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# Agroambiental education in the training of professionals: Perspective for sustainable development

Franciss Brown Smith<sup>1,\*</sup>, Yohanna Alexandra Grandales Brown<sup>2</sup>, Mercedes Lina Wong Torres<sup>3</sup>, Amparo Osorio Abad<sup>1</sup>

<sup>1</sup> University of Pedagogic Sciences, Habana 11500, Cuba

<sup>2</sup> Institute of Geophysics and Astronomy of the Republic of Cuba (IGA), Havana 11500, Cuba

<sup>3</sup> University of Havana, Habana 11500, Cuba

\* **Corresponding author:** Franciss Brown Smith, [francissbrownsmith@gmail.com](mailto:francissbrownsmith@gmail.com)

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**Abstract:** In Cuba the environmental education, is recognized as an indispensable process to reach the objectives of sustainable development. The agricultural content is of vital importance, the Limits of the Economic and Social Politics of the Party and the Revolution, the Conceptualization of the Pattern Economic and Social Cuban of Development Socialist and the National Plan of Economic and Social Development up to the 2030, they guide in this sense. In the calendar 2030, the objective 4 make allusion to the education of quality that should guarantee an inclusive, equal education and of quality. It also establishes that it owes himself, to assure that all the students acquire the necessary theoretical and practical knowledge to promote the sustainable development. The article analyzes the importance of the education agro-environmental, where educational actions are promoted guided to the transmission and acquisition of knowledge, abilities, attitudes and values related with the problems of the school agricultural ecosystem. This investigation intends as objective to contribute to the enrichment of the information on the state of the education agro-environmental in the training of the professionals of the education in Cuba as well as to reveal the theoretical-methodological foundations from the sciences of the education. He/she was carried out an analysis of the current agricultural situation and their study in the plans and study programs. In the analysis they combined theoretical and empiric methods as the study of documents, analysis of contents and the observation that allowed to reveal the theoretical-methodological foundations related with the education agro-environmental to contribute with the alimentary sovereignty and the objectives of sustainable development of the calendar 2030.

**Keywords:** science; agriculture; contents; strategy

## 1. Introduction

The degradation of the environment acquires special relevance, what denotes the necessity of changes in the ethical form, technique and economic of the human being's behavior in the current society, to join efforts that contribute to the rational use of the natural resources from fairer and more equal development patterns, valid for the execution of the objectives of development sustainable contents in the calendar 2030.

That is analyzed declared by the United Nations in the decade (2005–2014), referred to the Decade of the Education for the Sustainable Development (EDS), where it is also declared that the main objective of the (EDS), it is to integrate the inherent values to the sustainable development in all the aspects of the teaching (...)

by means of all the education forms (...) [1]. In such a sense Novo [2], he/she refers that the perspective of the sustainable development should be introduced in all the educational environments. The EDS is not presented as a new program, but like an invitation to rethink educational policies, the programs and the pedagogic practices.

In this respect, the Organization of the United Nations promotes in the goal four of the goal seven the necessity of: (...) that all the learners acquires the knowledge theoretical necessary and practical to promote the sustainable development, by means of the education for the sustainable development and the sustainable lifestyles, human rights, the gender equality, the promotion of a culture of peace and non-violence, the world citizenship and the valuation of the cultural diversity and the contribution of the culture to the sustainable development [3].

The National Environmental Strategy of (2016–2020), it integrates the strategic general aspects of the environmental calendar and the National Program of Environmental Education for the Sustainable Development (2016–2020), it constitutes, therefore, the mark of implementation of the projections and the action lines as regards environmental education that includes the priorities, the attention to the deficiencies and holes of previous strategic periods.

In Cuba the importance of the environmental education is recognized, as an indispensable process to reach the objectives of sustainable development, where the agricultural content is of vital importance, the Limits of the Economic and Social Politics of the Party and the Revolution for the period 2016–2021 (104, 107, 122, 125, 143, 157, 158, 162, 163, 202, 242, 254), the Conceptualization of the Pattern Economic and Social Cuban of Development Socialist and the National Plan of Economic and Social Development up to the 2030 (Axis strategic 162 and 163) and the law 150 of 2023 of the National System of the Natural Resources and the Environment, they guide in this sense.

