
Environmental education for the performance of the primary teacher in multigrade school

Educación ambiental para el desempeño del maestro primario en escuela multigrado

Leosmany Muñoz-Torrez**Leovis Muñoz-Torres****Danay Boligán-Castillo**

Universidad de Guantánamo, Cuba

Correo(s) electrónico(s):

leosmany@cug.co.cu

leovism@cug.co.cu

danay@cug.co.cu

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Abstract: The objective of this paper is to propose teaching activities that are developed in the form of a workshop and that favor environmental education in the initial training of the primary teacher for multigrade school performance. The main theoretical references that support the environmental education process are addressed. The methods used were the documentary, the histological and the analytical-synthetic review. With the implementation of the proposal, the level of theoretical knowledge of the contents addressed is improved.

Keywords: Teaching activities, Environmental education, Initial formation, Primary teacher, Multigrade school

Resumen: El presente trabajo tiene como objetivo proponer actividades docentes que se desarrollan en forma de taller y que favorecen la educación ambiental en la formación inicial del maestro primario para el desempeño en escuela multigrado. Se abordan los principales referentes teóricos que sustentan el proceso de educación ambiental. Los métodos empleados fueron la revisión documental, el histórico- lógico, y el analítico- sintético. Con la puesta en práctica de la propuesta se mejora el nivel de conocimiento teórico de los contenidos que se abordan.

Palabras clave: Actividades docentes, Educación ambiental, Formación inicial, Maestro primario, Escuela multigrado.

Introduction

The beginning of the 21st century has been marked by an increased scientific and technological development with direct influence on production, people's lives, the planet and the transformation of the contemporary world. The formation of a scientific-technological and environmental culture today constitutes an unavoidable need to be actively inserted into society. In the context of such training, common points emerge every day that enrich the integration of knowledge and lead to the solution of environmental problems.

There are numerous documents that regulate, control and implement environmental policy in Cuba, including: the Constitution of the Republic of Cuba in its article 27, guidelines 99, 104, 105 and 161 of the VII Congress of the Communist Party of Cuba, the Law 81/97 and the National Strategy for Environmental Education, which endorse as a priority for its fulfillment the protection of the environment, environmental education in the training and improvement of professionals, and its active link with sustainable economic and social development for the preservation-mitigation of social and environmental impacts.

Hence, environmental education as an educational process is one of the indispensable and necessary conditions to strengthen in primary teachers for the solution of environmental problems, especially if they are those imbued in initial training as primary teachers, which they must appropriate sufficient scientific and methodological tools to develop feelings, and habits of care and protection of the environmental environment in the new generations.

These requirements make it necessary that every day the ways of teaching are perfected from an integrative conception that affects the role of primary teachers in initial training, and that guarantees a conscious, meaningful and developer learning. This in turn translates into an environmental education with special ethical, political and moral value that favors the pillars of education declared by UNESCO: to be, to do, to know, and to live together from each context.

In the process of integral training of primary teachers, environmental education constitutes one of the axes that mainstream the curriculum from primary education to higher education. In the latter, environmental education is assumed as one of the curricular strategies that complements the initial training of primary teachers, depending on whether they not only appropriate environmental content, but also that they are capable of transmitting and implementing them. Therefore, it is a process focused on “training for oneself and for the profession” (López, 2008, p. 77).

Therefore, it is necessary to continue systematizing the search for alternatives that favor fighting the practice of attitudes not consistent with flora and fauna, facing the challenges of society, and the transformation of the environment for the good of nature and man.

For the reasons mentioned above, it is necessary to undertake the solution to the following problem: how to contribute to environmental education in the initial training of primary teachers for

performance in multigrade conditions? To this end, the work aims to propose teaching activities that are developed in the form of a workshop and that favor environmental education in the initial training of the primary teacher for their performance in the multigrade school.

