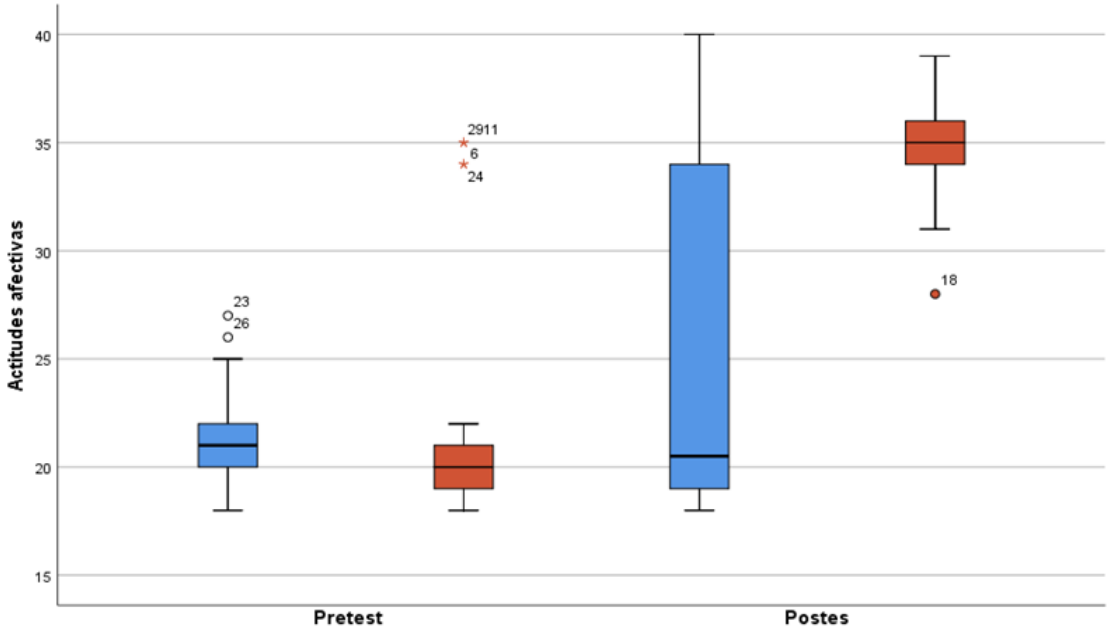

Figure 2. Application of the experiential program as a teaching strategy improves the development of affective attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte, 2020

Figure 2 shows that, with regard to the development of affective attitudes toward environmental conservation in the pretest, the students in the experimental group were similar to those in the control group, while in the post-test, the students in the experimental group had a significant advantage over those in the control group thanks to the application of the experiential program developed for the students in the experimental group.

The results shown in the table regarding cognitive attitudes in the pre-test show that 13,3 % of students in the control group consider the development of cognitive attitudes towards environmental conservation to be at a regular level, 86,7 % consider it to be at a low level, while those in the experimental group considered it to be at a high level (6,7 %), at a regular level (16,7 %), and at a low level (76,7 %).

Table 4. Application of the experiential program as a teaching strategy improves the development of cognitive attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte, 2020

	Control group (n=30)		Experimental group (n=30)	
Indicator	**Frequency**	**Percentage**	**Frequency**	**Percentage**
		Pre-test		
High			2	6,7
Average	4	13,3	5	16,7
Low	26	86,7	23	76,7
Average	21,1667		22,30	
Standard deviation	2,3937		5,8730	
		Post test		
High	3	10	9	30
Average	6	20	21	70
Low	21	70		
Average	23,6667		35,2000	
Standard deviation	7,41542		3,1338	

Similarly, with regard to the post-test results, 10 % of students in the control group considered their level to be high, 20 % considered it to be average, and 70 % considered it to be low, while 30 % of students in the experimental group considered their level to be high and 70 % considered it to be average.

