

Retos y desafíos de la educación ambiental en la Universidad de Guantánamo

Challenges and challenges of environmental education at Guantánamo University

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RESUMEN: Dentro del objeto social de la Universidad de Guantánamo se encuentra la formación integral de profesionales, que incluye el componente ambiental, la cual no está suficientemente lograda en las diferentes carreras. El propósito del artículo refiere los principales retos y desafíos que tiene la gestión y educación ambiental en la Institución, a partir del programa de acciones estratégicas para dar cumplimiento al Plan de Estado “Tarea Vida” e incluye ejemplos de los resultados alcanzados en este sentido en la carrera de Geografía, empleándose para ello métodos teóricos y empíricos. Los resultados obtenidos muestran la factibilidad de la propuesta realizada.

Palabras clave: Educación ambiental; Universidad de guantánamo; Retos y desafíos; Carrera geografía; Programa de diplomado.

ABSTRACT: Within the corporate purpose of the University of Guantánamo is the comprehensive training of professionals, which includes the environmental component, which is not sufficiently achieved in the different careers. The purpose of the article refers to the main challenges of environmental management and education in the Institution, based on the program of strategic actions to comply with the State Plan “Tarea Vida” and includes examples of the results achieved in this sense in the Geography degree, using theoretical and empirical methods. The results obtained show the feasibility of the proposal made.

Keywords: Environmental education; Guantanamo university; Challenges; Geography career; Diploma program.

Introduction

The subject of the environment is of state interest, so that from the Constitution of the Republic of Cuba, approved in 2019, it is expressed in Article 11 that the State promotes the protection and conservation of the environment and the confrontation of climate change, which threatens the survival of the human species, hence the importance of the inclusion of its study at different educational levels.

The master sustainability strategy of the University of Guantánamo (UG) expresses the fundamental requirements of the dialectic unity of academic excellence and relevance to the environment, as a dynamic agent to respond to the interests and needs of the locality, so that it contributes to the transformations that are needed in the comprehensive training of each professional to achieve territorial development, based on the contribution of each career, from its potential.

Based on what has been expressed above and considering the commonly accepted acceptance that the environment is a complex and dynamic system of ecological, socioeconomic and cultural interrelationships, which evolves through the historical process of humanity, and which includes nature, society, historical-cultural heritage, and as an element of great importance, social relations and culture, then there is no doubt about its universal scope and that the interpretation of its content is based on the fact that its study, treatment and management must be characterized by its integrality and the link with the different substantive university processes.

The purpose of this article is to evaluate the main challenges and challenges of environmental management and education in this University, based on the program of strategic actions to comply with the State Plan "Tarea Vida", as well as to highlight the main results of the Geography course on environmental management and education, a subject on which several articles have been published, although not with this approach or from the results of this course in the aforementioned subject.

Development

The social purpose of the University of Guantánamo is the training of integral professionals and the preparation of cadres of the territory, it is the institution in charge of the implementation in the province of the regulations and policies of the Ministry of Higher Education for the training of

undergraduate and graduate professionals, as well as the provision of scientific-technical services that impact on the development of the easternmost territory of the country. Which is endorsed by Agreement No. 7599 of the Council of Ministers of August, 2014.

Similarly, this University leads the training and continuing education of professionals in Pedagogical, Economic and Business Sciences, Agronomy, Forestry, Informatics and Technology, Sociocultural, Legal and Physical Culture and Sports, according to the territorial demands. To this end, it has a faculty of recognized prestige, closely linked to the context of the municipalities and the sustainable development of the society of Guantánamo.

Although the challenge can be conceptualized as a purpose or endeavor that is difficult to carry out and therefore constitutes a stimulus for those who face it, by linking it to environmental management and education at the UG, it is possible to affirm that one of the most transcendent challenges is related to the training of the undergraduate professional to face the challenges of climate change, that is, how the content taught from the different disciplines, seen in its three main dimensions (knowledge, skills and values), would form a professional sufficiently prepared to adapt to the changing conditions of their environment and that would allow them to minimize the impacts.

Another institutional challenge in this sense is the improvement of the career map, so as to ensure greater relevance of these with the territorial needs, both current and future, as well as the inclusion of other careers, as is the case of Environmental Engineering.

On the other hand, seen the challenge as something to be overcome and is valued as a difficult or new situation, in the context of the UG, it is considered that the most transcendent consists of restructuring the Group of Experts in Environmental Risk Management that, approved by rectoral resolution, conceived in 2019 the program of strategic actions to comply with the State Plan Life Task, as well as revitalizing its operation, so that the implementation in practice of the system of actions conceived can be ensured. This would allow:

- ✓ To give the required priority to the environmental issue in the strategic planning of the Institution.
- ✓ To give preference in the methodological work system of the different instances, with emphasis on university careers, faculties and municipal university centers to the topic of Life Task and its practical implementation in the context of Guantánamo.

