

# PHOTOGRAPH USE IN THE CONSTRUCTION OF INTERACTIVE LEARNING MATERIAL FOR DISTANCE EDUCATION

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## ABSTRACT

*Information access is essential in learning process. However, owing to technical, social and geographic reasons, Brazil, a continental-sized country, may have this process implicated. The proposal of the new educational and technological methodologies intends to provide the information access for a larger number of people. Many efforts have been made to supply this demand and, in this context, the distance education plays a fundamental role. The aim of this work is the use of the scientific photograph as an interactive learning support for distance education. The methodology adopted consists in Atlantic Rainforest Biome images adequacy to the texts presents in a subject - Elements of Ecology and Conservation – of the Biological Sciences undergraduate course of the Fundação Centro de Ciências e Educação a Distância do Estado do Rio de Janeiro (CEDERJ). Specific texts have been written about environment components and the students were asked to illustrate these texts with photographs that would better illustrate the presented characteristics. The evaluation of this activity is being done through questionnaires answered by 380 students of 14 Cederj regional unities in the State of Rio de Janeiro.*

**Keywords:** photograph; learning material; interactive; distance education; ecology.

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## 1. Introduction

In the last years, distance learning has been stimulating a great interest in the educative system and offering appropriate solutions to different needs and has been growing uninterruptedly in the explosion of knowledge that we are immersed. "For the first time in the history of humanity most of the skills a person acquires at the beginning of his career will be obsolete at the end of his professional life" [1]. The constant changes imposed by the diffusion of knowledge, in a quick rhythm owing mostly by Internet, the distance education plays an important role, especially regarding the possibility to experiment innovative experiences in educational process.

The information access is an objective way in the educational process. However, from technical reasons, cannot be employed in a generalized way in a country with continental dimensions, like Brazil. Following the modernity tools used in education becomes difficult for several schools. Many efforts have been made to attempt the students demand for information, especially those who live far from the big cities [2]. According to Paulo Freire [3], we live in a social-divided society, where the privileges of a few prevent the majority to enjoy the society production.

The information disclosure must follow the technology, nevertheless, without losing the main focus, student, and the central element in the educative process. The technology must be used as a way and not as the end. Thus, adjust technology for a better education, has been a challenge.

Paulo Freire [3], in "Pedagogy of the Oppressed" claimed freedom through education, and for this, teaches using student's daily life examples, increasing gradually the universe of them. The encouragement performs; therefore, stimulate the student's creativity and intelligence. Considering that, visual perception is one of the ways of man's interact with environment in which he live. Visual stimulus perfectly attends the education goals. Even before the writing advent, the visual communication helps to write the humanity's history [4]. Associating this communication to knowledge, man assimilates the image, process it and make your own conclusion [4]. Dynamic or static, the image is a crucial way of information disclosure, whatever an educational, scientific or cultural disclosing knowledge, developing ideas and establishing opinions. Already 1888, George Eastman declared, about the photography: "one picture is worth a thousand words". Since of these affirmative, the photographic images have been used in learning process in an interactive way. [5], [6].

Biology and many other sciences have been used illustrations, photographs and videos in educational and scientific process. The relation between environmental and photography exists since its discovery, in 1826. In the beginning, the intention of the photography was to do a strict register of the nature, portraying such as was revealed to us [6]. The photography use is increasingly in scientists activities, as a research instrument, data register, educational support and, principally, in scientific papers introducing the concept of scientific photography.

The dynamic image (video), in spite of the importance in learning process, needs a complex technological support. The illustration, which is pioneer in the biological sciences learning process, as well as the photography, exactly because do not need a sophisticated technological support for their diffusion and appreciation, becomes the most efficient tools in the information disclosure. For

this reason, the static image associated with pedagogic practice reaches the places where technology not attends the requests of the educational process contributing to “remove learning barriers” [7].

The purpose of the scientific photography applied to biology is the environment aspects documentation from a technical and scientific point of view, as a support for learning and research. The photography is an objective form of documentation, much better than the simple memory of a fact or event. Also has the power to capture nuances that are unperceived with naked eyes, increasing the researcher observation specter. Differently from the artistic photography, in which the creative imagination flows through the human sensibility, the scientific photography reproduced the evident reality, the image as an instrument to document the memory reality [8], [9].

Here, the perceptible reality is based on the intrinsic fact that the photography itself is not the reality reflex, but a translation from a three-dimensional world to a two-dimensional. Nevertheless, the photography, according to Roland Barthes [10], always encloses references.

Nowadays, in the globalization world, the scientific field and more precisely in Biology, the use of photography contributes significantly to the improvement of assimilation contents that are transmitted by classes, lectures, scientific works, etc.

Many times, as displacement difficulties, teachers use photography to exemplify and clarify education concepts, bringing the students out of the imaginary and presenting them a concrete way. This practice becomes more evident in distance education, where the teacher is not often “at hand”. In this case, once more, the photography operates as a support to the learning material available.