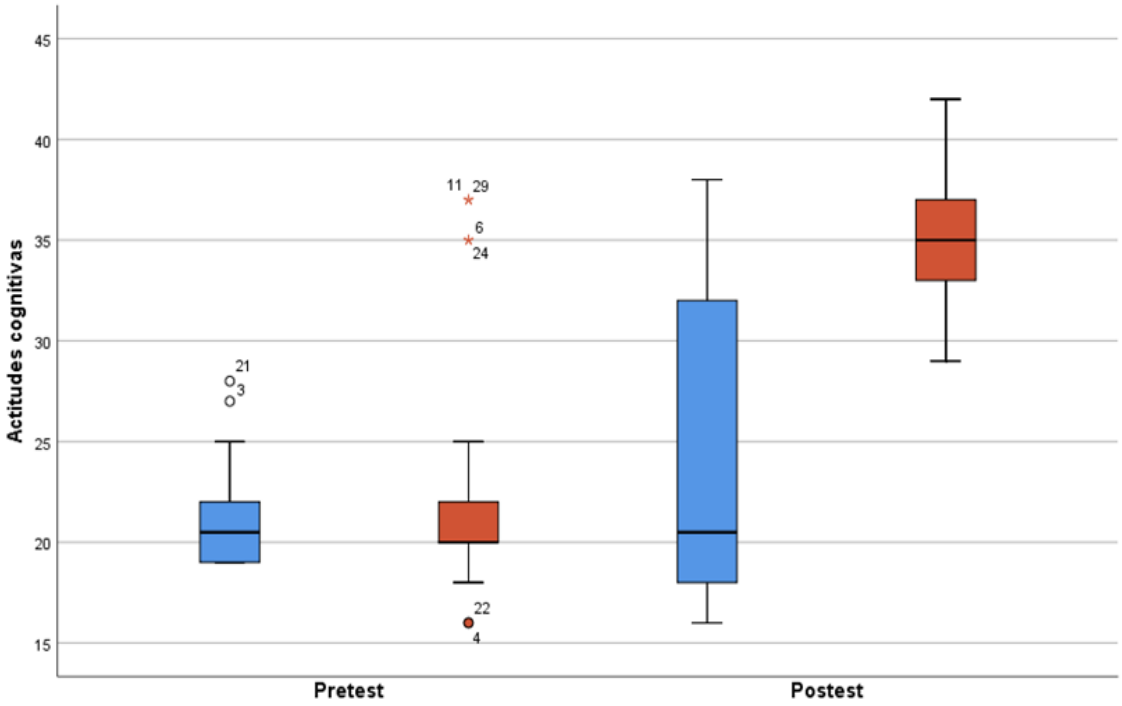

Figure 3. Application of the experiential program improves the development of cognitive attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte, 2020

Figure 3 shows that, with regard to the development of cognitive attitudes toward environmental conservation in the pre-test, the students in the experimental group were similar to those in the control group, while in the post-test, the students in the experimental group had a significant advantage over those in the control group thanks to the application of the experiential program developed for the students in the experimental group.

The results shown in the table regarding the active dispositional attitudes dimension in the pre-test show that 23,3 % of students in the control group consider the development of active dispositional attitudes towards environmental conservation to be at a regular level, while 76,7 % considered it to be at a low level. In contrast, 13,3 % of students in the experimental group considered it to be at a regular level and 86,7 % considered it to be at a low level.

Similarly, with regard to the post-test results, 3,3 % of students in the control group considered it to be at a high level, 26,7 % at a regular level, and 70 % at a low level, while 40 % of those in the experimental group were at a high level and 60 % at a regular level.

Table 5. Application of the experiential program as a teaching strategy improves the development of active dispositional attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte, 2020

	Control group (n=30)		Experimental group (n=30)	
Indicator	**Frequency**	**Percentage**	**Frequency**	**Percentage**
		Pre-test		
High				
Average	7	23,3	4	13,3
Low	23	76,7	26	86,7
Average	21,36		21,3	
Standard deviation	2,10882		5,0797	
		Post test		
High	1	3,3	12	40
Average	8	26,7	18	60
Low	21	70		
Average	23,53		35,0333	
Standard deviation	7,81569		2,68435	

