

## Sustainability and environmental attitudes towards specific problems in Latin-American university students

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### ABSTRACT

University sustainability is a notion with tremendous transformative potential. Knowledge is essential to understand how colleges communicate it to their students in order to assess their potential for transformation. The objective of this study was to assess the level of training in sustainability and associate it with environmental attitudes towards specific problems of university students in Latin-american. Through a quantitative, correlational and cross-sectional design, two scales were applied to measure the study variables. The population consisted of 3456 university students from 15 public and private universities in Latin-american. Using the simple random probability sampling method with a confidence level of 95% and a margin of error of 5%, the sample consisted of 383 university students. It was found that there was a highly significant relationship between training in sustainability and the environmental attitude towards specific problems of university students in Latin-american. Universities not only have an impact on the improvement of the quality of life of the university community, but they should also try to intervene in the spaces under a sustainable approach, understanding that students should be the main actors for environmental care.

**Keywords:** University sustainability, Sustainable development, Environmental care, Latin-american universities.

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### 1. Introduction

We can safely say that climate change is one of the biggest obstacles humanities must overcome. a problem that necessitates immediate and serious action, which in turn necessitates just transitions in the impacted economic and social sectors and with the countries that will be hit worst by global warming [1, 2]. The United Nations established a new sustainable development agenda in September 2015, with 17 goals and targets to be attained over the course of the next 15 years. Because of their social and environmental responsibilities, universities can't sit on the sidelines [3]. The university is dedicated to the 2030 Agenda for Sustainable Development as a part of its mission and vision. Further, sustainability and integrity form the primary axes of what the university should do to lead society towards a future that assures the well-being of those who are here now and those who have yet to arrive [4-6]. The strategy of universities should be defined by sustainability in general and in its three dimensions (social, environmental, and economic) [7]. Actually, if we look at up-to-date documents that

represent the strategy of each of the Spanish institutions, we can see that there are actions, activities, and initiatives related to sustainability under numerous names [8-10].

Many colleges and universities have established executive committees to oversee sustainability initiatives [11]. These changes need to be implemented in both the administrative and academic spheres [12]. Economic sustainability (incorporation of fair trade products, cost reduction through efficiency in the use of resources and recycling), environmental sustainability (green campuses, energy and water consumption savings, reduction of the ecological footprint and carbon emissions, promotion of public transport and recycling, native vegetation, etc.), and social commitment are all being incorporated into university operations (volunteering, attention to vulnerable groups, attention to functional diversity, a healthier campus, etc.) [13, 14]. Prior to proposing such measures, the university community and society should be informed of the objectives reached and the value of the work done by providing them with information on the operational indicators that will be used to monitor the success of the proposed measures [15]. The percentage of a university's budget that goes toward sustainability projects is a good measure of the institution's dedication to the cause [16].

Colleges and universities have been working toward sustainability for quite some time. They have already clearly positioned themselves with declarations like those of Tbilisi, Talloires, Halifax ([17-18], Luxembourg, and the COPERNICUS Charter, among others, and the measures being proposed now are part of their strategic operations [19]. More specifically, the Alliance of Ibero-American Networks of Universities for Sustainability and the Environment (ARIUSA), the Mexican Consortium of University Environmental Programs for Sustainable Development (Complexus), and the GreenMetric Ranking of World Universities have all been established to advance sustainable development in the realm of higher education [20]. These things are indicative of the dedication that colleges have to environmental preservation [21].

Universities still face a significant problem and have a significant duty to help create a more sustainable world, and their efforts in favor of sustainability and integrity should serve as a model for other sectors of society [22-23]. Remember that the future leaders of our nation's public and private institutions, as well as our nation's political parties, social movements, and businesses, are currently enrolled in college courses and receiving their education there. Universities hold a lot of sway over the future. That's why it's crucial for institutions to serve as guides and shining examples of how to get things done [24-25].

The University of Nottingham in England was ranked first in Universitas Indonesia's annual UI Green Metric ranking of the world's most sustainable universities since 2011 [26]. The school was one of three to make the podium, along with the University of California and the University of Connecticut (3rd place). This year marks the first time that a comprehensive ranking of Latin America's environmentally responsible educational institutions has been made public. These numbers form the basis for a collaborative effort to meet the goals set by the Inter-University Environmental Network (RAI). It's encouraging to see an uptick in the numbers, but there's still a long way to go. There is no reliable directory indicating which school has completed its assignments. This document, issued in May of 2019, provides a list of the individuals responsible for overseeing the sustainable university's environmental policies, committees, and initiatives [27-29].

After reviewing the report that has just been published and referring to the year 2018, we are unable to tell which universities in Latin-American are sustainable in the sense that they truly and completely obey all of the parameters that have been established at the national level [22, 30]. Students are delighted to see how universities are adapting the goals and agenda of Agenda 2030 (climate change, human rights, environmental challenges, and sustainability) in the curriculum [20, 31]. This is because students are agents participating in the present and future of the Sustainable Development Goals (SDGs) [32].

