

# *La asignatura Práctica de Campo I en la formación del profesor de Biología*

## *Field Practice I subject in Biology teacher training*

**Gener Chang- Jorge** ORCID: 00000000234876495

Universidad de Guantánamo, Cuba

**Correo(s) electrónico(s):**

[generch@cug.co.cu](mailto:generch@cug.co.cu)

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**Resumen:** En el presente artículo se analiza las regularidades de la Práctica de Campo desde su creación se demuestra la existencia del objeto de estudio con visión fragmentada lo que ha limitado el aprendizaje integrador y contextualizado. Las tendencias presentes facilitaron la elaboración de un programa de asignatura, lo cual se constituye el aporte de la investigación con su respectiva fundamentación científico-metodológica. A partir de los principales métodos de la investigación tales como análisis-síntesis, inducción-deducción se constató la importancia de dicho programa se procedió. Se consultaron expertos quienes avalaron el diseño general del nuevo programa de asignatura como su implementación práctica.

**Palabras clave:** Práctica de campo; Ecosistema, Profesor, Biología.

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**Abstract:** In this article the regularities of the Field Practice are analyzed since its creation, the existence of the object of study with a fragmented vision is demonstrated, which has limited integrative and contextualized learning. The present trends facilitated the elaboration of a subject program, which constitutes the contribution of the research with its respective scientific-methodological foundation. From the main research methods such as analysis-synthesis, induction-deduction, the importance of said program was verified. Experts were consulted who endorsed the general design of the new subject program as its practical implementation.

**Keywords:** Field practice; Ecosystem, Professor, Biology.

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## **Introduction**

The University is, by definition, the institution whose mission is to preserve and develop the culture of humanity. From this totalizing function of the University, and the role it must play in any nation, in accordance with the new world economic order; The University at present is precisely the institution in charge, to a large extent, of improving the competitive position of the entire nation in

the world and local market, due to its function of forming the human resources of society and developing, introducing and promoting advances of science, art and technology. (Zallas, 1999).

In this way, the Cuban University is the institution in charge of training competent human resources, promoting the introduction, innovation and creation of art, science and technology, to achieve prominent results (products) in its processes to promote local development. . (Zallas, 1999)

Since 1842 when Biology teaching began in Cuba, the teacher training process has changed and has been characterized according to the stages that have responded to the historical and social context. That is why today changes are under way aimed at better preparing the graduate, based on the formation of their personality based on competences that integrate "knowing and being" in a "know-how" within their different spheres of action.

The direct introduction of scientific results in educational practice promotes the updating of the content of the disciplines that are developed in each university and strengthens the feedback center of higher education-middle school. In the contemporary world, the fields of science are integrated every day into multidisciplinary spheres that allow a deeper and more comprehensive study of the phenomenon under investigation. Addine, F. (1998).

The Bachelor of Education careers, due to the characteristics of their object of study, are integrators of the knowledge, skills and modes of action of the teacher, which has its concretion in the theory-practice link. In initial training, this link is an essential didactic principle, which must motivate, prepare and conclude theoretical knowledge. Triana, L. I. (2012).

One of the disciplines which, due to its knowledge system, is aimed at achieving the link between theory and practice and the integration of the different contents of the natural sciences, this being essential in the formation of the Biology teacher, is the Field Practice which traditionally becomes a resource to understand the natural environment in which they live, reason about the natural and social phenomena that surround it, as well as try to explain the causes that provoke them, evolving their criteria about the environment and strengthening a responsible and scientific attitude towards it.

Taking into account the aforementioned, this work aims to explain the foundations of a Field Practice I subject program, based on integration and contextualization approach, that articulates the relationship between the contents of Natural Sciences from a systemic order, in correspondence with current curricular requirements in the training of the Biology teacher in Cuba.

## Development

Today there is a new vision of science education that demands new missions for the science teacher. Therefore, this teacher has to be better professionally prepared to successfully tackle the current challenges in what science to teach and how to do it. Undoubtedly, it is required to assess what will be the vision of Field Practice I that must be transmitted to the Biology teacher, in accordance with the new transformations of the Middle School, in the curricular area of Natural Sciences.

Science education can be conceived from three fundamental points of view, according to Álvarez de Z.C (1989)

1- As an activity aimed at helping students to elaborate or construct scientific concepts that allow them to explain the physical, chemical, geographic and biological world that surrounds them based on their own conceptions.

2- As an activity aimed at solving problems in different contexts:

In the context of pure science

☐ From applied science.

☐ Or in a social context

As an activity that shows the interactions of science, technology and society; pretending that science is not confined to the school laboratory, but manifests itself in all aspects of the world.

