
La gestión ambiental en la enseñanza de la geografía desde el proceso de formación

Environmental management in the teaching of geography from the training process.

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Resumen: La enseñanza de la Geografía, ofrece potencialidades para dar tratamiento a la gestión ambiental, en el proceso de formación. El artículo ha constituido resultado de investigación y su objetivo es proponer procedimientos metodológicos para dar tratamiento a la gestión ambiental desde la enseñanza de la Geografía. Se presentan algunos ejemplos desde programas de la Geografía en el proceso de formación de la Carrera Geografía. Para su realización se utilizaron métodos del nivel teórico, del nivel empírico y del nivel estadístico matemático. Con la aplicación de estos procedimientos se perfeccionó el tratamiento de la gestión ambiental desde la enseñanza de la Geografía.

Palabras clave: Gestión Ambiental, Enseñanza de la Geografía, Proceso de Formación.

Abstract: The teaching of Geography offers potentialities to deal with environmental management in the training process. The article is the result of research and its objective is to propose methodological procedures to deal with environmental management from the teaching of Geography. Some examples are presented from Geography syllabuses in the training process of the Geography career. Theoretical, empirical and mathematical statistical methods were used for their realization. With the application of these procedures, the treatment of environmental management in the teaching of Geography was improved.

Keywords: Environmental Management, Geography Teaching, Training Process.

Introduction

The training of professionals at the higher level is the process that, consciously and on a scientific basis, ensures the comprehensive preparation of university students and is embodied in a solid scientific-technical, humanistic and high ideological, political, ethical and aesthetic values, in order to achieve revolutionary, educated, competent, independent

and creative professionals, so that they can perform successfully in various sectors of the economy and society in general.

The training process enables their development with a humanistic character. The key to its understanding lies in a conception of the university, whose vision goes beyond the instructive, the merely cognitive and focuses its fundamental attention on man, on the full development of his personality; therefore, the meaningful, conscious aspects of social commitment become the main priority.

One of them is directed to the unity between education and instruction, with the objective of integrally preparing the student, which implies providing him with the essential knowledge and skills of his profession and becomes the instructive, educational and developmental dimensions in the training process. The determination of the educational potentialities in the training process and its instrumentation in close connection with the instructional aspects, constitutes a pedagogical task of the first order in the university context and in the profile of each career.

There are three fundamental issues that constitute the basis of the curriculum in the university context, in the training process, according to Horruitiner (2009):

- A clear vision of the guiding ideas that must preside over the training work, and therefore, must lead the curricular transformation, in order to achieve the proposed objectives.
- A training model capable of supporting these guiding ideas and clearly stating the general precepts that guide training and ensure the relevance of the graduate.
- A process of curricular transformation aimed at ensuring that these concepts are adequately reflected in the curricula and applied in teaching practice in universities.

In correspondence with these demands, it is necessary to take into account the potentialities offered by the curricula of the Geography career to deal with environmental management.

All of the above, allows considering the need to propose methodological procedures to teach these contents and give treatment to environmental management, from the teaching of Geography, with the objective of fostering in students a responsible conscience in the

protection and conservation of the environment for a sustainable development and to implement adaptation and mitigation actions, in areas vulnerable to the effects of climate change. That is why the role of the Universities in their contribution to the integral formation of the students is expressed through the integration of the environmental dimension in the educational system, directed to the acquisition of environmental knowledge, the development of capacities and the formation of ethical values that favor a social and professional behavior coherent with the aspirations of achieving sustainable development levels, from the potentialities offered by the contents of Geography.

For this reason, the objective is to propose methodological procedures to deal with environmental management from the teaching of Geography in the training process.

Development

The training of the education professional in the Bachelor's Degree in Education Specialty of Geography, like that of the rest of the graduates of university careers, constitutes a continuous training system that begins in the undergraduate program and has the purpose of enabling the future graduate to practice the profession in the basic element.

The Ministry of Higher Education (2016), states the following:

“Theoretical foundations of the curriculum”. It assumes the conception of the curriculum as an educational project and process; which implies, promoting the formation of a professional with a solid political-ideological development, high scientific, technological and innovative level in the area of educational sciences and sciences that explains, with a humanistic formation that favors its participation as a transforming agent, characterized by responsibility and social commitment; a selection of the necessary culture to the formation of this professional, expressed in knowledge, skills, values, attitudes, feelings with an intentional character determined by the social demands that are expressed as professional problems in this model of the professional.... “(p. 1)

These theoretical foundations have their direct expression in the undergraduate training of the education professional, from the unity between education and instruction, the link between study and work as a pedagogical principle, the dialectical unity of theory and

practice in the professional training process. The nature-society relationship and the relationship between geographic education and education for environmental education, sustainable development and international cooperation.