Development

Man has maintained a constant dynamic interaction with the environment for a long time. It has modified and altered essential variables that stimulate climate change and soil degradation, effects on forest cover, loss of biological diversity, deterioration of ecosystems, to name a few. However, what makes the situation particularly worrying is the acceleration of these modifications, their massive nature, and the universality of their consequences.

In this way, a new approach has been coined from the current Cuban university with the social mission of preserving, developing and promoting culture as an intrinsic need of society through the integration of its substantive processes related to training, research, and the university extension.

Environmental education. Some contributions that have an impact on the international, national and local context (Guantanamo territory)

The researchers who promote the search for alternatives that contribute to improving environmental education from the pedagogical process are dissimilar. In this regard, in the international context, important contributions have been made, including those of González (1996, 1998) who addresses issues related to the main trends and models of environmental education in the school system, as well as environmental education and teacher training; Novo (1996), among its main contributions are the avenues for the methodological treatment of environmental education; and Leff (1998) performs a comparative analysis between environmental knowledge, sustainability, rationality, complexity and power.

In Cuba there have been many authors who have dabbled in the subject, with preponderance in the initial formation due to the colossal importance of praxis within the object of study of the Didactics. Among them are Valdés (1996), who in his work deals with environmental education in the educational process in the mountains of Cuba; Santos (2002), offers a strategy of continuing education in environmental education for teachers; and Mc Pherson (2004) offers a proposal for the incorporation of the environmental dimension in the initial training of Cuban teachers.

For its part, Gibert (2011) offers a pedagogical strategy for the initial training of the basic secondary school teacher in the guiding function for environmental education; Martínez (2013) provides a system of agri-environmental educational actions from the initial environmental training of the primary teacher; and Martínez (2014) proposes basic ideas that should be considered in the preparation of Primary Education teachers on environmental education for sustainable development from the methodological work system.

In Guantanamo, the research carried out by Relaño (2010) stands out, who offers a strategy that demonstrates how the school can influence community environmental education through extracurricular activities based on the solution of environmental problems in the environment; Ugarte (2012) proposes the procedures for the determination of cognitive nodes and the main contents of integration in teaching, extra-teaching and extracurricular activities; and Turro (2018) reveals the potential offered by the educational spaces of the intra and extrauniversity community to deal with the local environmental problem.

Without making a detailed analysis of the subject investigated by the aforementioned authors, it is worth noting that some contribute theoretical elements that favor the implementation of the environmental dimension from curriculum for the initial training of the primary teacher, as is the case of Mc Pherson (2004).

However, systematic practice and observation of teaching activities corroborated that methodological treatment of environmental education is insufficient in the initial training of the primary teacher for performance in multigrade conditions.

Environmental education and the international theoretical significance of the definition for the Cuban pedagogical context

In the history of modernity there have been important events related to environmental protection. In 1972, in Stockholm, Sweden, the United Nations Conference on the Human Environment was held, where both developed and developing countries met. Here a final declaration of 26 principles and 103 recommendations was approved, with an initial proclamation of what could be called an ecological vision of the world: “(...) the defense and improvement of the Environment for the present and future generations constitute an objective urgent of humanity” (United Nations

Educational, Scientific and Cultural Organization, 1977, p. 1), the United Nations Environment Program (UNEP) was created, and 5 of June as World Environment Day.

In Cuba, environmental education is based on a system of legislative apparatus among which are the Constitution of the Republic of Cuba (2010), article 51; Law No. 81 on the Environment (2004), chapter 7, articles 48, 50 and 56. It also takes into account other normative documents of labor such as strategies, guidelines of the social-economic policy of the party and the revolution, resolutions, ministerial indications, and circular letters.