They will be able to obtain employment through decent labor, which will in turn enable environmental care if there is an increase in the number of university students who have knowledge about sustainability and a favorable attitude toward it [33]. With this goal in mind, educational institutions like universities should advocate for regulations that make it mandatory for everyone, including men and women, to be literate and understand the fundamentals of environmental preservation [34]. In addition, these policies should ensure that all students acquire the theoretical and practical knowledge necessary to promote environmental care [35]. This should include education for sustainable development and sustainable lifestyles, human rights, gender equality, the promotion of a culture of peace and non-violence, the promotion of global citizenship, an appreciation of cultural diversity, and the contribution of culture to sustainable development [36]. As a result of this, the purpose of this study is to evaluate the amount of training in sustainable development and to correlate it with the environmental attitudes of university students in Latin America about particular environmental issues.

## 2. Materials and methods

Taking into account the theoretical support demonstrated in the literature review, the following hypothesis is proposed in this study:

There is a significant association between sustainability training and the environmental attitude of university students in Latin America towards specific environmental challenges. This study establishes a population of 3,456 students from 15 public and private universities in Latin America using a quantitative methodology with a correlational scope [6, 37]. A basic random chance selection procedure with a confidence level of 95% and an error margin of 5% was used to select 383 university students. Universities were asked for institutional email addresses in order to collect data.

The survey method is utilized for both variables. The instrument used to measure the sustainability training variable is a scale designed and verified by Martnez-Valdés & Juárez-Hernández (2019), who analyzed the concept, contributions, and instruments. For its validation, it underwent a *prima facie* assessment by five experts, followed by a judgment process with 16 expert judges who evaluated the relevance and language of items qualitatively and statistically. A pilot group of 61 pupils was used to establish the dependability and sufficiency of comprehension. In its initial revision, the instrument was validated by experts who suggested the inclusion of a socioeconomic impact dimension; the judges endorsed the content validity of the items (Aiken's  $V > 0.75$ ; ICI  $> 0.5$ ). The pilot group rated the comprehension of items and instructions as excellent, and the optimal value for dependability was attained (0.8890 Cronbach's alpha). The instrument consists of two categories and 22 questions: knowledge appropriation and university relationships, university education, and socioeconomic impact.

For the second variable, we employ the scale of environmental attitudes toward specific problems established and verified by Moreno et al. (2005), who devised a scale of 50 items, each of which provides a specific, relevant, and complementary measure of environmental awareness. This specificity is achieved by crossing four psychological dimensions with ten environmental problems: individual concern, trust, social concern, and criteria. As a result, each item has a unique mix of an attitude component and an environmental dimension. The degree of agreement for each question is measured using a four-point Likert scale: "not at all or almost not at all," "slightly," "quite a bit," and "very much or completely." The obtained Cronbach's alpha coefficient for the scale is 0.838, indicating that it is a reliable measuring tool. The coefficients for the 25-item pollution and conservation subscales were 0.710 and 0.763, respectively, with moderate values for the discrete environmental and attitude subscales (Table 1). To test the construct validity or measure of congruence with the theoretical model, comparisons were made between the correlations obtained by ordering the matrix according to the attitudinal variables on the one hand and the environmental variables on the other, in order to determine which of these orderings is more coherent in terms of the response patterns. Given the correlation matrix of 50 particular environmental attitude variables, the mean absolute correlation values are 0.116 ( $p < 0.01$ ). In order to systematize the gathered data, incomplete questionnaires were eliminated from the count of virtual questionnaires. After this was accomplished, the findings were uploaded to Excel, where they were collected to produce descriptive statistics using the average arithmetic mean and percentage numbers. In IBM SPSS Statistic v25, the normalcy test was utilized for assessing hypotheses. Using the same technique, the data were sorted and encoded in order to generate the Pearson correlation test. This was accomplished with a 95% degree of confidence and a 5% margin of error.

## 3. Results and discussion

The descriptive analysis gives the results of Table 1, which relate to the variables and dimensions of inclusive leadership. As can be observed, the highest obtained arithmetic mean (2.3) was for the university education component, indicating a low level. The university relationship dimension obtained the lowest arithmetic mean value, resulting in a very low level (1.9). The variable and all dimensions are at the same level, according to an assessment of the results.

Table 1 . Arithmetic mean of the environmental sustainability variable

<b>Environmental sustainability</b>	<b>Arithmetic mean average</b>
<b>Knowledge appropriation</b>	2.2
<b>University relationship</b>	1.9
<b>University education</b>	2.3
<b>Socioeconomic impact</b>	2.1

Table 2 displays the results and dimensions of the inventive behavior at work variable. As can be seen, the trust dimension had the highest arithmetic mean (1.8), while the social concern dimension had the lowest arithmetic mean (1.3). All the outcomes of the variable are observed to be negative.