In the teaching-learning process of Geography, it is necessary that students approach reality through practical activity and from their experiences, knowledge and interests manifest the unity of the cognitive and the affective, which will allow the development of creativity, criticality, depth of thought, historical memory and the refinement of sensitivity to what they think, memorize or do.

The formation of an education professional that responds to these assumptions and references requires a curriculum that guarantees in a systemic and flexible way, dynamic and revolutionary ways of thinking and acting, whose development is centered on the activity of the students for the apprehension of the pedagogical professional mode of action. El Ministerio de Educación Superior, en el Plan E (2016), refiere:

General objectives that are closely related to the development of environmental management, from the teaching process (p.12).

1. Direct the pedagogical process and the teaching-learning process of Geography, in function of the integral formation of the students, taking into account the general objectives and the diversity of the individual and collective subjects that participate according to the results of the diagnosis.
2. To base the solution alternatives to professional problems, from the philosophical, educational and geographical sciences, based on the appropriation of knowledge, skills, values, the logic of thought, the interdisciplinary approach and the use of information and communication technologies.
3. Demonstrate the appropriation of the teaching-learning content of Geography and its own working methods in function of an effective, flexible and innovative educational work at the basic secondary and pre-university levels.
4. To direct practical activities related to basic and pre-university teaching excursions in close connection with locality studies and environmental education.

5. To value the contribution of the teaching-learning process of the contents related to Geography in secondary education, as well as the preparation of students for life, the acquisition of scientific, political and ideological culture, environmental and in values.
6. Solve problems that arise in the direction of pedagogical and teaching-learning processes of Geography with the application of scientific methods and the elements of educational research in the school environment.
7. Demonstrate with their performance that they have assumed self-preparation as a permanent process to obtain information, acquire, build and disseminate knowledge through different ways and with the use of different sources, according to personal, social and political needs and taking into account scientific and technological progress.

In this sense, the Geography career has gone through several curricula Plan A, B, C, D and currently E; in which curricular adjustments have been made to improve the initial training. Such demands are concretized from the potentialities offered by the programs of this career to deal with environmental management.

In this process, educational institutions have a fundamental role, especially higher education institutions, which should promote the awareness of all professionals to environmental problems, characterized by a creative, judicious, proactive and scientific thinking, reflected in the diversity of actions aimed at the protection and conservation of natural and historical-cultural resources, for the environmental welfare of all in a community context.

Environmental problems currently constitute an evident threat to human survival. Castro (1992) at the United Nations Conference on Environment and Social Development held in Rio de Janeiro stated the following:

"Let human life be made more rational. Let there be a just international order. Use all the science necessary for sustained development without pollution. Let the ecological debt be paid, not the foreign debt. Let hunger disappear, not man" (p. 3).

The materialization of these ideas is achieved through an integral education that promotes citizen participation in the equitable improvement of their quality of life, based on the efficient management of the rational use of natural resources. In this process, Environmental Education is included as an indicator in the model of sustainable development to which the Cuban State aspires, through which people achieve a harmonious relationship with the environment, hence it is considered as a dimension of education in the curricula of higher education.

When analyzing the definition given according to Cruz (2006): "environmental management or environmental management to the set of actions leading to the integral management of the environmental system. In other words, and including the concept of sustainable development, it is the strategy through which human activities that affect the environment are organized in order to achieve an adequate quality of life, preventing or mitigating potential or current environmental problems. Beyond all the theoretical and technical questions exposed, it is important to mention that at present environmental pollution is a very serious problem that all the nations of the world face without exception and therefore it is necessary the existence of concrete and forceful policies that tend to palliate or diminish them. ..." (p.74). Similarly, the Sustainable Development Network (2013) refers to environmental management as "a process aimed at solving, mitigating and/or preventing environmental problems, with the purpose of achieving sustainable development, understood as that which allows man to develop his potential and his biophysical and cultural heritage, guaranteeing its permanence in time and space" (p.74).