In the Cuban pedagogical context, several researchers have defined the term environmental education. Mc Pherson (1998) reports that it is a “permanent educational process aimed at awakening the need to universalize human ethics and induce individuals to adopt consistent attitudes and behaviors that ensure the protection of the environment and the improvement of the quality of life. of humanity” (p. 16). In this same order, Merino (2010) states that it is “a permanent and contextualized educational process, aimed at the development of knowledge, habits, skills, values, attitudes and responsible behaviors in relation to the environment, that ensure the integral formation of subjects and sustainable development of society ”(pp. 21-22)

From these definitions, we consider that environmental education in the initial training of primary teachers constitutes a learning process, and in turn an educational process that should facilitate the understanding of the realities of the environment, and that contributes to each person possessing an adequate awareness of dependence and belonging to their environment and the natural resources found in it, that they feel responsible for its proper use, care, protection and conservation, and above all that is capable of making emerging decisions in the context of their performance.

The workshop. A way of organizing the educational teaching process in the Cuban university

The workshop, according to (Calzado, 1998)

It is a type of organization that agrees with the problematizing and developmental conception of education to the extent that it is about saving the dichotomy that occurs between theory-practice; production-transmission of knowledge, skills-habits; research teaching; thematic-dynamic. Phenomenon that occurs to a greater or lesser degree in some of the forms of organization used so far. (p. 104)

As a way of organizing the educational teaching process, the workshop is adaptable to the characteristics and needs of the professors of the degree in Primary Education, it is considered as a social process based on the communicative links established in the group discussion with the facilitator who directs it, and promotes the affective socialization of knowledge among the participants by actively interacting in the development of the proposed teaching activities.

To develop the workshops, the group discussion method proposed by Merino (2010) will be taken into account since we consider it the way that favors the collective debate, listening and respecting the different points of view; strengthens feelings; it favors the modification of personal and group criteria based on a group analysis around the environmental problem in the educational context for which it work

An approach to the didactics of environmental education in the initial training of the primary teacher for performance in multigrade conditions

To develop the workshops, the previous preparation acquired by the primary teachers in initial training in the subjects Biology, Education and health in the territory, Geography and Didactics of Natural Sciences, which are the ones that most reflect environmental problems global, national and local, and their treatment in the elementary school curriculum. It takes advantage of the context of the subject itself Work in the multigrade for being the one that most accurately offers the means for the performance of the primary teacher in conditions of multigrade, simple or complex.

From this conception, the environmental education teaching activities are presented in the initial training of the primary teacher for performance in multigrade conditions.

Activity 1

Title. - Environmental problems in the rural and mountain context. Your treatment in multigrade conditions

Objective: to identify the environmental problems in the rural and mountain context that are reflected in the subjects that are part of the primary curriculum, and how to give methodological treatment to the environmental contents in the initial training of the primary teacher for their performance in multigrade conditions.

Content: definition of environmental problems, climate change, greenhouse effect, threat, danger, vulnerability, risk, main local environmental problems.

Form of organization: workshop

Methodological orientation: To develop the workshop, in preparation for the preconditions, the following activities are oriented to the teachers of the Bachelor's Degree in Primary Education:

- Investigate which contents of the subjects Natural Sciences, History of Cuba in 5th and 6th grades, and Labor Education from 1st to 4th grades can be integrated for the treatment of environmental education in a multigrade class
- Which of the global, national and local environmental problems are referred to in the programs of the subjects Natural Sciences, History of Cuba in 5th and 6th grades, and Labor Education from 1st to 4th grades?

A summary of the National Environmental Strategy (which essentially reflects the main environmental problems), and a guide of activities for participants to prepare for the workshop will be delivered.

To begin the activity, an audiovisual material is presented in which global, national and local environmental problems are addressed. As a fundamental element to generate the discussion in the group work it is oriented to observe the didactic material, and take notes on the causes of the environmental problem in the context that occurred and its effects. Next, the processing of the information collected by each work team is carried out to establish the relationship between the main problems that appear in the National Environmental Strategy with those observed in the audiovisual material.