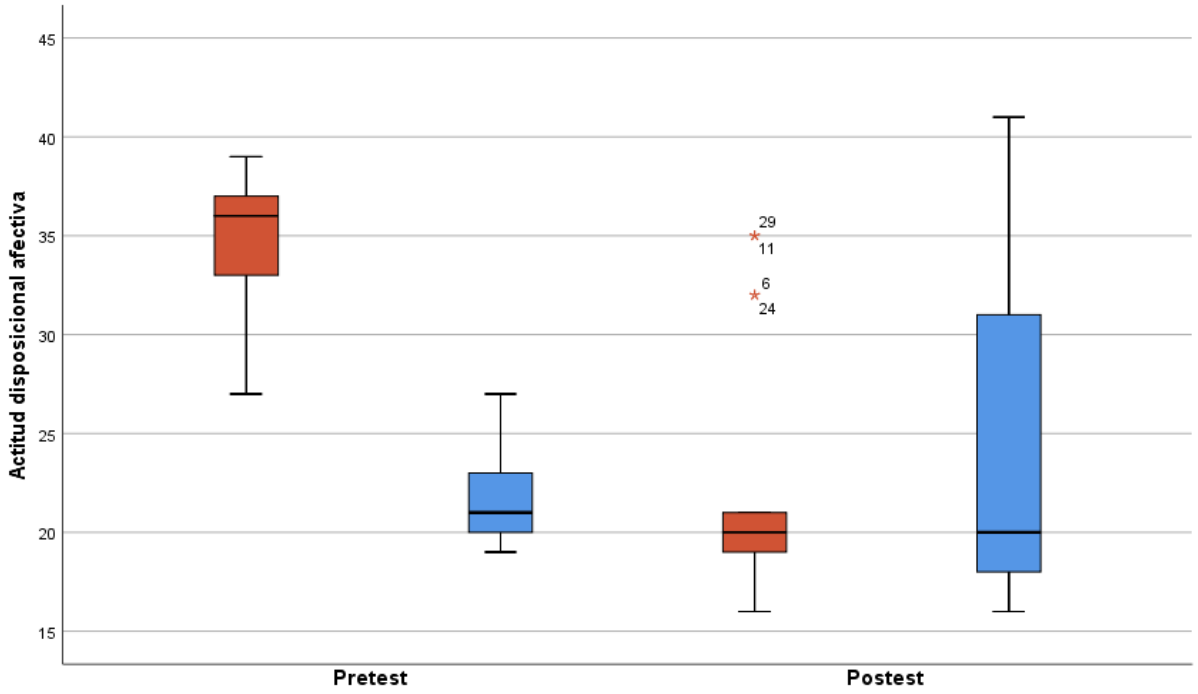

Figure 4. Application of the experiential program improves the development of active dispositional attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte, 2020

Figure 4 shows that, with regard to the development of active dispositional attitudes toward environmental conservation in the pretest, the students in the experimental group were similar to those in the control group, while in the post-test, the students in the experimental group had a significant advantage over those in the control group thanks to the application of the experiential program developed for the students in the experimental group.

Hypothesis testing

To test the hypotheses according to the results of the normality test, in some cases the Student's t-test was used if the normality assumption was met in both groups. Otherwise, the Mann-Whitney U test was used if the normality assumption was not met in one or both groups.

Normality test

Table 6. Normality test of the data

		Kolmogorov Smirnov								
		Control				Experimental				
Test		**Statistical**	**gl**	**Sig**	**Result**	**Statistics**	**gl**	**Sig**	**Result**	**Try using**
Pre-test	Attitude toward the environment	0,283	30	0,000	Not normal	0,371	30	0,000	Not normal	Mann Whitney U
	Affective	0,210	30	0,002	Not normal	0,350	30	0,000	Not normal	Mann Whitney U
	Cognitive	0,228	30	0,000	Not normal	0,321	30	0,000	Not normal	Mann Whitney U
	Dispositional-active	0,302	30	0,000	Not normal	0,390	30	0,000	Not normal	Mann Whitney U
Post test	Environmental conservation attitude	0,317	3	0,000	Not normal	0,094	30	0,200	Normal	Mann Whitney U
	Affective	0,318	30	0,000	Not normal	0,169	30	0,029	Not normal	Mann Whitney U
	Cognitive	0,340	30	0,000	Not normal	0,192	30	0,006	Not normal	Mann Whitney U
	Dispositional-active	0,308	30	0,000	Not normal	0,207	30	0,000	Not normal	Mann Whitney U

General hypothesis

Research hypothesis

The implementation of an experiential environmental education program as a teaching strategy improves the development of environmental conservation attitudes in first-year students at the Universidad Privada del Norte, 2020.