Environmental issues have become one of the main concerns for modern man, as they affect everyone equally. Sufficient reasons support the determination of the United Nations to dedicate the decade 2005-2014 as the Decade of Education for Sustainable Development.

In this regard, Valdés (2011), in his work *Ecology and Society*, states the following:

"It must be pointed out that consumer societies are fundamentally responsible for the appalling destruction of the environment... The solution cannot be to avoid development for those who need it most. The fact is that anything that contributes to

underdevelopment and poverty today constitutes a flagrant violation of ecology." Human survival on this planet we call "ours" is compromised.

These elements demonstrate the need to take advantage of the potential of the curriculum and study syllabuses to develop feelings of care and protection towards nature, as well as to raise the perception of risk in the face of the effects of climate change.

For this reason, methodological procedures are proposed from the study programs of the Geography career, in order to deal with environmental management:

1. Contribute to the process of integration of the contents of different subjects from the analysis of concrete environmental problems, in the teaching and extra-teaching spaces.
2. Incorporate the environmental dimension directed towards environmental management and sustainable development, to those contents of the syllabuses of the disciplines and of each of the subjects that promote the formation of values in correspondence with the model of the professional of this career.
3. To consider the contents of environmental management for the preparation of future professionals in terms of risk perception and the reduction of the impact of natural catastrophes on the environment.
4. Promote the incorporation of environmental management for sustainable development, articulating the contents of health education and energy saving in the training process.
5. To train and develop research skills in students linked to the line of environmental management, from an integrated and systematic work.
6. To achieve the systematic dissemination of environmental anniversaries as a contribution to the development of environmental culture, raising the perception of risk with an environmental approach.
7. Formar un profesional de la carrera consciente de que el uso de los recursos naturales, sociales y económicos, así como la conservación de ecosistemas, constituyen la base de la sostenibilidad del desarrollo.

8. To train a career professional aware that the use of natural, social and economic resources, as well as the conservation of ecosystems, constitute the basis for the sustainability of development.
9. To value, from a theoretical and methodological point of view, the knowledge system of environmental management and education for sustainable development and Life task, in correspondence with contemporary demands and its contribution to local development.
10. To strengthen the professional competences of the students through the treatment of the processes that characterize the management of environmental knowledge and of confronting climate change.
11. Elaborate and apply self-learning strategies in the solution of different environmental problems present in the community, from the perspective of Environmental Education for Sustainable Development, reflecting a system of coherent educational influences.
12. Defend thesis at the end of the course with environmental themes that give answers to the environmental priorities of the territory.
13. Participate in environmental management plans for mitigation, adaptation and resilience to the effects of climate change. Life task.
14. Show a responsible environmental culture that contributes to professional performance in the solution of environmental problems.
15. Elaboration of a web page on environmental problems and mitigation or adaptation to the effects of climate change.
16. Develop an environmentalist role in students in training through their participation in elective and elective courses on the effects of climate change.
17. Publish and present in forums and events, topics with research proposals and environmental solutions in their community and the university environment.

In this sense, some examples are presented, from Geography curricula, to deal with environmental management:

Environmental Management in Geography Education Program. Fourth Year. Course by Encounter. Example 1. Final Evaluation.

Orientation of the Integrating Final Evaluation from a Community Intervention Project "Eco-Guaso" Community.

1. Name three of the main environmental problems affecting the "Eco-Guaso" community in Guantánamo province.

1.1 Explain with a concrete example the manifestation of one of them in this community.

2- Explain the main strategies and actions to adapt to the impacts of climate change in Cuba.

2.1 To value the role of the Cuban State in the confrontation to the Climate Change Life Task, from the proposal of environmentalist actions in this community, starting from the environmental problems that exist in this community.

3. Exemplify the manifestations of climate change in the school where you develop your experiences, as a teacher in training and the actions that are carried out to face them.

4. Evaluate the following environmental alternative from a Community Intervention Project "Eco-Guaso" and express your criteria on how it can educate your students environmentally, with regard to the effects of climate change in the community where they interact.

Topic. Environmental path in the community. _____

Objective: Identify environmental problems in the locality and their influence on the school and the community from a walking.

Propose measures for environmental conservation.

Activities:

- ✓ Make a trajectory in the environment from the school to the "Eco-Guaso" Community.
- ✓ From the observation, diagnose and characterize the environmental problems, both in its biotic and abiotic components and fundamentally in the socio-economic.
- ✓ Propose some of the actions for adaptation, mitigation and resilience to the effects of climate change to which this community is vulnerable.