The following is a summary table that describes the main causes of the environmental problem and its impact on the environment, such as primitive culture in the exploitation of land, inappropriate practices in the exploitation of the seabed, water drinking, flora and fauna, among others. The evaluation is carried out taking into account the positions assumed during the development of the activity and after the exchange that occurs in the analysis, debate and group discussion based on the results presented. The technique of positive, negative and interesting (PNI) will be applied,

which will allow to know what are the positive, negative and interesting aspects of the subject, and project towards the methodological treatment to an identified environmental content.

Activity 2

Title. - Multigrade rural school towards adaptation, mitigation, and resilience of the effects of climate change.

Objective: to exemplify the methodological treatment of climate change content through an activity in the subject Labor Education to contribute to environmental education in the initial training of primary teachers in multigrade conditions.

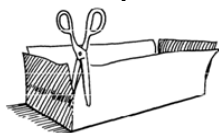
Content: constructive process of articles of social utility, basic drawing, climate change, vulnerability, danger, risk, threat and greenhouse effect.

Form of organization: workshop

Methodological orientation: to develop the workshop, in preparation for the previous conditions, the professors of the degree in Primary Education and primary teachers in initial training (guests) are oriented to the following indications:

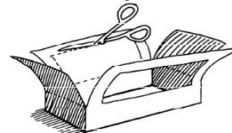
- Form work teams and build a greenhouse as shown in step 4.
- Use materials such as paper, cardboard, cardboard box approximately 50 cm long and 25 cm high, scissors or cutting blade, sealed paper, thermometer, low-density polyethylene and glue.
- In the construction process of the greenhouse consider the illustrations and the steps for its construction that are offered in the text Regional Office of Education for Latin America and the Caribbean (1997) and that we show below:

Step 1



Cut the corners of a cardboard box to form four fins as shown in the figure. Leave about 3 cm from the base to maintain the rigidity of the box.

Step 2



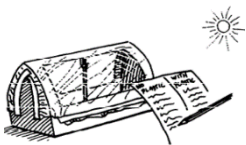
Fold the fins outward and on the two longer sides cut a rectangle leaving a "37.5 cm frame" on it. Then glue the low-density polyethylene in each rectangle with the sealed paper



Step 3

Step 4

- To each fin of the greenhouse make small windows to be able to ventilate and recycle the indoor air (if it were a greenhouse for the school garden it should include two windows and two doors in order to create air flow on hot days)
- Orient the greenhouse in an east-west direction according to the radiation angles to achieve maximum light penetration and minimize the gloom of plants throughout the day.
- Each work team must measure and record the temperature inside and outside the greenhouse when sunlight strikes for two consecutive days at the same time.

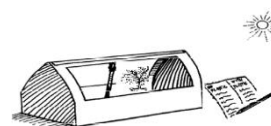


- Include other components inside the greenhouse (a container with cotton well moistened with water and a seed of a fruit, preferably corn).
- Place another experimental system like the one shown on the left of the two figures shown below; include cotton well moistened with water and a seed of a fruit, preferably corn, inside the container.

- Observe and compare the germination process of the plant in each of the experimental systems after 4 or 6 days.



Experimental system 1



Experimental system 2

- Report what was observed during the days of the experimentation process. Which of the experimental systems has the greatest advantage to intensify agricultural production?
- Research the advantages and disadvantages of greenhouses in agriculture.
- Do you consider it important in the initial training of the primary teacher for performance in multigrade conditions to guide how to encourage schoolchildren to apply ecological alternatives to minimize the damage of the greenhouse effect? Why?
- What solution do you propose to primary teachers in initial training in performance under multigrade conditions to minimize the effects of climate change in the rural and mountain context?

To start the activity, each team will present the built greenhouse; a member of each work team must explain how they developed the construction process of the greenhouse, and the labor protection and safety standards they considered when using the different technical means.