Due to the very characteristics of the Cuban socialist educational system, the conception of science that must be brought to classrooms must take into account the previous conceptions; show a link between them in the curriculum, emphasizing the use of this knowledge in the satisfaction of social needs. Bosques, R, (2004). In teaching this subject, intra and interdisciplinary relationships must be achieved, so that there is a curricular structure. Although the object is taught separately, prior coordination must be achieved between the sequencing of the content and the design of the learning and evaluation activities in such a way that they contribute to the comprehensive knowledge of biological phenomena related to the integration of physical and chemical knowledge geographic and the other disciplines of Biology.

For this, intermaterial relationships are essential because they contribute to achieving the mutual relationship of the system of concepts, laws and theories that are addressed in the school. Furthermore, the subject guarantees a general joint system of knowledge and skills, both intellectual

and practical, as well as a system of values, convictions and relationships towards the real and objective world of today.

From the curricular point of view, with the new study plan that began in the 2015-2016 academic year, the training of the Biology teacher has a wide field provided by biological disciplines, where content related to environmental processes is addressed, as well as the generalities of their care and protection.

On the other hand, relations with disciplines in the area of Natural Sciences such as Physics, Chemistry and Geography are favored, which guarantees an integrative study of the phenomena related to their practical study.

It is therefore necessary to make explicit the postulates that will guarantee the instrumentation in the proposed new design. These show below:

A deep theoretical knowledge is required not limited exclusively to the conceptual field (concepts, laws, theories, principles, etc.), but applied to the solution of the most general and frequent problems of the natural environment, with a broad cultural sense where the Scientific knowledge as something changing, in constant evolution and construction, and as a reflection of the integration of different related science phenomena. Álvarez, A. (2002)

All this will facilitate developing in students the constant search for new discoveries and applications of science, the consequent autodidacticism, a broad and integrative thinking, which guarantees various responses depending on the research object.

In summary, the concept of assumed corresponds to a great theoretical base that integrates knowledge of Natural Sciences and socioeconomic factors that guarantees them to develop future teachers a protectionist and sustainable conscience, as well as favoring a mentality that contributes to the necessary balance in nature and knowing how to teach it to your students in this way.

### **Integrative conception of the program.**

In educational processes, the school program is not an isolated element, but has a deep school insertion based on a study plan. This conception implies the need to interpret it, to make the corresponding correspondence between the content to be developed and the required learning, with the curricular goals defined in the professional model.

To define this complex system, a curricular sequence has been established that guarantees the necessary integration of the discipline-subject-model of the professional

The author agrees with what is stated by (Díaz B, 1996) when stating that the profile "... is the determination of the general and specific actions that a professional develops in the areas or fields of action emanating from social reality and the own discipline tending to the solution of the social needs previously warned ".

For the Biology teacher it is quite clear that his pedagogical profile is aimed at the formation of the students' personality through biological content. To do this requires learning different biological disciplines, with which the knowledge of the graduate is guaranteed. Armiñana, R. (2010)

The object of study of the Field Practice in accordance with the profile of the future Biology teacher makes up this discipline, classified as specific basic because it is aimed at mastering a general content of the work object. Despite not corresponding to the exercise of the profession, through it you can contribute to the development of professional skills, among which is the planning of the teaching-educational process. Elias Amórtegui, M.C (2010)

To highlight the necessary purpose in this curriculum, the basic professional problems to be solved must be determined based on the requirements of the Professional Model.

Starting from the plan E is designed according to problems, the author of this thesis based his analysis on scientific works (Doctorates and Masters and Conferences) that have taken into account conceptions, to perfect programs based on the design of professional problems. From these references, the author assessed the design of the specific problems to be solved in the subject, according to the following system of steps:

1. Analysis of the tasks and functions declared in the professional model.
2. Establish the correspondence of this with the object of the discipline.
3. Relationship of the subject with the didactics and the context of the province.
4. Accuracy of the problems in the form of questions so that they become the learning needs of the students.

Starting from the objective of Field Practice I is the study of the environment and its interactions with the social environment, its systematic ordering, its relationships with the biotic and abiotic factors of the ecosystem, utility and sustainable management, it was determined that:

- 1-Specific problems that the subject solves according to the model of the professional.
- 2-How to explain the interdisciplinary in the polygon of practice with a dialectical-materialistic approach?

3- What relationships are established between the environment and socio-economic development, which demonstrate the need to maintain ecological balance?

4- How to explain the importance of field work in the training of the Biology teacher?

5- How to explain the spiritual and material use that the conservation of the environment provides for the benefit of man?

6- What are the essential actions for students to learn to plan and organize practical and field activities?

From the objectives of the discipline, the ability to achieve in close relationship with the object is well explicit. In this way, Field Practice I in a university center aims to teach how to learn and also to contribute to teaching to do in correspondence with the way of acting, of planning Biology in the Middle Education subsystems that are related to the object of this science.

It aspires to be done at a productive level, according to the year in which it is taught (2nd) and the fundamental learning resources to be used, which guarantees the solution of current or new problems, by applying different strategies according to the content received, with a level of depth in accordance with the demands of the school programs in which the study of Natural Sciences is inserted. To do this, they will rely on private teaching.