- ✓ Make a message to the residents of this community in the modality of Poetry, virtual message, letter where the importance of protecting and conserving the components and natural resources in this community for a sustainable development is valued.

Example 2. Regional Geography Program. Topic # 4. Australia and Oceania. Antarctica: general characteristics and scientific importance. 3rd year. Summary: Antarctica: general characteristics. Relationship between physical geographic components (climate-hydrography-soil-vegetation-fauna).

Objective: To establish relationships between components (climate-hydrography-soil-vegetation-fauna), in order to achieve a correct scientific training.

Teaching method: independent work

Procedures: work with maps and text, partial research, analysis).

Form of organization: practical class

Teaching-learning media: (CD of the career" Compendium of Regional Geography", Anthology of maps for Education Hernández Herrera, Pedro A, Recio Molina, Pedro P et al: Havana 2013. Physical Geography of the continents 3 T.V. Vlasova, Physical Planisphere, maps Physical World, geographic strips and zones, vegetation.

Activities for the development of the practical class:

The activities in the previous guide will prepare 3rd year students in this course for the development of the practical class.

When using the thematic map Physical World through the "Anthology of Maps for Education, refer to the Physical Map of the World and the book Physical Geography of the Continents. Volume III: a) Locate the continent Antarctica. b) Refer to its limits and extreme points. c) What are its borders like? d) What are the consequences that are derived from the situation and geographic extension of the continent Antarctica? Evaluate the geographical situation of this continent taking into account elements that characterize it.

In this sense, students should take into account that: This continent is completely in the southern hemisphere. It is a completely southern continent, the southernmost continent on Earth. It has a marked circular shape and is crossed by all the meridians of the earth.

2. Analyze the Climate map of the world according to Koppen and refer to:

- a) What are the types of climate that predominate in Antarctica?
- b) Give the climate behavior of the meteorological variable temperature and precipitation.
- c) Represent it in your map notebook: temperature and precipitation values.

In these components, it is necessary for the student to understand that Antarctica has more severe climatic conditions than the polar zone, temperatures of -88°C have been recorded at the Vostok station, which is one of the lowest observed on earth. The formation of glaciers is characteristic of this belt.

It is important to note that glaciers accumulate large amounts of water in solid form. If all the glaciers on the mainland were to melt, the level of the world ocean would rise by approximately 70 cm, which would cause flooding in the lowlands where 25% of the world's population currently lives.

3. Look at the physical map of Antarctica. a) Explain the hydrography of Antarctica. b) What are the hydrographic characteristics of Antarctica?

4. Compare the following thematic maps:

- Climate map of the world according to Koppen.
 - Map: World. Actual temperatures, atmospheric pressure and winds (January) and Actual temperatures, atmospheric pressure and winds (July). Page 14.
 - Map: the World. Mean annual precipitation and ocean currents. Page 15.
 - Map: the World. Geographical belts and zones. Page 18 and 19.
 - It establishes the influence that exists between the confronted geographical components (climate-hydrography).
- a) It establishes causal relationships based on the dependencies and relationships between the components being analyzed (climate-hydrography).

Subsequently, the integration of all the geographic components will be oriented from a learning situation, with an integrative approach.

Refer to the book *Physical Geography of the Continents*, part three. T.V. Vlasova:

(a) Identify through the index under the heading related to the physical-geographical regionalization of the continent Antarctica, and read carefully the aspects that characterize the region.

b) Consult the atlas *Anthology of Maps for Higher Education* for the following thematic maps: the physical world, climate, geographic belts and zones, vegetation. Locate the region, then relate the components of the maps consulted and compare the aspects investigated in the map with what is recorded in the book, and reach generalizing conclusions.

c) Why is it that Antarctica has the largest reserve of fresh water on the planet but cannot be used?

Conclusions

Environmental education at the higher level has been approached with a more comprehensive approach by different authors, which demonstrates the variety of scientific results, constituting a contribution to the curricula to treat environmental management, taking advantage of the potentialities offered by the contents with an environmental approach.

Such demands require a systematic monitoring and fostering the awareness of all students from the training process, before environmental problems, characterized by a creative, judicious, proactive and scientific thinking, which translates into the diversity of actions aimed at the protection and conservation of natural and historical-cultural resources, for the environmental welfare, preventing or mitigating environmental problems, from the teaching process of Geography.

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