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Director: Fernando Emilio Valladares Fuente

Email: [fernando.valladares@upr.edu.cu](mailto:fernando.valladares@upr.edu.cu)

*Translated from the original in Spanish*

*Original article*

## *Development of environmental education in university students from the Physical Education subject*

*Desarrollo de la educación ambiental en estudiantes universitarios desde la asignatura Educación Física*

*Desenvolvimento da educação ambiental em estudantes universitários da disciplina de Educação Física*

Irisdany Gómez Quintana<sup>1\*</sup> , Yadira Hidalgo Castro<sup>1</sup> , Juan Carlos Díaz Cabrera<sup>1</sup> ,  
Amarilys de Jesús Pozo Contrera<sup>1</sup> , Edinberto Ramos Pérez<sup>1</sup> 

<sup>1</sup>University of Pinar del Río "Brothers Saíz Montes de Oca. Pinar del Río, Cuba.

\*Corresponding author: [irisdany.gomez@upr.edu.cu](mailto:irisdany.gomez@upr.edu.cu)

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### **ABSTRACT**

Environmental education is a continuous educational process that seeks to objectively form and modify attitudes about the global reality of the environment, both natural and social. For this reason, this article focuses on the Physical Education subject, which, in the authors' opinion, it is an ideal block of content, for addressing the development of environmental education in university students. During the research process, methods like historical-logical, analytical-synthetic, inductive-deductive, observation, documentary review, survey were used, as well as descriptive statistics one. The processing of the information obtained allowed to corroborate the real existence of the problem, and then carry out a diagnosis of the difficulties and potential present in the development of environmental education in the Bachelor of Education. Economy specialty, for its further treatment. Therefore, the objective of this research is to develop a set of activities that from



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the potential of Physical Education allow contributing to the development of environmental education in the first- and second-year students of the career Bachelor of Education. Economics specialty at the University of Pinar del Río "Hermanos Saíz Montes de Oca".

**Keywords:** Environmental education, Physical Education, environment, students, sport.

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## RESUMEN

La educación ambiental es un proceso educativo continuo que persigue formar y modificar actitudes de forma objetiva sobre la realidad global del medio, tanto natural como social. Por ello, este artículo se centra en la asignatura Educación Física, la cual consideran los autores, que constituye un bloque de contenidos ideal, para poder abordar el desarrollo de la educación ambiental en estudiantes universitarios. Durante el proceso investigativo se utilizaron los métodos: histórico-lógico, analítico-sintético, inductivo-deductivo, la observación, revisión documental, la encuesta y la estadística descriptiva. El procesamiento de la información obtenida permitió corroborar la existencia real del problema, y luego realizar un diagnóstico de las dificultades y las potencialidades presentes en el desarrollo de la educación ambiental en el Licenciado en Educación. Economía, para su posterior tratamiento. Por tanto, el objetivo de la presente investigación consiste en: elaborar un conjunto de actividades que desde las potencialidades de la Educación Física permitan contribuir al desarrollo de la educación ambiental en los estudiantes de primer y segundo año de la carrera Licenciatura en Educación. Economía en la Universidad de Pinar del Río "Hermanos Saíz Montes de Oca".

**Palabras clave:** Educación ambiental, Educación Física, medio ambiente, estudiantes, deporte.

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## SÍNTESE

A educação ambiental é um processo educativo contínuo que visa formar e modificar atitudes objetivamente sobre a realidade global do ambiente, tanto natural como social. Por esta razão, este artigo centra-se no tema da Educação Física, que os autores consideram ser um bloco de conteúdo ideal para se poder abordar o desenvolvimento da educação ambiental nos estudantes universitários. Durante o processo de investigação, foram utilizados os seguintes métodos: histórico-lógico, analítico-sintético, indutivo-dedutivo, observação, revisão documental, inquérito e estatística descritiva. O processamento da informação obtida permitiu corroborar a existência real do problema, e depois fazer um diagnóstico das dificuldades e potencialidades presentes no desenvolvimento da educação ambiental no Bacharelato em Educação. Economia, para o seu tratamento posterior. Portanto, o objectivo da presente investigação consiste em: elaborar um conjunto de actividades que a partir das potencialidades da Educação Física permitam contribuir para o desenvolvimento da educação ambiental nos alunos do primeiro e segundo anos do curso de licenciatura em Educação. Economia na Universidade de Pinar del Río "Hermanos Saíz Montes de Oca".