Table 2 . Arithmetic mean of the variable environmental attitudes towards specific problems

Environmental attitudes towards specific problems	Arithmetic mean average
<b>Individual concern</b>	1.6
<b>Trust</b>	1.8
<b>Social concern</b>	1.3
<b>Judgment</b>	1.4

For the hypothesis test, the first consideration was the application of the normality test under the Kolmogorov Smirnov parameters. Since the population is greater than 50 individuals, the value obtained was  $.358 > .05$ , indicating that the distribution has a normal behavior. Considering this result, the Pearson correlation test was chosen as the appropriate parametric test.

In every instance, the correlation between the two research variables and their dimensions is substantial and statistically significant, as shown in Table 3.

Table 3 . Hypothesis testing through Pearson's Correlation.

		<b>Environmental attitudes towards specific problems</b>	<b>Individual concern</b>	<b>Trust</b>	<b>Social concern</b>	<b>Judgment</b>
<b>Environmental sustainability</b>	Pearson correlation	.832**	.75**	.881**	.751**	.5184**
	Sig. (one-sided)	.000	.000	.000	.010	.006
<b>Knowledge appropriation</b>	Pearson correlation	.431*	.529**	.497**	.477**	.388*
	Sig. (one-sided)	.020	.000	.001	.000	.050
<b>University relationship</b>	Pearson correlation	.584**	.564**	.611**	.781**	.397*
	Sig. (one-sided)	.002	.003	.001	.000	.033
<b>University education</b>	Pearson correlation	.817**	.719**	.814**	.724**	.633**
	Sig. (one-sided)	.000	.000	.000	.000	.001
<b>Socioeconomic impact</b>	Pearson correlation	.818**	.696**	.895**	.815**	.63**
	Sig. (one-sided)	.000	.000	.000	.000	.001

Most studies of attitudes today examine their potential as predictors of actions. Many studies have been conducted to predict the performance of pro-environmental behaviors (Acuña-Moraga, et al., 2022; Apaza, et al., 2022), but these efforts have been hampered by a lack of consensus on the concept of environmental attitude itself. While citizens of industrialized countries have been vocal about their support for environmental protection and enhancement for the past few decades, this support does not appear to have translated into any concrete changes in individual behavior. It has been argued that having a high level of environmental awareness does not guarantee the implementation of responsible ecological behavior [2, 28, 34]. This is because the correlations between pro-environmental attitudes (concern for environmental problems) and ecologically responsible behavior are, generally speaking, very low. This has increased the urgency of doing additional studies to improve the models used to explain pro-environmental behaviors [22, 33].

According to Cuesta-Claros et al., (2022), a new vision of education is emerging that seeks to train people to assume responsibilities and create a sustainable future, and he emphasizes the crucial role of higher education in this process by analyzing the results of the changes in education from the Rio Summit to Johannesburg [5]. One of the primary goals of the university chair is to facilitate the transfer of knowledge on these topics from the academic world to society by promoting platforms for dialogue and the incorporation of new approaches related to sustainable development into undergraduate and postgraduate study programs [16, 17].

Most public and private university students throughout the world do not receive a strong environmental education that is responsible for the needs and demands of the moment, despite the necessity to raise awareness about the protection and conservation of natural resources and sustainable production [30]. Therefore, universities, as centers for professional education, have the duty to ensure that their students acquire the necessary information, abilities, motivations, attitudes, and values to effectively address environmental issues. This necessitates the environmental mentalization of all university processes, with an emphasis on formal and non-formal education via the curriculum, research, and university extension, in order to fulfill the social task assigned to the university [27, 38-54].

## 5. Conclusion and future work

Understanding that students should be the major players for environmental care, universities should not only aim to intervene in areas under a sustainable strategy to improve the quality of life for the university community. As a hub for information creation and dissemination, as well as a connecting point between the business world and the rest of society, universities unquestionably bear a social obligation. The 2030 Agenda and the Sustainable Development Strategy outline the long-term goals for sustainable development that should serve as the compass for all university social responsibility efforts in the twenty-first century. All that we do at universities should be infused with the values and goals of sustainable development; these should be incorporated into the curriculum as specialized competencies; knowledge should be generated and transferred in accordance with these values; ties should be strengthened with other social agents engaged in this work; universities should take the lead in disseminating this information and sparking public debate; and universities should be held accountable for their contributions to achieving each of the 17 Sustainable Development Goals. The university should be a role model for everyone involved: students, faculty, researchers, support personnel, business leaders, civic leaders, and everyday residents. The 2030 Sustainable Development Strategy, endorsed by the Council of Ministers, calls on universities to expressly integrate particular initiatives aimed at the university community and the rest of society that address the problems posed by the SDGs. Universities in Latin-american may and should play a significant role in shaping this strategy, as well as in its ongoing evaluation and the production of related success reports.

## Declaration of competing interest

The authors declare that they have no any known financial or non-financial competing interests in any material discussed in this paper.

## Funding information

No funding was received from any financial organization to conduct this research.

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