At the same time the Plan of State for the confrontation to the climatic change [4], it highlights the current climatic tendencies and the most vulnerable considered scenarios that will produce a deterioration of the general environmental quality, as consequence of the reduction from the potential water to regional scale, the impoverishment of the floor, the decrease of the agricultural yield in fundamental cultivations of the national diet, the loss of the biological diversity and the impact on the economic activity in the country.

More recent the National Plan of Alimentary and Nutritional Sovereignty [5,6], to reach a full alimentary security that promotes the education to all the citizens, it constitutes a challenge for Cuba, under the current conditions of economic and social development.

In a same way, as discovery of this investigation it is fundamental to highlight the cultural wealth that identifies the Cuban pedagogy, which contains the conceptual and methodological base for the education agro-environmental in Cuba, sustained in the experience and the international practice with a long tradition in their implementation and development.

In this sense inside the existent problems in the current agricultural education and their integration to the plans and study programs in Cuba is even insufficient, problematic that is evidenced starting from the results of investigation projects related with the topic and the observation in the educational environment. Therefore,

it becomes evident the necessity of the education agro-environmental to acquire knowledge, abilities, attitudes and values in the citizens, in function of the socioeconomic and environmental politics of the country.

The present investigation has as objective to contribute to the enrichment of the information on the state of the education agro-environmental in the training of the professionals of the education in Cuba as well as to reveal the theoretical-methodological foundations from the sciences of the education to contribute with the alimentary security and the objectives of sustainable development of the calendar 2030.

## **2. Methods**

The used methods were: the observation, the study of documents and analysis of contents.

The observation: it was applied in the visits to the schools, traveled by the existent school agricultural ecosystems in the communities, what allowed to know their weaknesses and strengths to obtain a compression of the education agro-environmental in the practice.

The study of documents allowed the search of the necessary antecedents for the development of the investigation from the study of documents rectors, thesis, books among others.

The qualitative analysis of documents to determine the addresses of the investigations related with the topic and the revision of national and international articles that base the relevancy and importance of the topic. Also, to understand the development of previous investigations and to identify breaches for future investigations.

The proposal was applied in the pedagogic school Fulgencio Oroz Gómez from the Havana and in the University of Pedagogic Sciences “Enrique Male José” like center rector.

## **3. Results**

The education agro-environmental in the context educational Cuban analyzes that declared by the United Nations in the decade (2005–2014), referred to the Decade of the Education for the Sustainable Development (EDS), where the UNESCO takes charge of its setting in practice. In the documents of both institutions, it is recognized that this it is not centered in a concrete environment, but rather it includes to 15 fields like the peace, the health, the sustainable urbanization, natural resources (it dilutes, energy, agriculture, biodiversity), I change climatic, I develop rural, prevention and mitigation of disasters.

The reflective carried out consultation that the experiences in the treatment of the agricultural activity in the school are varied at world level, according to Riedmiller [7]; Penghui and Tormoehlen [8]; Kidane and Worth [9]; Robert and Edwards [10].

The mentioned authors express different focuses according to the objectives: educational (centered in offering to the learners knowledge and abilities to improve the agricultural practices, to favor the teaching of the natural sciences, as practical

dimension of the sustainability programs of environmental education.

In syntony with the above-mentioned the agricultural activity understands each other as: “(...) the system of exploitation of the earth that includes the agricultural, forest activities and cattlemen” (Spanish Society of Ecological Agriculture [SEAE] [11]). The agricultural systems have characteristic that allow the human beings the production of foods and the gain obtaining, for it is indispensable the care and the protection of the agroecosystems.

The necessity to include the contents of the agricultural activity in the Cuban school is ratified in the Article 27 of the Constitution of the Republic of Cuba mentioned by Parrado et al. [12], and the Articles 53, 54, 55, 56, 63, 64, 65, 141, 142, 144 and 145, of the Law of the System of the Natural Resources and the Environment [13] as well as in the Limits of the Economic and Social Politics of the Party and the Revolution (2016–2021), 137, 139; 145; the National Strategy of Environmental Education (2010–2015) and the National Environmental Strategy (2021–2025).

He/she stands out the result of Leiva [14] referred to the agricultural education of the students of secondary basic, which carries out a systematizing of the most immediate antecedents in the subject Agricultural Education, for the formation of primary teachers and of preschool, their contents have exit by means of the disciplines “Studies of the Nature” or the subject “The School Orchard” and the work with the “Area of the Nature” in the education preschool and in consequence Ávila [15], it develops an investigation directed to the professional overcoming in the education of the rurality for educational of the primary school.

