Educational Project as a Biological-Agricultural Model for the Teaching of Agronomy at the Universidad Veracruzana in Orizaba-Córdoba Región

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The Academic Group UV-CA-456 "Biotecnología y Modelos Biológicos Agropecuarios" is linked to the learning's Agronomy students through academic strategies and activities, in order to achieve learning for their professional life and for professors, activities that are related to research, teaching and social spreading of knowledge. As a result, the applied and developed activities in the teaching-learning process in the field of agricultural producers are relevant for the implementation and professionalization in the improvement and/or understanding in agricultural production.

The educational project refers to the production of coffe that takes place at the maquiladora farm "Barrios Jacome" that is located in Boca del Monte, Comapa, Ver. For this project it was necessary to visit the place and participate in the process of production with the objective of determining the stages. It turned out to be a great process of learning with practical agricultural experiences for the students.

Keywords: teaching-learning strategies, transversality, educational project, curriculum, agricultural practice

INTRODUCTION

The Faculty of Biological Sciences at the University of Veracruz, which is focused on the biological and agricultural teaching area, is located in the municipality of Amatlán de los Reyes, Veracruz, México and it has a great demand from students that come from agricultural production family backgrounds. It is relevant to take into consideration those teaching-learning strategies that permit students to put the knowledge into the agricultural practice. Therefore, the importance of the utilization of didactic strategies that make students to have a meaningful comprehension, will lead Agricultural Engineer learners to obtain greater results in their learning process. The implementation of educational projects through agricultural practices in the soil may be perceived as an alternative for teaching-learning strategies that can be used to achieve meaningful instructional procedures in the classroom.

For this reason, those practices coming from an agronomy school that permit the transversality of this area to a real context may be considered as a Biological-Agricultural model.

DEVELOPMENT (METHODOLOGY)

The school subject "Calidad de frutos y semillas" (Fruits and Seeds Quality) is a course which is considered essential and necessary for the Agronomy Engineer career. The transversality (application) of the acquired knowledge in this course are relevant for the students professional development, therefore a topic that includes content from the curriculum will support the professionalization of Agronomy students.

How can a learner get immersed in the agricultural processes? This objective may be possible through the knowledge of activities that are carried out by agricultural producers. Therefore, as a part of the conclusion of the school subject "Calidad de frutos y semillas" and, as a part of the learning students' process, they will develop a research project that consists on the implementation of a real-life project that demonstrates the knowledge they have acquired throughout the course. One of the main topics of this school subject is related to the quality and safety of the origin of an agricultural product; hence it is necessary to have the processes' benchmarks that involve the presence of such products for the consumer, it means, its trazability (Agencia Española de Seguridad Alimentaria y Nutrición. 2009).

The research process, as part of the innovative project (Calvo, 1996) consists on explaining the first stages of the course: the importance of the quality of the agricultural products as well as their health and safety characteristics. Subsequently, series of questions regarding what they eat daily are asked to students. What do they eat? Do they know how the products are made? Do they certainly know these products are healthy? Are they aware of the products' processes of production? Once the students develop consciousness in this matter, and when they realize that most of the times they are unfamiliar with the origin of the agricultural products they usually consume, they are explained and provided with information related to the management's importance of an agricultural product: the trazability.

Once the theory has been understood, a local product is selected with the purpose of having a great number of evidence in situ from this process of production by applying the knowledge they have acquired in the classroom (Angel et al., 2016)

Students were gathered by teams and each team chose a crop of interest or one in which they have direct contact due to they are producers or producers' neighbors. Following up, one of the projects will be described on a general way. Such product consisted of monitoring the Biological-Agricultural model and it refers to the coffee production that is carried out at the maquiladora farm "Barrios Jácome" located in Boca del Monte, Comapa, Veracruz, México. For this project, it was necessary to visit the place and to take part in the process of production with the objective of determining the stages of production. Such stages will be generally described, yet for students it resulted to be a great process of learning and agricultural practice. All this process was documented with images taken at the place mentioned above.

Description of the Project

- *Objectives*
  - To transversalize the knowledge from the class to a real situation.
  - To determine the process of trazability of an agricultural product.
  - To learn the process through a real life experience.

- *Development*
  - Knowledge about the process of quality and safety of an agri-food product.
  - Explanation of the trazability through structuralized examples.
  - Selection of a local product for research purposes.
  - Monitoring of production and preparation of the product through the research in situ.
  - Preparation of a research report and presentation of the research in a forum.

Methodology and Evidence

Each step of production has been documented in the production place as well as with the support of some bibliographic references (Rebolledo, 2008). Those processes were carried out at the maquiladora farm "Barrios Jácome" for the production of roasted and ground coffee, ready to be served. The stages that were taken into consideration and researched for this project were the following, and which are carried out on the farm and that are listed in order to demonstrate the practice and intervention of students in a real situation.

- **Selection of the Seed**
  - Building up seedbeds and nurseries.
  - Seedbed or seedling for suitable varieties and qualities.
  - Selection and preparation of the seed.
  - Packaging and storage.
  - Seedling

- **Setting up the Coffee Plantations**
  - Preparation of the soil
  - Drowned (soil)
  - Fertilizing and prevention of pests and diseases.
  - Management of shady plantations
  - Harvest

- **Coffee Pulping**
  - Coffee wet milling
  - Coffee dry milling

- **Roasted and ground coffee**

- **Coffee marketing**

CONCLUSIONS

To the extent that students are capable to connect theory with practice, the learning they achieve on a specific topic will be more meaningful. For this educational experience and in this context, in addition to the quality practices carried out at the laboratory, by linking them to a real process will provide them with some elements of learning that they can relate and make use of it later in a professional issue.

The fact that students were present on each of stages of the coffee process in a maquiladora permitted them to get involved more directly on this process, and if they were familiar with it, they were able to connect what their theoretical basis with the real experience of a production system.

In addition, students have now the ability to systematize the information they were already familiar with (family business) and that they were unaware about the importance that each practice field involves (good agricultural practices) in the quality of the product, as well as the certainty of the route of an agricultural product.

ACKNOWLEDGMENT

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ENDNOTE

1. Fines del Nuevo Modelo Educativo hoy Modelo Educativo Integral y Flexible, de la Universidad Veracruzana. Beltrán, 1999.

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