

Integrating Earth Sciences Related Topics into Compulsory Education Curricula – an experimental teaching experience

M. L. R. Liberato (1), A. Alençõo (2), J. A. Santos (1), M. Amraoui (1), M. G. Pereira (1), S. B. Oliveira (3), C. Fernandes (3), S. Vilareal (4)

(1) Departamento de Física, Universidade de Trás-os-Montes e Alto Douro, 5001-801 Vila Real, Portugal, (2) Departamento de Geologia, Universidade de Trás-os-Montes e Alto Douro, 5001-801 Vila Real, Portugal, (3) Agrupamento Vertical de Escolas de Vila Pouca de Aguiar Sul, 5450-003 Vila Pouca de Aguiar, Portugal, (4) Escola Secundária do Rodo, 5050-092 Peso da Régua, Portugal

(mlr@utad.pt)

In Portugal, Educational curricula cover weather and climate-related phenomena throughout the whole compulsory education. Meteorology and environmental contents seem to be rather well-covered all through the different school grades. Nevertheless, some effort should be made in implementing experimental teaching, as the introduction of meteorological and related subjects face a rather tight curriculum, with few hours to spend.

An approach to these themes starts in primary school, where focus is given to the seasons and some basics concepts on rivers, lakes and the ocean are taught. Apart from the introduction of basic principles in primary school, a rather wide range of physical aspects with relation to processes in the earth system is dealt with. Throughout all school grades emphasis is given to the Water Cycle and to related physical and geological processes. Different climatic zones over the country and over the Globe are compared and distinction between climate and weather is made. Traditionally, meteorology themes were included into the Geography curricula. Today, however, meteorology-related issues appear under life and earth sciences with some background in Physics and Chemistry. However, interdisciplinary approaches are difficult to pursue in public schools.

This work will provide a review of the development and implementation of “Water in the Environment” project. This is an interdisciplinary project supervised by scientists of the University of Trás-os-Montes and Alto Douro with teachers and students from two nearby public schools. The project aims at encouraging the development of experimental activities in school by exploring the Hydrological Cycle and using environmental characterization of the local Corgo River. Moreover, some technical tasks are developed and attention is devoted to encouragement of collaborative efforts. In addition, fieldwork is promoted and teachers are encouraged to lead students in the learning processes by engaging them in problem solving. Within the time-frame of

an academic school year, students will be fully involved in data collection, analysis and dissemination of the main outcomes by using Communication and Information Technologies (CIT). These interdisciplinary activities follow the syllabus defined for each school grade in the area of the Earth Sciences in order to consolidate primary scientific concepts and to develop students' curiosity and awareness in studying natural phenomena. Such projects provide undeniable examples of how scientific understanding advances and introduce students to the scientific processes, generating interest in science and technology.