

# *Sitio Web “InfoPath” para el aprendizaje del contenido planta*

## *Website "InfoPath" for learning plant content*

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### **Resumen**

El trabajo revela la necesidad de propiciar un cambio en la concepción de aprendizaje del contenido planta. El propósito es potenciar el conocimiento de las plantas mediante un Sitio Web para que los estudiantes se conviertan en multiplicadores de la información de la necesidad de su cuidado y protección. Los métodos empleados consistieron en la revisión de diversas fuentes de información, la observación, encuestas y entrevista a estudiantes. Sus resultados ofrecieron mejoría en los modos de actuación, llegando a la conclusión de continuar contribuyendo a la búsqueda de nuevas concepciones en el proceso de enseñanza-aprendizaje de las Ciencias Naturales.

**Palabras clave:** Sitio Web; Aprendizaje; Planta; Herramientas informáticas

### **Abstract**

The work reveals the necessity to propitiate a change in the conception of learning the content of plants. The purpose is to increase the knowledge of the plants by means of a Web site so that the students become multipliers of the information of the necessity of its care and protection. There were applied some methods that consisted on the revision of diverse sources of information, the observation, inquiries and interviews to the students. The results obtained offered an improvement in the ways of acting, reaching to the conclusion of continuing contributing to the search of new conceptions in the Teaching-Learning process of the Natural Sciences.

**Key words:** Web site; Learning; Plants; IT tools

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## Introduction

The Educational Revolution that takes place in the National Education System and in a very particular way in the Basic Secondary; calls for a new model in the training of students for this educational level, so that it corresponds to the economic and social changes in Cuba and the world. As Fidel Castro said (2003, p.5): "(...) today it is a question of achieving an integral education and a general culture in all the town, but the main link is promoted in our schools" (...) .This objective demands a comprehensive preparation of teachers and professors, which guarantees that their work is translated into the quality of the pedagogical process and helps the student to know himself and the environment that surrounds him, to discover and develop individual and group potentialities, and on those premises make self-determined and socially useful decisions.

In Cuba, the implementation of the III Improvement of the National Education System is carried out, in which changes are being made in its educational strategies, which has been determined, according to doctors Valdés, P. and Valdés, R. "by the the need to adapt the results of teaching to the demands of the society of the given time, and for the development achieved in the conceptions that are held about the teaching-learning process" (1999, p. 1).

Consequently, the transformation of work methods and styles in the educational institution is proposed; as well as the work of educators and pupils with new study plans and programs, textbooks, methodological guidelines and workbooks. It is about creating didactic mechanisms to achieve a more participatory teaching and learning that responds to more current knowledge problems in topics such as new technologies.

The use of information and communication technology (ICT) computer tools is a necessity today in all spheres of human endeavor, such as multimedia, networks, the Web, to name a few, are techniques that know their potential they can become very helpful tools for the teaching-learning process of Natural Sciences, particularly within the content of biology, plants, offering teachers attractive and potentially innovative job opportunities for the development of their classes and within this the great facility that computing resources allow in order to conceive the integration of multidisciplinary content.

In High school education, these changes are aimed at increasing the level of quality, since it is considered, within the National Education System, as "the weakest link" as a result of research carried out by the Central Institute of Pedagogical Sciences and from the Center for Educational Studies of the Pedagogical University "Enrique José Varona" (Rojas, C., 2002, p.52). The weakness of this link is

currently addressed with haste taking into account that this teaching, according to UNESCO, is an "axis for all life" (Masón, R.M., 2002, p.265).

Taking into account the aforementioned, it is necessary that each teacher equips his students with abilities, capacities and convictions in order to make them active subjects of their own learning, preparing them to solve present and future problems, preparing them for life. Given its importance, already from previous centuries, eminent Cuban pedagogues expressed different postulates that today maintain an extraordinary validity: Varela (1788-1853), de la Luz y Caballero (1800-1862), Varona (1849-1933), Martí (1853 -1895) and many others contributed to the theory of learning.

Regarding how learning should be to achieve a true transformation in students, specialists such as Toruncha (1996, 2000, 2002), López Hurtado (2002), González (1995), Rico (1996, 2002, 2004), have spoken. Silvestre (2000, 2002), among others, who highlight the position of students in their own learning process and emphasize the correct direction on the part of the teacher.

About the learning process of Natural Sciences, in particular Biology in the school context; there have been several researchers who have made theoretical and practical contributions for its improvement, in this sense the following can be pointed out in the province of Guantánamo: Pérez (2008), Laurencio (2008), Creagh (2010) and Dimendú (2011), among others.