Statistical hypothesis

Ho: the experiential environmental education program as a teaching strategy does not improve the development of environmental conservation attitudes in first-year students at the Universidad Privada del Norte, 2020.

H1: the experiential environmental education program as a teaching strategy improves the development of environmental conservation attitudes in first-year students at the Universidad Privada del Norte, 2020.

Level of significance

The theoretical significance level is $\alpha = 0,05$, which corresponds to a confidence level of 95 %.

Test function

The non-parametric Mann-Whitney U test was used.

Decision rule

Reject Ho when the observed significance "ρ" of the model coefficients is less than α.

Do not reject Ho when the observed significance "ρ" of the model coefficients is greater than α.

Calculations

Table 7. Comparison test applied to the general hypothesis

Test	**Indicator**	**Result**
Pre-test	Man-Whitney U	322,50
	Z	-1,896
	Asymptotic significance (two-tailed)	0,058
Post test	U of Man-Whitney	128,000
	Z	-4,767
	Asymptotic significance (bilateral)	0,000

As can be seen in the results in the table, there are no significant differences in the development of environmental conservation attitudes between the control and experimental groups in the pre-test, while there are significant differences in the development of environmental conservation attitudes between the control and experimental groups in the post-test, with the students in the experimental group having a greater advantage.

Since $\rho = 0,000$ in the post-test is lower than the theoretical significance value $\alpha = 0,05$, the null hypothesis is rejected. This means that the experiential environmental education program as a teaching strategy improves the development of environmental

conservation attitudes in first-year students at the Universidad Privada del Norte in 2020. The results are significant, and therefore the general research hypothesis is accepted.

First specific hypothesis

Research hypothesis

The implementation of the Experiential Environmental Education Program is a factor that contributes to strengthening the cognitive dimension of environmental conservation attitudes in first-year students at the Universidad Privada del Norte.

Statistical hypothesis

Ho: the Experiential Environmental Education Program does not contribute to strengthening the cognitive dimension of environmental conservation attitudes among first-year students at the Universidad Privada del Norte.

H1: the Experiential Environmental Education Program contributes to strengthening the cognitive dimension of environmental conservation attitudes among first-year students at the Universidad Privada del Norte.

Significance level

The theoretical significance level is α =0,05, which corresponds to a reliability level of 95 %.

Test function

The test was performed using the nonparametric Mann-Whitney U test.

Decision rule

Reject Ho when the observed significance "ρ" of the model coefficients is less than α.

Do not reject Ho when the observed significance "ρ" of the model coefficients is greater than α.

Table 8. Comparison test applied to the first specific hypothesis

Test	Indicator	Result
Pre-test	Man-Whitney U	300,000
	Z	-2,265
	Asymptotic significance (bilateral)	0,024
Post test	U of Man-Whitney	184,000
	Z	-3,956
	Asymptotic significance (bilateral)	0,000

As can be seen in the results in the table, there are no significant differences in the development of affective attitudes toward environmental conservation between the control and experimental groups in the pretest, while there are significant differences in the development of affective attitudes toward environmental conservation between the control and experimental groups in the post-test, with students in the experimental group having a greater advantage.

Since ρ =0,000 in the post-test is lower than the theoretical significance value α =0,05, the null hypothesis is rejected. This means that the experiential environmental education program as a teaching strategy improves the development of affective attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte in 2020. This is significant, therefore the first specific research hypothesis is accepted.

Second specific hypothesis

Research hypothesis

The implementation of the Experiential Environmental Education Program is a factor that contributes to strengthening the affective dimension of environmental conservation attitudes in first-year students at the Universidad Privada del Norte.

Statistical hypothesis

Ho: the Experiential Environmental Education Program does not contribute to strengthening the affective dimension of environmental conservation attitudes in first-year students at the Universidad Privada del Norte.