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**Palabras-chave:** Educación ambiental, educación física, ambiente, estudiantes, deporte.

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## INTRODUCTION

The analysis of the relationship between society-environment-sport has been a subject of study and discussion for a long time, even in international forums. Its relevance is attributed to a group of problems that affect humanity and contribute to a great extent to the destruction and deterioration of nature. This situation is caused to a large extent, by the lack of adequate attitudes and social commitment towards the management and care of man's natural resources. These attitudes have been worsening over the years, due to the lack of environmental awareness and education and therefore, of an environmental culture in considerable sectors of the population.

This environmental crisis constitutes a threat to human existence, which significantly affects the deterioration of the quality of life, and therefore makes it one of the main concerns of humanity. To reverse this situation, it is necessary to have capable, motivated professionals, willing to work and above all, with knowledge that allows them to find solutions to current problems and prevent others that may appear.

Vento, *et al.* (2018), state that the irresponsible activity of man accelerates the process of environmental deterioration, as a result of his accumulated ignorance and lack of environmental knowledge. This lack is a consequence to a large extent of the still insufficient development of environmental education, which contributes to the fact that the action of the human being is more impactful on the environment that surrounds it.

In this regard, Jiménez (2020) considers that the training of professionals capable of managing knowledge and innovation, based on the care and protection of the environment; it is the responsibility of Cuban universities. Hence, in these institutions, experiences aimed at the development of EE of students are developed.

In addition, it is stated that, to achieve this end, planning, organization and development of methodological work is necessary from the institution, the careers, to the teacher and the student him/herself, which is still insufficient. For this reason, it is necessary to explore new tactics that provide future teachers, in charge of educating the new generation, with the necessary tools to systematically influence the environmental education of their students (Sierra, *et al.*, 2016).

The coincident points between the aforementioned authors analyzed previously lie in the need to consider Environmental Education (EE) as a necessary tool to be used during the training process. Only in this way they will be able to develop in future professionals a system of knowledge, skills, attitudes and values which encourage them to care for and protect the environment that surrounds them. The authors of this research agree with these criteria.



Faced with this need, the Cuban educational system has taken on the task of training an integral professional, with firm ecological convictions, and capable of enhancing the essentially human nature of each one. Hence, in recent times, Environmental Education has been seen as a transversal issue to be worked on sporadically, in all the subjects of the curriculum, in each of the education subsystems. From here, the urgent need to prepare the teachers of Technical and Professional Education (ETP) arises; so that these, in turn, prepare future technicians through methods, skills and knowledge that respond to social demands, in this case the care and preservation of the environment.

That is, the responsibility falls on Higher Pedagogical Education (ESP), in ETP careers, and therefore, the training processes of future teachers must be directed, in correspondence with environmental needs. The training of the Bachelor of Education does not escape this. Economics (LEE), this professional whose work objective is direct and systematic action as an educator, on the Teaching-Learning Process (PEA) in families of Economics, Services and Social Services in the ETP with its complex structure.

The aforementioned complexity includes the addition of new content that responds to the needs of the new generations so that they act in favor of environmental protection, so as to prepare teachers in training to transmit this content to future mid-level professionals, as part of the ETP process of the Accounting specialty.

This is the case of the Physical Education subject, which, in the authors' opinion, it is a block of ideal content for addressing the development of EE. This subject needs new scenarios for students to face new challenges. For this, it is important to take into account the environment that surrounds them, which they see and feel daily, but with another look at their small world, the environment.

The environment must be treated not only as a specific content but as transversal to all disciplines, and among them, Physical Education is the leader in promoting the relationship of students with their natural environment, through which the physical activity with the open air space; it includes walks, and the care of nature is promoted, as the great treasure that must be preserved in order to live better.