These cited authors have enriched the theoretical references of the Biology learning process, which has allowed the author of this work to assume a large part of the theoretical and methodological foundations of the aforementioned investigations.

However, it is insufficient in Basic Secondary Education to treat the content of Natural Sciences using ICT, to contribute to the development of the teaching-learning process of Natural Sciences and transform the personality of students, achieving qualitatively levels superior in their general comprehensive culture.

This implies taking into consideration in the teaching-learning process of the ESBU school "Sergio Eloy Correa" a website for learning the plant content, in view of the continuous improvement in the training of new generations, which constitutes a requirement that implies a common action on the part of the teaching professionals, for the achievement of a harmony between the affective and the cognitive.

So the objective of the work is aimed at: developing a website to enhance the learning of the plant content in the seventh grade Natural Sciences subject of the ESBU "Sergio Eloy Correa".

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## Development

High school education today faces radical changes in its educational model, in the historical social context of the perfection of Cuban socialism from the unfolding of a battle of ideas, for the achievement of a comprehensive general culture as an expression of the III Improvement of the National Education System in Cuba, where the transformation of work methods and styles in the educational institution is proposed; as well as the work of educators and students with new study plans and programs, textbooks, methodological guidelines and workbooks. This educational effort, articulated from the participation of students, teachers, family and workers, had an important place, accompanied by a differently organized school. It is about creating didactic mechanisms to achieve a more participatory teaching that responds to more current knowledge problems in topics such as Civics, new technologies, languages, health and sexuality and local history.

The ideological strategy was presented to us by Commander Fidel Castro when he said:

Today it is about perfecting the work done and starting from entirely new ideas and concepts. Today we are looking for what our judgment should be and will be an educational system that increasingly corresponds to equality, full justice, self-esteem, and the moral and social needs of citizens in the model of society that the Cuban people are has proposed creating. (2002, p.6)

So in current conditions, the search for alternatives that serve to enhance the learning of the contents of the Natural Sciences course is of great importance.

The aspects dealt with up to here constitute valuable antecedents that will allow assessing the characteristics in the teaching-learning process in Natural Sciences, which due to its importance plays a fundamental role both as a general culture and in the training of learners, preparing it for life.

It should be borne in mind that the disciplines that make up the Natural Sciences in the Basic Secondary, specifically Biology, have the general purpose of contributing to the formation of a comprehensive vision of reality in students and with it the understanding of the unit and diversity of the material world, which is a fundamental element for the acquisition of scientific culture, in turn, a component of the comprehensive training to which it aspires.

In this preparation for life, it is necessary to know some aspects related to the diversity of species, which is the best known level of Biological Diversity, and with which it has been erroneously identified. All species, according to their own characteristics and their relationships with others, are

located in a hierarchical classification system that includes the following main categories: kingdom, phylum, class, order, family, genus and species.

Different separation systems have been proposed for the kingdom category, ranging from three, five and even thirteen. Here we have followed what is currently used in our National Teaching System, in which five kingdoms are recognized: moneras, protista, fungi, plantae and animalia.

In the work we will make reference to the plants for their importance and for the need to give treatment to the insufficiencies detected in the teaching-learning process of Natural Sciences for their apprehension by the students.

Of the five kingdoms in which living beings can be located, vegetables are located in the Plantae kingdom, which is subdivided into three groups: algae, bryophytes and tracheophytes.

The first group are macroscopic or microscopic eukaryotes, usually aerobic and capable of performing oxygenic photosynthesis by means of chloroplasts; they differ in that they are unicellular, cenocytic, or multicellular, and many of the macroscopic exhibits striking morphological features. The microscopic ones are part of the phytoplankton that constitutes the first link in the food web at sea.

This study deals with the study of the following groups of algae: Chlorophyta (green algae), Bacillariophyta (diatoms), Phaeophyta (brown algae) and Rhodophyta (red algae).

The second group are plant species that their body does not have a vascular structure (absence of conductive tissues and vessels that allow them to transport water and / or solutions inside the plant). In general, they are little evolved species, with high sensitivity and fragility in the face of changes in the habitat, very closely related to water, although they can be found on various substrates, with epiphytes (vegetables that live on other plants being abundant, without taking their nutrients from them).

These plants are generally small and include three divisions: Anthoceroophyta (Anthoceros), Hepatophyta (Hepatic) and Bryophyta (Mosses).