H1: the Experiential Environmental Education Program contributes to strengthening the affective dimension of environmental conservation attitudes among first-year students at the Universidad Privada del Norte.

Level of significance

The theoretical significance level is α =0,05, which corresponds to a confidence level of 95 %.

Test function

It was performed using the non-parametric Mann-Whitney U test.

Decision rule

Reject Ho when the observed significance "ρ" of the model coefficients is less than α.

Do not reject Ho when the observed significance "ρ" of the model coefficients is greater than α.

Calculations

Table 9. Comparison test applied to the second specific hypothesis

Test	Indicator	Result
Pre-test	Man-Whitney U	433,50
	Z	-0,249
	Sig. Asymptotic (bilateral)	0,803
Post test	U of Man-Whitney	110,5
	Z	-5,036
	Sig. Asymptotic (bilateral)	0,000

As can be seen in the results in the table, there are no significant differences in the development of cognitive attitudes toward environmental conservation between the control and experimental groups in the pretest, while there are significant differences in the development of cognitive attitudes toward environmental conservation between the control and experimental groups in the post-test, with the students in the experimental group having a greater advantage. Since ρ = 0,000 in the post-test is lower than the theoretical significance value α = 0,05, the null hypothesis is rejected. This means that the experiential environmental education program as a teaching strategy improves the development of cognitive attitudes toward environmental conservation among first-year students at the Private University of the North in 2020. This is significant, and therefore the second specific research hypothesis is accepted.

Third specific hypothesis

Research hypothesis

The implementation of the Experiential Environmental Education Program is a factor that contributes to strengthening the conative dimension of environmental conservation attitudes in first-year students at the Universidad Privada del Norte.

Statistical hypothesis

Ho: the Experiential Environmental Education Program does not contribute to strengthening the conative dimension of environmental conservation attitudes in first-year students at the Universidad Privada del Norte.

H1: the Experiential Environmental Education Program contributes to strengthening the conative dimension of environmental conservation attitudes in first-year students at the Universidad Privada del Norte.

Level of significance

The theoretical significance level is α =0,05, which corresponds to a confidence level of 95 %.

Test function

It was performed using the nonparametric Mann-Whitney U test.

Decision rule

Reject Ho when the observed significance "ρ" of the model coefficients is less than α.

Do not reject Ho when the observed significance "ρ" of the model coefficients is greater than α.

Calculations

Table 10. Comparison test applied to the third specific hypothesis

Test	Indicator	Result
Pre-test	Man-Whitney U	312,000
	Z	-2,086
	Asymptotic significance (bilateral)	0,037
Post test	U of Man-Whitney	110,000
	Z	-5,049
	Asymptotic significance (two-tailed)	0,000

As can be seen in the results in the table, there are no significant differences in the development of active dispositional attitudes toward environmental conservation between the control and experimental groups in the pretest, while there are significant differences in the development of active dispositional attitudes toward environmental conservation between the control and experimental groups in the posttest, with the students in the experimental group having a greater advantage. Since $\rho = 0{,}000$ in the post-test is lower than the theoretical significance value $\alpha = 0{,}05$, the null hypothesis is rejected. This means that the experiential environmental education program as a teaching strategy improves the development of active dispositional attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte in 2020. This is significant, and therefore the third specific research hypothesis is accepted.

DISCUSSION

The processed data show that the implementation of the experiential environmental education program as a teaching strategy improves the development of attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte in 2020. It can also be interpreted that 80 % of the students in the experimental group who participated in the sessions of the program reached a regular level and 20 % reached a high level. It is necessary to specify, as Robbins and Judge, cited by Saravia[8], stated, that attitudes are evaluations of the person that are related to their values and conditioned by other factors or beliefs, but that they have three elements: cognitive, affective, and behavioral.[55,56,57,58,59,60,61]

In the study by Esteban M et al.[9], they pointed out that students have prior concepts about the environment but consider that good environmental education is necessary if we want to improve the environmental problems we face. Therefore, it is necessary to implement programs such as the study proposed by Hernández et al.[10], which concluded that the PRAE being implemented is having a medium impact on promoting attitudes among students towards environmental conservation.