Further on, the photography is routine used in education, but it becomes necessary to transform this use in an objectivity and interactivity way. Therefore, this project intends to present a new form of photography use in educational process, specifically in distance education.

## **2. Objective**

### **2.1. General Objective**

The purpose of this work is the use of scientific photography as an educational interactive support in Distance Education. The experimental test field was the subject Elements of Ecology and Conservation of the Biological Sciences undergraduate course of the Fundação Centro de Ciências e Educação a Distância do Estado do Rio de Janeiro (CEDERJ).

### **2.2. Specific Objectives**

The specific objectives can be described as follows:

- Develop a didactic for an interactive learning, where the students assumes the role of author of his knowledge;
- Bring about, through the photograph, a virtual contact with ecosystems, associating it with the subjects contents of an undergraduate course;

- Stimulate student's interest for Ecology lessons, through the visual perception.

### 3. Methodology

For this work, several stages were observed.

#### 3.1. Learning Material Production

**Images Production:** The images were produced in Atlantic Rainforest ecosystems incursions, considering the subject contents and a text prepared by the teacher with the photographs suggestions that are better adequate to the lesson's contents. All the material was produced with digital cameras of high resolution, searching images with esthetic and educational quality. After this stage, was created a specific image bank of the Atlantic Rainforest Biome (Figure 1).



**Figure 1.** Bank image photograph example

**Images and Texts Adaptation - Concluding the learning material:** According to the classroom's book and the Ecology specialized bibliography, many photographs that objectively illustrates the subject contents were selected in the image bank. Then, texts were written, standing out (in bold-face) the characteristics of forest ecosystems, restinga, coast lagoons, mangrove and rocky coast. The texts and the corresponding images constituted the content of the first

distance evaluation (AD1) of the subject Elements of Ecology and Conservation (EEC), being carried out in the period of March to April / 2007.

Above, we have a text fragment about restinga and the photographs that might have been used in the answer of one of the students (Figure 2):

*Some bromeliads, located inside of the restinga, have its leaves forming a glass. These adornments structure store water, which makes possible the aquatic organism's **incident of life** in a sandy ecosystem. They represent for these aquatic organisms a possibility of incident and distribution in an ecosystem where, apparently, it would be impossible, and works like micro lakes in different and numerous points of the restinga. Over again, a component of the biological field, the bromeliad, facilitates the animal aquatic life in a bound and adverse environment, besides "helping" **other plants germination**.*



**Figure 2.** Example of the photograph used in the answers "incidence of life and other plants germination", from left to right, respectively.

### 3.2. Testing the Learning Material

**Character of the activity:** The texts wrote without images and a set of representative photographs of the ecosystems, previously described, were available to the students in a CD. With this material, the students were free to choice and insert the images in the texts, considering the adequacy to the characteristics isolated in two of the five ecosystems presented, justifying their choices. After that, the students send a CD, with the activity concluded for a tutorial evaluation.

**Sample:** There were enrolled in the subject Elements of Ecology and Conservation (EEC), 375 students of 14 CEDERJ regional unites distributed in the State of the Rio de Janeiro. They were suitable to participate of the AD1. Up to the moment, a total of 260 CDs would be back, with the activities concluded.

### 3.3. Learning Material Evaluation

**Data Collection:** The learning material evaluation will be carried out through semi-structured opinion questionnaires, with shut and open questions. The shut

questions were built according to Likert Scale. The open answers, intends to identify the student's vision about image's quality and adaptation into the texts, as well as material effectiveness, familiarization with the ecosystems and the potential of this activity to motivate the Ecology studies.

The questionnaires were distributed, in the beginning of May of the present year, for 375 students's enrolled in Elements of Ecology and Conservation (EEC).

**Data Analysis:** The questionnaire, with shut and open questions, answers will be quantitative and qualitatively analyzed. The shut questions will be tabulated in a database (using Excel<sup>®</sup>), and subsequently quantified. The answers of the open questions will be read and understood by two analysts. The content analysis [11], made possible the isolation of key words. These key words/expressions allow us to categorized the answers and compare with other [12].

The qualitative stage data completed the database (Excel), in order to identify relations or approximations with the students discuss. From these data, three analysts will be responsible for the categorization of the expressions/key words in accordance with the degree of similarity. The results will be compared. The coincidences will be accepted and the disagreements will be analyzed by a new analyst and categorized only with the coincidence of, at least, two analysts opinion.

In other moment, the AD1 activity content will be evaluated.

#### 4. Final Considerations

In the constant search for motivation, essential element of the educational process, distance education presents any possibilities to this process occurred, considering that new technologies allow us to build diverse environments in such a way to learn.

New educational approaches of interactive learning, where the students were the author of his knowledge, are essential to maintain a good level of motivation. Thus, this essay aims to diagnose that this interactive construction, contributed to educational process.

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