- ✓ To ensure the required systematicity in the treatment of this topic in the faculties and university boards of directors, so that the follow-up of the agreements is propitiated and thus to be able to certify their fulfillment.
- ✓ Identify, with greater precision, the main environmental problems generated by climate change in the different municipalities of the Province.
- ✓ Update and implement curricular and environmental education strategies in the different careers with topics related to the Task Life.
- ✓ Socialize the main results achieved through scientific events or other conceived modalities.
- ✓ Make greater use of the benefits of information and communication technologies to disseminate the university's work in the environmental dimension, with emphasis on the impacts achieved.

It should be noted that the Life Task, in this University, has been a priority and as such is materialized with concrete actions in the selected areas, including the Guantánamo university community and the nine municipal university centers located in territories vulnerable to the negative effects of severe weather events, although its results should have greater visibility.

The State Plan, materialized in the strategic actions designed, has as a background the approval and implementation of the environmental strategy and the system of actions for environmental risk management with the mission of managing knowledge and innovation that favors the environment, the prevention of risks and hazards, and the mitigation and adaptation to the effects of climate change; from the university processes.

It was applied in all the municipalities of the province, with emphasis on Baracoa, Caimanera, San Antonio del Sur, Imías, Maisí and Guantánamo because it coincides with current priorities. The coastal community of Maguana (in Baracoa) was used as a study polygon because of the characteristics of the ecosystems and the rich biodiversity that surrounds it, which are vulnerable to penetration by the sea and damage to the coastal ecosystem.

The municipality of Caimanera was also included, with its extensive bay, part of which is occupied by the illegal base of the United States of America, whose contamination is accentuated by the mouth of the Guantánamo-Guaso River, as well as the salinization of soils. In addition, there are threats of loss of population settlements with houses on stilts over the sea.

With respect to the municipality of Guantánamo, located in the valley of the same name, with particular environmental fragile ecosystems, it is characterized by extreme drought and sometimes abundant rainfall, strong winds, in addition to seismological risks due to the proximity to the Bartlett Trench in the south of the province of Santiago de Cuba.

Another more contemporary challenge in this sense is to conclude the elaboration and socialization of the Environmental Strategy of the UG for the 2022 - 2026 cycle, in which, based on the existing experience, it will be possible to continue improving the university work, with emphasis on the training of undergraduate professionals in the environmental work of the territory.

Although the environmental strategy designed transversalizes the curriculum of the different careers studied here, this article exemplifies the main actions related to environmental education developed in the Bachelor's Degree in Geography Education.

In this sense, it can be said that in its historical development, different results of concluded research on environmental management and education have been contributed, in the interest of enhancing knowledge and its systematic use for the improvement of this career. In order to evaluate how the research work in the area of environmental management and education in this province has contributed, the following moments are taken into account:

For more than ten years and having as a background the Bachelor's Degree in Comprehensive General Teacher Education (PGI) and the Bachelor's Degree in Natural Sciences Education, the career is designed for its study through a double profile (Biology - Geography), where the topics of Environmental Education and Management continue to be the object of research, as one of the lines of scientific - methodological work that has transcended the most in the career.

In 2016, the study of the Bachelor's Degree in Education is restarted. Geography, through the "E" study plan, where the institutional prerogatives are enhanced to insert environmental subjects and contents both in the proper curriculum and in the optional/elective one, which were favorably used.

In each of its different stages of development, important contributions were received for the progress of environmental studies, from the investigative activity of the Student Scientific Group for the Integral Geographic Study of Guantánamo, which offered important contributions to the knowledge of the geography of this Province.

Among the entities with which it maintains systematic work links, in areas related to environmental management and education in this territory are: Center of Technological Applications for

Sustainable Development, the Provincial Delegation of Science, Technology and Environment, Physical Planning, Flora and Fauna Enterprise, Hydraulic Resources, in addition to the work carried out in this sense by the students of the career in different municipalities of the territory, through teaching activities and pre-professional practices that are carried out in them.

Among the most significant results of the research on environmental education are the following:

- ✓ A methodological conception to contribute to environmental education in protected areas.
- ✓ Pedagogical conception of environmental education from the university extension.
- ✓ A methodological alternative to improve the experimental activities of geographic content in the Field Practice discipline.

The treatment of these contents is inserted in different optional/elective programs, which contributes to the environmental education of students, with contents specific to their natural environment.

As for postgraduate education, the subject has been widely dealt with in different academic programs and professional development activities, which include, among other topics:

- Climate Change and Task Life. Its treatment in the training process of professionals.
- Environmental management and environmental impact assessment methods in fragile ecosystems.
- Management of science, research and technological development in facing climate change.
- Curricular environmental education in the integral formation of professionals.
- Climate change and local development in Guantánamo.