Intervention programs are generating a change in students' attitudes towards the environment, as confirmed by the study carried out by Rodríguez[11], which concluded that the effects of the environmental education program on the progress of environmental conservation among female students were satisfactory; Ortega J.[12] also concludes that the 'My Ecological School' program has a significant influence on students' environmental attitudes. The study conducted by Usnaya et al.[13] shows that the implementation of appropriate academic programs improves environmental awareness and substantially reduces the problem of environmental pollution.[69,70,71,72,73,74,75]

Likewise, it was demonstrated that the implementation of experiential environmental education programs as a teaching strategy improves the development of affective attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte, 2020. It should be noted that, as Rodríguez M., cited by Chalco[14] argues, affective attitudes are shaped by feelings toward the object of the attitude. The assessment that determines behavior is motivationally activated in the presence of the object or situation and is accompanied by feelings.[76,77,78,79,80,81,82] This dimension is the most deeply rooted and the most resistant to change. It refers to feelings, whether for or against an object or social situation, for which a cognitive component is necessary. These are perceptions of the environment, beliefs, and feelings about environmental issues. They are the sensations that the environment produces in the subject.[83,84,85,86,87,88,89,90]

In the study by García A. et al.[15], it was stated that students criticize the state of the environment because they are concerned about it, but they also point out that there are few actions to help improve the situation. Therefore, in the study conducted by García A. et al.[15], they indicated that environmental education and awareness campaigns aimed at the population should be carried out.[91,92,93,94,95,96,97]

Hernández L. et al.[10], in their study, pointed out that the affective component showed that the most valued aspects are conservation and protection. They also consider that working in this wilderness area is a privilege, a love of nature, a commitment, and a source of pride, which allows us to identify some of the values that the group has towards the object of study. This is supported by the study by Rodríguez[11], which showed high levels in the cognitive-affective and conative components in the experimental group after the program was implemented.[98,99,100,101,102,103,104]

Regarding the second specific hypothesis, it was demonstrated that the implementation of the experiential environmental education program as a teaching strategy improves the development of cognitive attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte, 2020. In this regard, Rodríguez, cited by Chalco[14], consider that cognitive attitudes are made up of structured sets of beliefs, values, knowledge, or expectations that are relatively stable and predispose individuals to act in a certain way when faced with an object or situation. The cognitive dimension accounts for the degree of information and knowledge about issues related to the environment.

Most students have prior concepts about the environment, but believe that these need to be improved in order to solve environmental problems Esteban M et al.[9] This is supported by a study conducted by Arteaga J et al.[16] which indicated that the cognitive component is favorable, implying that it is necessary to be informed, as argued in the study by García A et al.[15], which states that the majority are informed about environmental conservation.[105,106,107,108,109,110]

The study by Hernández L et al.[10], it is stated that the cognitive component indicates the level of knowledge that a person has regarding basic s related to environmental problems. Therefore, it is necessary to offer workshops to impart knowledge to improve this component. In this regard, the study by Rodríguez[11] in which, after the implementation of a program, high levels of the cognitive component were observed; The study conducted by Espinoza[17] also shows that the implementation of the workshop improves students' knowledge of environmental protection.[111,112,113,114,115,116,117]

Finally, it was demonstrated that the implementation of the experiential environmental education program as a teaching strategy improves the development of active dispositional attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte, 2020. In this regard, Rodríguez, cited by Chalco L[14], pointed out that the active dimension, also

called behavioral, which manifests itself by directing action in a certain way toward an object, is the tendency to react toward objects in a certain way.[118,119,120,121,122]

In this regard, the study conducted by Arteaga J et al.[16] pointed out that the behavioral component is one of acceptance, which is very different from the study conducted by García A et al.[15], in which the actions taken to contribute to environmental conservation are scarce. In the study by Hernández et al.[10], they pointed out that environmental behaviors have improved, demonstrating positive attitudes.[123,124,125,126,127]