Based on the above, the effective use of the class hours of the aforementioned subject should be encouraged, the real problems that affect the natural environment are addressed. Students should be taught about the great importance of the environment, as it is a source of life and diversity.

Some scholars from the field of sport and other sciences have focused on the incidence of the environment and with it environmental education (EE) in the training process of future professionals. This is the case of Gómez (2016), who introduces approaches to strengthen environmental values from the training of athletes.

Other researchers have been consulted who have directed their contribution to the professional performance of the Physical Education teacher. Such is the case of Suárez, Martínez and Moreno (2017) who direct their studies towards a set of indicators, which allow measuring the methodological teaching professional performance of Physical Education teachers, in order to improve the training process. While González (2017) defends



the idea that environmental education is not reduced to forming a citizenry to conserve nature, or change behaviors, but is assigned a challenging task, that of educating to change society. For this reason, an environmental education oriented towards sustainable development that promotes, from integrative values, a conscious, political, historical and ethical subject is necessary and urgent.

The formation of values is another of the fundamental lines to follow when it comes to environmental education. In this regard, Prieto, *et al.* (2018) defend the need to transform the teaching of Physical Education in the current Cuban school, with the purpose of prioritizing educational work. To do this, they are based on the idea that Physical Education classes are presented as a favorable setting to contribute to the formation of values in students, based on the potential offered by the sports activities themselves.

While Zayas (2019) states that the solution lies in the improvement of Physical Education through training and for this he proposes a training strategy for those responsible for the direction of the Physical Education area from the earliest ages.

Another of the most recent researches on the subject is carried out by Redondo, *et al.* (2020), who directed it in order to strengthen environmental education, specifically in Athletics. For this, they propose the implementation of a methodology that, based on the adequate or limited and correct use of teaching methods, allows solving environmental problems.

In this approach, it is necessary to make two important clear aspects: 1. That physical education is an effective way to develop environmental education in university students and 2. That for students of the Bachelor's degree in Economics. Specializing in Economics, it is essential for him/her to guarantee an efficient and contextualized environmental education in his/her training. These concepts will be illustrated below.

Physical education has proven to be a way, a space and an effective method to develop environmental education and that it remains as a group of positive values and the learning system incorporated into the personality of the student. Several authors have shown in their works that physical education allows contact, identification and awareness of the subjects with the physical, psychological and social environment. As a way of exemplifying this argument, in Physical Education the student must consider the characteristics of the terrain, the weather, the sports facilities and the state of their health and physical and mental well-being to exercise physical activity in a sustainable way (Blanco, *et al.*, 2007; Hernández, *et al.*, 2009; Ramírez *et al.*, 2015; Fuente, 2016; Valladares, Posso, 2022).

For students of the Bachelor's degree in Economics, it is vital to acquire a comprehensive education based on knowledge and the rational exploitation of natural and material resources in line with the cultural and social relations that emerge in this interaction. In other words, a student of this career who does not know how to educate his/her disciples to understand and conceive the economy as a cycle where much of what is produced can be reused, recycled and reduced in manufacturing cost, is not considered a resilient professional. Without this premise, the professional cannot become a trainer of austere, innovative and rationalizing men. The economy, especially the Cuban one, due to the fact that it is an island without great natural resources, must be based on a culture of savings, respect for otherness and the natural and historical heritage, and these aspects of education



should not be transmitted authoritarian, nor banking. On the contrary, it must use channels such as physical education within the subjects that this student must study in their study plan. Here the interdisciplinarity of educational influences is activated to make education more flexible, motivate and renew the training processes of the university (Bedolla, *et al.*, 2019; De la Rosa, Carrión, 2020; Burgos, Boyato, 2021).

The references studied show that, although in Cuba concrete and coordinated actions are carried out in order to develop environmental education in teachers, coaches and athletes, there are still difficulties regarding the impact that these must achieve in each sector of society. That is why the objective of this research is to develop a set of activities that from the potential of Physical Education allow contributing to the development of environmental education in the first- and second-year students of the Bachelor's degree in Economics. Economics (LEE) at the University of Pinar del Río "Hermanos Saíz Montes de Oca".