During the workshop, many questions is made based on the comparison of the recorded temperature measurements and what was observed during the germination process in the experimental systems, and the advantages that greenhouses have for intensifying agricultural production in the context Rural and mountain. The questions should lead to the interpretation of the greenhouse effect and the measures that can be implemented in the agriculture sector to reduce danger, vulnerability and risk (PVR).

Then, the participants are offered some variants that can be used in the multigrade to implement ecological measures in the school garden and intensify the agricultural production of short cycles, in addition to raising awareness among students about the care and conservation of the environment and the variants that can be used for the development of the subject during the successful orientation of the contents that can be treated in the subjects The World in which We Live, Natural Sciences, and Labor Education.

Subsequently, the task is to prepare a work project where the primary teachers in initial training are oriented to the dissemination and creation of a greenhouse in the school garden of the multigrade school.

The evaluation is carried out taking into account the behavior and the positions assumed by the work teams and the members in the exchange that favors the rain of questions during the whole process of development of the workshop, in addition the analysis, debate and discussion will be taken into account in a group based on the results observed during the days of the experimentation process. The PNI technique will be applied, which will allow to know what are the positive, negative and interesting aspects in the subject matter.

Activity 3

Title. - The multigrade school for the protection and conservation of flora and fauna in the rural and mountain context.

Objective: to exemplify the methodological treatment of the protection and conservation content of flora and fauna through an activity in the subject History of Cuba that contributes to environmental education in the initial training of primary teachers for their performance in multigrade conditions.

Content: invasion from east to west, protection and conservation of flora and fauna.

Form of organization: workshop

Methodological orientation: to develop the workshop, in preparation for the preconditions, the professors of the degree in Primary Education and primary teachers in initial training (guests) are oriented, formwork teams to investigate in the school library the solution of the next activities:

1. During the wars for independence in the period between 1868-1898 the invasions from east to west (1875 and 1895) developed.

- a) Refer to the main events that occurred in them.
- b) What environmental problems caused the invasions of flora and fauna?

2. During the National Liberation War, in 1958, the invasion from east to west developed.

- a) Refer to the main events that occurred in them.
- b) What environmental problems caused the invasion of flora and fauna?

3. Compare the environmental effects to the flora and fauna that produced the invasions that occurred at different times. What measures do you propose for the protection and conservation of flora and fauna in the context that these invasions were generated?

To start the activity, the professors of the degree in Primary Education and the primary teachers in initial training will be organized in teams. The workshop will take place in panel form, the members of the work teams will respond in 10 minutes to the activities that are part of the research carried out.

During the activity, the exchange between the participants should be facilitated to generate controversial debates that stimulate the development of creative potentialities, and the conditions to identify the effects caused to the flora and fauna that generated the invasions occurred at different times should be encouraged.

As part of the reflections generated in the debate, control and evaluation actions will be undertaken by the teams themselves based on the responses offered by the participants. It is the opportune moment to carry out the evaluation, coevaluation and hetero-evaluation. In addition, it reflects on the measures that are implemented in Cuba to protect and conserve flora and fauna.

Finally, it is oriented to carry out an activity similar to that developed in the workshop with the purpose of teaching how the primary teacher in his class can contribute to environmental education in multigrade conditions from treatment to content (invasions from east to Occident) of the program of the subject History of Cuba 5th and 6th.

The evaluation is carried out taking into account the positions assumed during the development of the activity and after the exchange that occurs in the analysis, debate and group discussion based on the research presented. The PNI technique will be applied, which will allow to know what are the positive, negative and interesting aspects in the subject matter, and project towards the methodological treatment to an identified environmental content.

Conclusions

The elaborated teaching activities and their implementation contribute to the preparation of the Bachelor's degree in Primary Education, allow to enhance the curricular strategy of environmental education, provide the possibility for primary teachers in initial training to link the environmental knowledge received with the educational practice in multigrade conditions, and in turn acquire an environmental awareness to be able to face and solve the environmental problems that are manifested in the rural and mountain context.

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