Decision-making

Given the results that have been shown, it can be said that before the experiential environmental education program was implemented, 83,3 % of the students in the control group had low environmental conservation attitudes, while 86,7 % of the experimental group also had low attitudes. In terms of affective attitudes, 80 % of the students in the control group were at a low level, and 86,7 % of the experimental group were also at a low level. With regard to cognitive attitudes, 86,7 % of students in the control group were at a low level, a similar result to that found in the experimental group, where 76,7 % were at a low level. In terms of active dispositional attitudes, 76,7 % of the control group was at a low level, and 86,7 % of the experimental group was at a low level.[128,129,130,131,132,133]

After the experiential program sessions, 26,7 % of the students in the control group achieved a regular level of environmental conservation attitudes, while 80 % of the students in the experimental group achieved a regular level. reached a regular level, but in the experimental group, 80 % reached a regular level and 20 % reached a high level. This allows us to affirm that the application of the experiential program improved the development of environmental conservation attitudes in first-year students at the Universidad Privada del Norte in 2020.[134,135,136,137,138]

In terms of affective attitudes after the program was implemented, it was found that in the control group, 23,3 % reached a regular level, while in the experimental group, 83,3 % reached a regular level and 16,7 % reached a high level, which allowed us to affirm that the implementation of the experiential program improves the development of affective attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte, 2020.[139,140,141,142]

With regard to cognitive attitudes, after the program was implemented, 20 % of the control group reached a regular level, while in the experimental group, 70 % reached a regular level and 30 % reached a high level, allowing us to conclude that the implementation of the experiential program improved the development of cognitive attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte in 2020.

Regarding the active dispositional attitudes dimension, after the experiential program was implemented, 26,7 % of the control group reached a regular level, but in the experimental group, 60 % reached a regular level and 40 % reached a high level, which allows us to conclude that the experiential program improved the development of active dispositional attitudes toward environmental conservation in first-year students at the Private University of the North, 2020.

CONCLUSIONS

The data collected before and after the experiential program was implemented were processed and analyzed, leading to the following conclusions:

Significant differences were found in the development of environmental conservation attitudes between the control and experimental groups in the post-test, with the students in the experimental group having a greater advantage. In the post-test, ρ =0,000, which is less than the theoretical significance value α =0,05, it is accepted that the experiential environmental education program as a teaching strategy improves the development of environmental conservation attitudes in first-year students at the Universidad Privada del Norte in 2020. This is significant, and therefore the general research hypothesis is accepted.

It was also observed that there are significant differences in the development of affective attitudes toward environmental conservation between the control and experimental groups in the post-test, with the students in the experimental group having a greater advantage and, in the post-test, ρ =0,000 being less than the theoretical significance value α =0,05, so the experiential environmental education program as a teaching strategy improves the development of affective attitudes toward environmental conservation in first-year students at the Universidad Privada del Norte in 2020.

There are significant differences in the development of cognitive attitudes toward environmental conservation between the control and experimental groups in the post-test, with students in the experimental group having a greater advantage. and when ρ =0,000 in the post-test is lower than the theoretical significance value α =0,05, it was confirmed that the experiential environmental education program as a teaching strategy improves the development of cognitive attitudes toward environmental conservation in first-year students at the Private University of the North, 2020. If there are significant differences in the development of active dispositional attitudes toward environmental conservation between the control and experimental groups in the post-test, with the students in the experimental group having a greater advantage, and if the post-test value of ρ =0,000 is lower than the theoretical significance value of α =0,05, it can be concluded that the application of the experiential environmental education program as a teaching strategy improves the development of active dispositional attitudes toward environmental conservation in first-year students at the Private University of the North, 2020.

RECOMMENDATIONS

It is necessary to train teachers, as they are agents of change and must not only be aware of but also put into practice environmental attitudes in line with the new paradigms, establishing sustainable ethics, respecting biological and cultural diversity, and providing

education that accompanies the cultural changes necessary for environmental protection. Higher authorities should implement strategies to raise awareness and achieve behavioral changes. Academic administrators should include content and activities related to environmental conservation in the curriculum to create an institutional project. Research should be carried out to determine the level of knowledge and attitudes among teachers themselves, especially given their role in educating students to be environmentally conscious and responsible.

FINANCING

None.

CONFLICT OF INTEREST

Authors declare that there is no conflict of interest.

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