In a same way international authors as: Moreira and Bianco [16]; Kareiva et al. [17]; Moreno et al. [18], they intruded in the sustainable or sustainable agriculture and in the inventory of political agro-environmental, those that consider indispensable to guarantee the feeding, the health and the conservation of the ecosystems.

In the national environment they constitute relating of the topic investigating agro-environmental as: Almaguer [19]; Martínez [20]; Hidalgo [21]; Brown [22].

The authors referred in their studies distinguish the necessity to pay attention to the element agro-environmental, they conceives the primary teacher’s preparation pedagogic sustainable agro-environmental that is summed up in a system of actions that like part of the educational-methodological functions of educational orientation and of investigation-overcoming and the relationships among them, for the treatment to the development agro-sustainable under mountain conditions, in function of completing the essential task as educator.

Indeed, the politicians and measures have a triple challenge: the economic viability in the production of foods; the conservation of the atmosphere and the natural resources; and the commitment of to combat the rural poverty and to guarantee the alimentary security. These they are considered as instruments for the implementation of the principles of the sustainable development applied to the agricultural and forest productive sectors (Organization of the United Nations for the Feeding and the Agriculture [23]).

They intended and they developed some activities that enriched the education agro-environmental of the professionals of the pedagogic school as: a project

socioproductive that includes a diagnostic agro-environmental that he/she reveals the environmental problems that affect the sustainability of the school agricultural ecosystem and a course of titled professional overcoming: The environmental education for the sustainability. The course was imparted during the methodological preparation of the professors, he/she facilitated to acquire knowledge for the application of good practical agricultural, and also to stimulate the solution of the environmental problems, associated to the school agricultural ecosystem. Time of duration 48 hours classes, two monthly encounters, were carried out in the months of April, May and June, with the participation of the 15 professors of the department of Natural Sciences. In the course of environmental education for the sustainability, four conferences were inserted, those that constitute support of the methodological shops.

It is shown in the **Figure 1**.



**Figure 1.** Pictures of the participation of the professors in the courses.

The activities agroambientales possess: title, objective, methodological orientations and evaluation. In the **Figure 2** are observed the participation of the professors and students during their execution. The first activity that is conceived is the diagnostic agroambiental like one observes in the **Figure 2**, together to the sustainability indicators that in this sense, they allow to evaluate the situation and potentialities of the agricultural ecosystem. Propagation of varieties plants. Protection of the floor like natural resource. Reparation of areas. Sowing of plants. Reforestation.



**Figure 2.** Pictures of the participation of the professors in the activities.

#### **4. Discussion**

The agricultural activity, it has been referred in multiple projects and documents rectorors of the politics of Cuba; however, the preparation of the professors in the pedagogic schools is essential to confront this topic in its professional work and to reach a mentality of producers, for the sake of educating for the sustainable development. My call is directed to the necessity of implementing practical strategies that promote the holistic learning and integrate the agricultural systems and agroecological, included the climatic change to the study programs and training in the different careers and universities without stopping to qualify the professors and producing agents socializers in the practice educational experiential for the sake of to guarantee the alimentary security and to implement the objectives of sustainable development of the calendar 2030.

It is important to highlight the contribution from the investigation to the theory of the sciences of the education keeping in mind that it expresses the theoretical-practical conception of the pedagogic process that integrates the environmental contents and of the agricultural sciences with those of the subjects of the careers to achieve the education agro-environmental in the professor's preparation. It looks for alternative of solutions to the environmental problems related with the agricultural production from the profession, of this argument it is that one conceives the school agricultural ecosystem as an educational resource where it is linked the work and the activities that are carried out with the family and the community.

It is valid to stand out the benefits and opportunities of the focus agro-environmental since it allows by means of their practices to transform the environment well for the of the society, it improves and it contributes from the school to the conservation of the school agricultural ecosystems and the production of healthy foods. It facilitates to identify the social and economic transformations happened in the municipality where the school is located and specifically the school agricultural ecosystem.

On the other hand, he/she offers sustenance on the educational chore, starting from the own educational practice as approach of the truth, of there the importance of understanding the education agro-environmental from the bond practical theory.

