

# The Promotion of Laboratory Teaching in Natural Sciences in Greece through the Laboratory Centres for Natural Sciences (EKFE): The experience from the activities of EKFE of Rethimno.

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**Abstract.** *Part of the work of the Laboratory Centre for Natural Sciences of Rethymno-Crete is presented. Specifically the presentation is focused on experience learning approaches. Experiments realized with simple easily available materials, questions and problems linking Natural sciences to situations of everyday life and a simple experimental kit are some of the activities within the context of experience learning in Natural science..*

**Keywords.** Experience learning, Natural science teaching, Experimentation.

## 1. Introduction

The Laboratory Centres for Natural Sciences (EKFE) constitute a valuable institution, in the area of basic education in Greece. The 78 EKFE that function today in Greece, support in every possible way and with enormous variety of methods the Laboratory teaching of Natural Sciences in primary and secondary Education. The activities of EKFE include: the supply of the schools with the necessary laboratory equipment, the training of teachers to carry out experiments in Science, on site visits to Schools to organise experimental activities of students, the production of teaching material, practical assistance on the area of Science Teaching, the application of innovative and/or new technologies' approaches in Science Teaching, etc. The importance of EKFE in the teaching of natural sciences in Greece is enormous, because they have established a variety of direct and frequent communication schemes with teachers, with students and, also, with senior functionaries

in education. Thus the diffusion of results from the above activities is widespread.

## 2. Motivation

The EKFE Rethymno organized in school year 2003-4 a line of activities, along the directives of Socrates. The aim was to exploit past experience and produce a package including:

- A Science laboratory guide (book and CD) for experiments with easily available common materials
- A thesaurus of Science exercises and problems related to the application of Science to everyday life
- A guide on the contents of a suitcase for the Science experimentalist.

When completed, the package will be freely available to the interested Science teacher in primary and secondary Schools.

## 3. Implementation

In order to get a direct first-hand input on the relevant needs and wills of the teachers, two pilot activities were organized:

- In cooperation with the Association of primary education teachers of Rethimno, a two day seminar on 'Teaching approaches in Primary and middle school' was organized. The seminar was focused to experience Science learning approaches. It was attended by 140 Science teachers.
- During organized study visits of primary and secondary school students to EKFE, a series of experimental activities using easily

available common materials was organized with the students actively participating. A total of 411 students from 11 different schools attended.

The activities were accepted in a very encouraging way and the feedback collected was used:

- To start producing a teaching guide of about a 100 experiments that may be realized with easily available common materials. These experiments are organized within a thematic context and their realization is being and digitally videotaped. The guide includes basic objectives, clarifications of the theory, tips to attend, and applications from everyday life. The theory behind most of the experiments extends to many areas of Science and this has to be clearly understood. Work has already been built-up for Fluids and Heat, other areas start now.
- To start a collection of questions linking natural sciences to situations encountered in everyday life. For every case the explanation is enriched with relevant comments and information. Up to now entries for Energy, Heat, Mechanics and Fluids have been entered in a continuing process.
- To form a suitcase for the experimentalist in the natural sciences. It contains a list and photos of simple materials useful to the realization of more than a hundred experiments. The materials may be transported in a suitcase 50 x 25 x 20 cm<sup>3</sup>.

#### **4. Epilogue**

In all of the above activities, the experiments planned seem to be very interesting to the students, they are simple to realize, may be used as a common start to many different teaching approaches, and, for safety reasons, they use simple non-toxic, non-dangerous materials.

We consider that these activities will contribute considerably to the promotion of an experience learning teaching approach of Natural sciences.