Likewise, from the career, the redesign of the field practices component has been enhanced, based on the possibility of a new look, derived from a research carried out, to the stages of this important teaching activity, in order to contribute to the environmental training in protected areas, where it is shown that the incorporation of this dimension contributes to the satisfaction of the needs and demands of the professional's training.

All the above mentioned allows satisfying the social task related to environmental management and education, according to the demands of protected areas, which enables the student to solve the professional problems that emanate from his object of study through the appropriation of scientific knowledge, in such a way that he links science with the profession he is studying.

It is also interesting to know the main moments through which the development of this training in the Geography career has gone through, about which there is coincidence as to the determination of four stages, namely:

1st: Creation of preliminary bases for the introduction of the environmental dimension (1972-1989).

2nd: Refinement of the environmental dimension (1990-2003).

3rd: Consolidation of the introduction of the environmental dimension (2004-2009).

4th: Reorientation of the environmental dimension towards protected areas in the professional training process (2010 to present).

Contribution to social practice of the result obtained

The main results obtained can be summarized as follows

- ✓ The design of programs of study linked to environmental issues for the core curriculum in the "E" study plan. Among them:
 - Environmental Management and Local Development
 - Basics of Agrometeorology
 - Didactics of Natural Sciences
 - theories on population and sustainable development
- ✓ The design of programs for the elective/elective curriculum:
 - Local Geography and Territorial Planning
 - Geohistorical Elements of Guantánamo
 - Science, technology and Geography
 - problems of Geography
 - Professional skills in the teaching of Geography
 - Physical-geographical and socioeconomic curiosities of the planet and Guantánamo.
- ✓ The organization of student scientific groups linked to environmental issues, the results of which have led to the elaboration of course work and the culmination of studies, which were presented in different scientific and methodological events, both institutional and territorial.

- ✓ The curricular adjustments made in the plan of the teaching process of selected students, in the interest of a better link with the contents of the natural environment and a better preparation to contribute to local development from their sphere of action, as well as the intention of linking them professionally to labor entities such as Physical Planning and Geocuba.
- ✓ The results of the students' works, both of theoretical and practical character, have increased the bibliographic fund used in the direction of the formative process of the career, substituting lacks and/or updates of texts referred to the thematic of environmental education and management.
- ✓ There is evidence of a higher level of knowledge attained by students who multiply knowledge at the educational levels where they carry out their work practice as a component of professional training.
- ✓ From the curricular point of view, the planning and concretion of adjustments to the teaching process plan allowed the incorporation of own and optional programs that concur in all types of courses and academic years, which address knowledge related to environmental education and management at the territorial level from the theoretical-practical point of view.
- ✓ As a result of the preparation acquired by the students, community work has been evidenced linked to the environmental sanitation campaign in coordination with the 4 de Abril polyclinic, awareness-raising work through educational talks in schools, with the inhabitants of the western bank of the Guaso River and in the La Caoba neighborhood, thus contributing to the reduction of waste in intermittent periods.

There is also a diploma program entitled "Management for Disaster Risk Reduction and Climate Change", which is satisfactorily developing its second edition to contribute to increase the postgraduate preparation of teachers in the topic Task Life from Education, which satisfies the requests of both UG teachers and other professionals of the Province linked to environmental management and Task Life, from different territorial organizations and institutions. This program grants 27 academic credits and includes different courses related to the aforementioned topic:

- Environmental education in the teaching of school geography.
- Biodiversity and protected areas.
- Management and sustainability of natural resources.
- Management and direction of educational processes in school Geography.
- The use of information and communication technologies in school Geography.

- Theory and practice of the study of locality.
 - Contemporary approaches and trends in the teaching of Geography.
- ✓ The results achieved and the experience accumulated have allowed the design and implementation of research projects, with the participation of professors and students of this career. Among them:
- Capacity building for the integrated management of the coastal ecosystem and prevention of hazards, vulnerability and risks in the Maguana Community of the municipality of Baracoa.
 - Sustainable management of ecosystems in the Guaso watershed.
 - Systematic work links are strengthened with the University's Department of Local Development to carry out integrated activities with the career in environmental issues.
- However, there are still many challenges to be faced, both in this career and at the institutional level, mainly those associated with the practical implementation and validation of the results achieved

Conclusions

The University of Guantánamo has a sustainability strategy that responds to local interests and needs, where the treatment of environmental management and education plays an important role in the curricula of the different careers studied there, as well as in postgraduate activities.

Different challenges related to environmental management and education at the UG were identified, which require adequate attention and follow-up, in the interest of continuing to strengthen this important institutional work.

The results achieved, both in the theoretical and methodological order, show their usefulness for the systematic improvement of the Geography career in environmental studies, as well as for the redesign of its subjects, either in the basic curriculum or in the optional/elective one.

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