It is recognized that, in Cuba, favorable conditions exist to make the treatment from the contents of the different subjects and programs, to the concerning environmental problems to the school agricultural ecosystem in the education in general and especially in the pedagogic schools, in function of the educational objectives and the interdisciplinary and integrative focus. In this same order of ideas, the benefits and opportunities of the focuses are stood out based on works multi-disciplinary for the education agro-environmental and the training of professionals.

A key aspect, is the inclusion of the topic of the agriculture in the different educational levels, starting from the implementation of the Program of Agricultural Education in the current Cuban school elaborated for and other relating applied results to the agricultural education in the formation of educational .

In these documents allusion is made to the importance of the preparation of the professors in function of the socioeconomic development of the country, with view to act in the conservation, protection and improvement of the natural resources,

among them, the floor, the water and the resources zoo and phylogenetic.

Also, the imprint is reaffirmed of carrying out integral investigations that contribute to the care and the protection of all the components of the environment, to evaluate the socioeconomic and environmental impacts of the extreme events, in function of adjusting the environmental politics to the current perspective of the country.

It is necessary to insist in that the agricultural activity, has significance for the Cuban archipelago, due to its characteristics and natural conditions, for it the treatment to the education agroambiental, is of interest in the different educational environments.

In fact, the agricultural education, represents a priority, in her multiple factors intervene to carry out actions with different educational levels and actors of the National System of Education (SNE), which are in development and they are introduced in the current process of improvement of the Cuban school. The exposed aspects justify and they sustain the it was worth of the education agro-environmental, to upgrade the agricultural and environmental knowledge in the preparation of the professors.

Education agro-environmental understood as formation process and development of educational actions guided to the transmission and acquisition of knowledge, abilities, attitudes and values in connection with the problems of the school agricultural ecosystem and the environmental education guided toward the sustainable development.

In syntony with the distinguished aspects the author understands in advance, that the ecosystem agricultural scholar is (...) formed by all the natural resources, organisms and microorganisms that they interact in the agricultural area of the educational institution, where he/she stands out the cook's orchard, gardens of medicinal, ornamental plants, spicy, garden or forest Martian and other modalities of production of the urban, suburban and family agriculture that are used as educational resource by the professors of the pedagogic school in the development of activities agro-environmental .

In connection with the activities agro-environmental they understand: "All those actions guided toward the conservation and improvement of the school agricultural ecosystem and their environment to favor the education agro-environmental in the pedagogic school, by means of the transmission of knowledge and knowledge that contribute to the sustainable development" [24].

Of course, that the activities agro-environmental can be integrated to the work of the pedagogic school, when considering the school agricultural ecosystem as educational resource and favorable scenario for the production of foods and a road of implementation of the contents similar with the ONU and the objectives of sustainable development of the calendar 2030 .

It is deduced that, the used focus is rather systemic, with objectives based in the economic, social and environmental dimensions of the sustainable development. "The focus agroambiental is considered by the Organization of United Nations, measures to achieve a sustainable agriculture" [25].

In the made analysis the necessity of the education agroambiental is appreciated to respond to the socioeconomic transformation and to promote the sustainable and

environmental development, by means of the actions that are projected the educational emphasis, in this topic, doesn't only put on in assisting to the capacities or individual dexterities, or in preparing professionals for the market, but in introducing in the heart of the educational act the problems of the society, from the global scale until the local one[26,27].

The investigation can contribute to the sovereignty and alimentary security, by means of the education agroambiental that can revert the complex situation of the deterioration of the school agricultural ecosystems in this sense, starting from the incorporation and integration of contents and popular knowledge in an authentic, organic and systematic way to the programs of studies and methodological orientations to the professors during the preparation to assume the conservation of the school agricultural ecosystem and the production of foods like part of the culture, in all its manifestations and expressions and enunciated in the recent Law 148 of 2022 [28], have more than enough alimentary sovereignty, alimentary and nutritional security.

## 5. Conclusions

The education agro-environmental allows to promote the holistic learning and to integrate systems agroecological in the educational practice.

Favorable the exchange of experiences between professors and students during the training that allows to socialize traditional knowledge as a form of fulfilling the objectives of sustainable development of the calendar 2030.

The main theoretical-methodological foundations are revealed that sustain the education agro-environmental in the Cuban school and their contribution to the preparation of the professional of the education to contribute with the security and alimentary sovereignty.

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