It also demonstrates the social purpose for which technical applications are needed: a sustainability purpose that educates students in the proper use of nature to raise the quality of life, but without causing damage to the ecosystem with the consequent effects from the environment. The above is the maximum aspiration of this subject as a level of systematicity and its reason for existing in the curriculum or study plan of the Biology degree.

It is also worth highlighting how, from the objective itself, the aspiration of adjusting this curriculum to the peculiarities of the territory is collected, which guarantees a high level of essence and decentralization of the teaching-learning process, because the student learns the capital that you will find in professional practice.

This learning will become more effective to the extent that the future teacher knows better the flora and fauna of its territory with its essential characteristics, develops motivation towards the profession by having basic training that logically will favor the application of different teaching strategies - learning with their students, fundamentally in the link between theory and practice, and education for life.

During the development of these Field Practices, the students go through different stages in the assimilation of the contents, producing the step from direct observation to abstract thinking and from there to practice, as a dialectical development of knowledge of objective reality. Taking into account the aforementioned and the characteristics of the province of Guantanamo, we have the objective of the program: Explain the functioning of the coastal and semi-desert ecosystem of the geography of Guantanamo, based on the integration of the contents of Natural and Socio-economic Sciences, which determine the characteristics of the environment, as well as its environmental problems, promoting care and love for nature.

As main skills to develop:

- ✓ Correct use of dichotomous keys and other classifiers
- ✓ Describe different structures of organisms and processes that occur in them.
- ✓ Prepare and interpret graphs, tables, synoptic charts and others.
- ✓ Correctly use Information and Communication Technologies based on PCs.
- ✓ Properly apply the procedures for the preparation of malacological, entomological and herbal collections.
- ✓ Taxonomically locate different species of unicellular microorganisms and plants.
- ✓ Plan, organize, direct and control teaching activities related to the development of independent work of schoolchildren in nature.
- ✓ Use the educational possibilities of the content of practical activities in the environment.
- ✓ Observe different organisms, communities, ecosystems and environmental factors
- ✓ Observe and interpret biological phenomena such as the adaptations of organisms to the environment, zoning, ecological relationships.
- ✓ Correctly use the selected instruments for sampling, in the visited ecosystem, as well as environmental factors.
- ✓ Correctly establish interdisciplinary relationships at all times during the development of the Field Practice and the ecosystem approach.
- ✓ Explain the relationship between climate, soil, vegetation and animal population, as well as damage to the environment.

The knowledge system is divided into two themes:

**Topic # 1 Introduction to the study of field work.**

**Objective:** Explain the importance of Field Practices in the training of the Biology professional, based on their object of study.

**Contents:** Field Practices. Types. Importance. Field Practices in the international context. Field Practices in the context of Cuban education. The field work method. Importance and structuring of the teaching excursion in the development of skills.

## **Topic # 2 South and semi-desert coast of Guantánamo.**

**Objective:** Explain the relationship between the contents of Natural Sciences and the socioeconomic development of the Field Practice area.

**Contents:** Cuban semi-desert. Location. Predominant relief. Climatic characteristics that distinguish it. Soil morphology. PH. Salinity. Main problems that affect it. Forward and backward of the beaches and the dune. Coastal and subcoastal xerophilous scrub, semi-thorny coastal scrub, coastal sclerophyllous scrub, and rocky coastal scrub. Perennial plants. Adaptations to the environment. Organism with capacity to carry out photosynthesis. Algae, mosses and ferns. Characteristics. Classification. Lifecycle. Animal population. Main species. Adaptations to the environment. Invasive Alien Species and their impact on the ecosystem. Effects of climate change. Main environmental problems of the polygon. Possible measures to take to cushion its effects. Socio-economic development of the community. Impact on the local environment.

The evaluation must be formative, systematic evaluative activities are suggested that guarantee control and feedback of the teaching and learning process of the subject, so it will adopt the forms of self-evaluation, coevaluation and hetero-evaluation. In this evaluation system, the following will be carried out the delivery and debate of the investigative report of the Field Practice I subject.

## **Conclusions**

The evolution of the conception in the Field Practice discipline is focused on the fragmentation of its object of study, which does not guarantee an integrative learning of the functioning of the natural world, all this evidenced the need to restructure the Field Practice subject I from of the improvement of the curriculum and the consequent redesign of the program, with the aim of integrating, systematizing and contextualizing the content from the demands of the teaching subsystems on future graduates.

It offers a subject program in undergraduate training, based on the link of the integration of the Natural Sciences contents, with which it is achieved that students acquire the knowledge and values necessary for their personality, which allow instrumentation professional skills and learning by doing is guaranteed, according to the requirements of the subsystems for which they graduate.



The application of an integrative approach is materialized in the curricular design, which allowed the elaboration of the subject program for the Biology degree program, adapted to the characteristics of the territory of Guantánamo, and taking into account the relationship problem, object, objective with generalized skills that contribute.

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