## MATERIALS AND METHODS

To develop this research, a population made up of 16 and 21 first- and second-year students of the LEE career, respectively, and 6 teachers belonging to the Department of Physical Education of the University of Pinar del Río "Hermanos Saíz Montes de Oca" were selected.

The research has as a general methodological foundation the dialectical-materialist method, since it allows a more objective analysis of the problem and defines with greater clarity, the way to access scientific knowledge obtained with the use of theoretical, empirical and statistical methods, with the objective of characterizing, developing and deepening the essential characteristics of the identified research object.

Theoretical methods were used mainly in the phase of theoretical elaboration and research design, they are also used in the interpretation of empirical data and the elaboration of the practical proposal. Among them are:

The *historical-logical* one: allowed to start from the genesis of the problem posed, from it, logical relationships are established based on theoretical-methodological precepts that base environmental training taking as reference pedagogical, psychological, philosophical and sociological patterns, for the use of each activity according to the particularities of this type of teaching.

The *analytical-synthetic*, allowed the determination of the activities that will be implemented, as well as the way in which each of them will be used, based on the didactic function that they will fulfill.

The *inductive-deductive method* was used to establish the relationships between the proposed educational didactic activities with an environmental nature, as well as their contribution to attitude changes in students as part of their environmental education.



The empirical methods were used in the diagnosis stage as a means of accumulating empirical information and verifying the existence and current situation of the research problem. Among them the following were used:

The *documentary review*: it was used for the study, compilation and systematization of the information obtained from the lesson plans and normative documents consulted during the investigation (Syllabus of subjects, Director Program of the Environment, as well as texts related to the problem under research, among others).

*Observation*: it was used to verify to what extent Physical Education teachers take advantage from their class of the potential that the subject itself offers for the development of environmental education in university students; as well as the modes of action of the students, in relation to the care and protection of the environment, starting with the sports areas.

On this basis, the dimensions and indicators proposed by Valladares that deal with the natural environment, the built environment and the social ethical environment are assumed.

## RESULTS AND DISCUSSION

The results of the methods, techniques and instruments applied in the verification of the problem, allowed to identify the following as main limitations for the development of environmental education (Table 1):

*Table 1. - Relationship between the % of teachers and the limitations regarding EE*

<b>% of teachers in the Physical Education department</b>	<b>Limitations</b>
65	They show little orientation regarding environmental education.
72	They do not correctly take advantage of the potential that the subject offers for the development of environmental education and its close relationship with sport.
100	They do not know how to develop environmental education in their students from Physical Education because the subject program does not contain any methodological guidance for it.

To this it must be added that there are few activities based on contributing to human improvement and with it to the care of the environment as part of the educational teaching process in the LEE career.

In relation to the actions of the students, it was found that:

- Their knowledge is limited to explain what the environment is and what are the existing environmental problems.





- Little mastery of possible existing local environmental problems, as well as the explanation of their causes, consequences and possible actions to be carried out for their mitigation.
- They fail to see Physical Education as a possible solution to the existing environmental situation.
- They fail to see how proper care and maintenance of sports areas and school environments they contribute to the care and protection of the environment.
- They have not developed an environmental culture that contributes to their future performance.

On the basis of the analysis carried out previously, it is decided to elaborate as a solution proposal to the problem initially raised, a set of activities with the general objective of contributing to the development of environmental education from the Physical Education subject, in the first- and second-year students of the LEE degree at the University of Pinar del Río "Hermanos Saíz Montes de Oca". While the specific objectives are based on each activity in a particular way.

In the elaboration of the activities, a series of active and participatory methodologies that promote awareness were taken into account as a reference, such as: the clarification of values, the discussion in groups and environmental education on the ground, always seeking the actions of the students directly and responsibly.

They give the possibility of combining knowledge and elements that contribute to environmental education from sport. Concepts, ideas and ways of working that transcend through the contents of the Physical Education subject are presented.

The activities are structured taking into account: title, objective, moment in which it is carried out, development and evaluation.