Unlike the previous groups, in the third group of the Plantae kingdom we find the tracheophytes, plant species that have a vascular structure in their bodies (presence of tissue and conductive vessels that allow them to transport water and / or solutions inside the plant). They are species with a higher degree of evolution, some groups are still highly dependent on water, but others already achieve independence as they evolve; They also develop greater resistance and strategies for survival against changes in habitat. Pteridophytes (ferns and related plants), gymnosperms (pines) and angiosperms (flowering plants) are tracheophytes.

This analysis allowed us to understand that Natural Sciences and within it Biology study the physical,

chemical and biological systems and changes that take place in the universe taking into account the role of man in the nature-society relationship and that in this process it is important the selection, preparation and use of teaching aids closely related to the methods used.

To guarantee the effectiveness of the above in the teaching-learning process of Natural Sciences, a dynamism in their classes and teaching means is necessary, which is a key factor in the didactic process. They favor that the two-way communication that exists between the protagonists can be established more effectively. A fundamental function of the means of teaching in the Natural Sciences is to form and guarantee the best assimilation, by the students, of the representations, facts, concepts, theories and laws, and to develop the skills and habits that are included in the objectives of school programs, as well as familiarize students with science methods and procedures for applying knowledge. The means help to solve the tasks of the polytechnic nature of teaching, materialize the relationship of theory with practice and with life, expressed in a concrete, demonstrative way, as an object of study and as an important source of knowledge.

This is summarized in what was stated: "The teaching means must serve to improve the working conditions of teachers and students, at no time to dehumanize teaching" (González Castro, V., 1986).

The diversity of means that can be used for the development of natural science content is wide, so that among them the work with ICT acquires special relevance and precisely the computer as a teaching medium reinforces the motivational and affective component. These are, in practice, a resource and a means that serves various purposes, including the treatment of difficulties.

The Website, considered as a pedagogical element, is incorporated into the practice of knowledge and strengthening of political-ideological work, which does not imply replacing other methods, means, techniques, but taking advantage of its characteristics, complementing what is not possible due to work or it is difficult to achieve.

The elaboration of this Site has its theoretical and practical foundation in the main scientific concepts elaborated by Martinian postulates and the orientations about the use of new technologies as teaching means, in order to correct, compensate or transform a situation, based on its needs with the help of specialists.

The use of a Website is proposed, as it is an attractive medium and meets the following indicators.

- It adapts to the characteristics of the sample, interests, motivations, aspirations and ideals.
- Operational level: Corresponds to the skills of teachers and students.

- It allows, through relationships and non-sequential information organizations, a simple implementation of sequential structures.
- Its multimedia nature makes it an audiovisual medium and therefore a medium that works the sensory (Leninist principle of development).
- The presence of the rich text favors interactivity.

For Dr. Hurtado (2006): Website "is a means or system of teaching media that integrates theoretical-methodological and cultural aspects in general for the achievement of certain objectives aimed at dynamizing and transforming learning."

According to Wikipedia (2018, page. 1), the free encyclopedia, a Website in English: Website or Website:

It is a site (location) on the World Wide Web that contains hierarchically organized documents (Web pages). Each document (web page) contains text and graphics that appear as digital information on a computer screen. A site can contain a combination of graphics, text, audio, video, and other dynamic or static materials.

In the Cuban Encyclopedia Ecu Red (2018, page. 2) a Web site is defined:

As an organized and coherent set of Web pages whose function is to offer, inform, advertise or sell content, products and services to the rest of the world. For a website to be visited by other people, it must be hosted on a server.

It is a computer connected to the World Wide Web with disk space and sufficient connectivity to host sites and serve them to the rest of the Internet user community through IP addresses or domain names.

### **Website Features**

The pages of a Website are frequently accessed through a common root URL called cover page, which normally resides on the same physical server. URLs organize pages into a hierarchy, although hyperlinks between them more particularly control how the reader perceives the overall structure and how web traffic flows between different parts of the sites. Some websites require a subscription to access some or all of their content. Examples of subscription sites include some news sites, gaming sites, forums, web-based email services, sites that provide stock exchange data and real-time economic information, etc.

Steps to follow in the preparation of the Website: To give treatment to the problems detected, we propose the use of the Website which is aimed at promoting the investigative work of present and future generations.

For the treatment of the content and its instrumentation through the computer, a previous script of the preparation of the Site was prepared, which has the following structure:

**Title:** “Info Plant” website for learning plant content.

**Level:** high school education.

**Objective:** to promote the learning of the plant content in the seventh grade Natural Sciences subject of the High school “Sergio Eloy Correa”.

**Addressed to:** 7th grade students.

**Synopsis:** the “Info Plant” Website provides information on the different groups of plants to the 7th grade students of the High school “Sergio Eloy Correa” of the Guantánamo municipality; it also offers a set of educational actions that must be undertaken jointly by the school and the community to strengthen the care, protection and conservation of plants.

The Website was made with the CCS, which is a Content Management System (CCS, for its acronym in English), and among its main virtues is that of allowing the content of the Site to be edited in a simple and dynamic way. It is an open source application programmed mainly in PHP under a GPL license.

Client PCs should only have the Mozilla Firefox Web browser installed in any of its versions for a better display of the product, it does not require specific RAM or micro. Advantages of using Xara Web Designer Premium.

The advantage of using Xara Web Designer Premium is that advanced technical knowledge or design software is not required to keep the site updated; since it has content, image and video editing tools that allow the user to work in an environment similar to a text editor (Open Office, Word and others). Xara Web Designer Premium includes features such as: improves web performance, printable versions of pages, flash with news, blogs, forums, Poll (surveys), calendars, search on the Website, internationalization of the language, among other benefits.

Moments for the development of the Website

The following moments were taken into account when preparing the Website

**First moment:** elaboration of the script of the Website

The conception of this Site is oriented to menus, where each individual user will have options at the end, just by clicking on the hyperlink, which will allow access to the content related to it.

Once the aforementioned aspects have been defined, the corresponding design is elaborated, where, concretely and clearly, what is actually going to be the Web Page already conceived is based.



**Second moment:** presentation of the information.

At this stage it was taken into account, according to the conceived script, as this information is presented, the first level options were placed on the front page. The second level ones were placed in Pages linked to the Main Page and in this way the entire Website is created.

**Third moment:** elaboration of the Website.

The content offered favors the knowledge of the groups of plants and the preparation of the teachers, as well as to motivate the schoolchild towards the study, research and implementation of activities oriented by teachers on this subject, the characteristics of this Site they awaken and maintain users' curiosity and interest in their content, without causing anxiety and preventing playful elements from negatively interfering with the assimilation of knowledge.

In the elaboration of the Site, light and natural colors were used, which play an important role, taking into account the users for whom it is intended.

Structure of the “Info Plant” Website .The Website is structured in four parts: upper, left, central and the footer or footer.

The banner with the title is displayed at the top, below the main menu that contains the following options:

**Home:** this will allow you to return to the Front Page from any part of the Site.

**Themes:** where the user can access the content offered on the Site organized by the different themes of the Natural Sciences related to plants subject program.

**Personalities:** shows a list where the user can access the biographical synthesis of personalities who have excelled in research, care and protection of the environment at the national and international level.

**Curiosities:** it offers a series of environmental curiosities related to the plants of the Guantánamo province.

**Glossary:** where the necessary vocabulary is included for a better understanding of the contents

**Forums:** displays a list of topics that the teacher created to discuss various topics related to plants.

**Gallery:** displays a gallery of images about different groups of plants.

**Teacher:** This section allows the teacher access to guidelines and other options within the Site.

- The guidelines provide the teacher with tools to deal with the contents of the Natural Sciences classes and how to guide students towards working with the Website.

- **Submit an article:** allows the teacher to submit new content to enrich the topics offered by the Site.
- **Create topic:** gives the teacher the option to add new topics to the forum.
- **Add term:** allows the teacher to add new terms to the glossary that makes it easier for the student to understand the content displayed on the Site.

On the left, the search option is displayed, which allows the user to locate specific content within the site with greater agility.

In the central part, the information contained in the articles and sections that make up the Site is displayed.

Specific information on the development of the Site is shown in the footer or footer.

### **Possibilities offered by the product**

- The product can be used both by teachers in its preparation and by students to carry out teaching and extra-teaching activities.
- It favors cooperative learning between students, teachers and the teaching environment.
- It offers a simple and consistent interface to easily access all the information.
- It is a more modern way of offering information and the most powerful means. The information is provided in the form of articles, which are linked through hyperlinks.
- It enables the presentation of information to be carried out through the combination of texts and images, which are elements of great importance to increase the preparation of teachers and the motivation of students towards the study of plants.

## **Conclusions**

The use of ICT computer tools in the teaching-learning process of Natural Sciences in Basic Secondary education is a necessity today, so when diagnosing and specifying the existing problems presented by the knowledge of the content plant in students, A Website was developed to promote the learning of the plant content in the seventh grade Natural Sciences subject of the High school "Sergio Eloy Correa", which allowed us to apply the proposal, transform the reality and the way of acting of our students giving solution to a great extent to the problem posed and raise to higher levels the knowledge of issues

related to care and conservation; as well as, continue contributing to the search for new conceptions in the teaching-learning process of Natural Sciences.

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