Title: it corresponds to the main idea of the activity; it was tried to be attractive and to motivate the students.

Objective: they are related to the skills that are worked on in the Physical Education subject each year.

When it is done: it can be during classes, but not necessarily within the areas of the university.

Development: includes the actions themselves, where the different participatory techniques are taken into account.

Evaluation: participation in each activity has great weight, but the personal growth of each student in relation to the subject matter has also been considered.

Next, they are related to the Activities that make up the proposal:



### Activity 1

Title: Environmental education in the locality.

Objective: to recognize the main existing environmental problems in the Pinar del Río municipality.

When it is carried out: during extracurricular hours, preferably starting from the very beginning of the school year and from the class.

Development:

For the development of this activity, it is necessary for the teacher to carry out a previous tour to determine the areas with the greatest potential and then guide the students based on visiting the most prone areas, such as: streets of the municipality, industrial enterprises ( Dairy Complex, La Conchita factory, Beer factory, Cookie and Pasta factory, among others), oxidation lagoon (if they exist), sports centers and facilities (INDER, Fajardo, baseball and soccer stadiums, racetracks , outdoor gyms free).

In each area visited, students must carry out a survey of the environmental conditions that surround it and the possible environmental problems that, in their opinion, cause them.

Once the survey is presented, the possible causes, consequences and measures that could be taken to eradicate these problems will be analyzed together, ensuring that all students participate, freely express their points of view and reflections. The teacher will encourage them to rectify approaches that are not friendly to the environment.

Evaluation: The teacher will evaluate each student for their participation.

The delivery of a report of the tour carried out will be oriented, where the main environmental problems of the municipality must appear, as well as some of the causes that have originated them, taking into account the observation made and other elements treated and debated together. The report will be presented at the beginning of each class shift and independently throughout the course.

### Activity 2

Title: Environmental situation of my university.

Objective: to characterize the environmental situation of the university contributing to the development of abilities and capacities for the formation of environmental values.

When it is done: after school hours and from class.

Development:

The professor will guide the students based on characterizing the environmental situation of the university, both in the teaching facilities and in the student residence, in the three campuses belonging to it. For this, they will be given a guide, previously prepared by the group of the subject, which will serve as support material at the time of characterization.



To carry out the activity, students must meet with heads of departments, professors, administrators, chefs, and the center's maintenance staff, in order to allow them to tour the facilities, carefully observing and describing each aspect indicated in the guide. As evidence for the debate, they will use photographs of each of the places visited, using a cell phone or a camera as a means, so that they are also developing the use of technologies. This will captivate them and without realizing it they will identify with the environment that surrounds them.

*Evaluation:* Their participation and the level of familiarity with the environment will be evaluated.

These are some of the activities that can contribute to the development of environmental education in university students from the Physical Education subject, based on the limitations detected from the implementation of a group of methods and instruments selected by the researchers and applied to the students of first and second year of the Bachelor in Education. Economics specialty of the University of Pinar del Río, some recent graduates of the career who are already directing the educational teaching process in the ETP and the group of teachers in the Physical Education area of the aforementioned university.

Based on making comparisons between this work and some references on Environmental Education applied to Physical Education (PE), it can be stated that in the queries made, the number of works referring to the environmental issue in PE it is very reduced. In this case, the works consulted address the issue of environmental education from a more naturalistic perspective (Pastor, Pastor, 1997; Gallegos, Extremera, 2010). This is not the case in works where the psychosocial aspect is also part of environmental education from the maturation of this science under construction where the human role is more harmful and more decisive every day (Valladares, Posso, 2022; Redondo *et al.*, 2020).

## CONCLUSIONS

The proposal meets the methodological, didactic and structural requirements for its implementation in the educational teaching process from the Physical Education subject, in order to contribute to the development of Environmental Education in university students and thereby awaken the sense of belonging to the natural environment. where they live and exercise day by day.

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**Conflicts of interest:**

The authors declare not to have any interest conflicts.

**Contribution of the authors:**

The authors have participated in the writing of the work and analysis of the documents.



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