"Radiation and Environment" a regional theme for the improvement of the Scientific Culture of a School Community

Alina Louro [a] e Maria de Fátima Paixão [b]
Escola Secundária de Afonso de Albuquerque – Guarda, Portugal
Escola Superior de Educação, Instituto Politécnico de Castelo Branco – Portugal.
fatimapaixao@ese.ipcb.pt

The role played by science education has changed. In the 60s and 70s the main target was the formation of a scientific and technological elite; our concern today is centred on the fact that teaching and learning science - Chemical Education in particular - should answer the questions set by society and provide the future citizens with relevant knowledge for their lives (Miguel & Campanario 1999).

In order to do this, in a time of deep changes, it becomes urgent to include, in the curricula, some selected aspects where science and technology (S&T) are given a social orientation with links to the Society (STS curricula), namely to the interests and contexts of the students themselves (Bybee, *et al.* 1991). This approach may contribute to view S&T as a human endeavour, providing the development of attitudes where S&T are appropriately valued (Manzano et al, 2000), since S&T are perceived as more real, complete and contextualized. It seems quite obvious, then, that the scientific culture of the teachers, as far as these subjects are concerned, should be at an appropriate level.

We claim that a subject, set in a local and regional perspective, may develop in students attitudes and competencies, which will improve their scientific and technological culture. We argue that "Radiation and Environment" – an optional topic in the syllabus of Physics and Chemistry of the Portuguese compulsory school – is one of these STS subjects.

Since our secondary school is located in Guarda, a region where radioactive material was explored a few decades ago, the researchers conducted a study aiming the following:

- To identify knowledge related to "Radiation and Environment", in a perspective of scientific culture, presented by teachers of different areas and by students in their final year of compulsory schooling, of a school community located in a region with a considerable rate of radioactivity.

Written Questionnaires were administrated to teachers and students. The subjects were asked questions on local radioactivity, such as the identification of the radioactive materials explored some decades ago and still present in the region, or its economical implications to the region. Data was subjected to a content analysis and a comparative analysis was performed.

The findings of this research were similar, for teachers and students. Both groups showed a lack of information, a poor capacity to present their opinions and to argue, and a difficulty to make judgements about the topic. According to these results, it was concluded that the education of the elements of the school community was at an inappropriate level.

Recommendations are presented regarding curricular reorganization as well as teacher education aspects.

REFERENCES:

Miguel, J.; Campanario, M. (1999). La Ciencia que no enseñamos. *Enseñanza de las Ciencias*. 17(3), 397-410.

Manzano, M. C. C.; Iglesia, P. M.; Hermida, E. N. & Pazos, M.S. (2000). Dos Proyectos curriculares innovadores de Ciencias Orientados hacia la relevancia social y personal. *Livro de Resumos do "Movimento CTS na Península Ibérica – Aveiro"*. 41-51.

Bbybee, R.W.; Powell, J.C.; Ellis, J.D.; Giese, J.R.; Parisi, L. & Singleton, L. (1991). Integrating the History and Nature of Science and Technology in Science and Social Studies Curriculum. Science Education, 75, 1, 143-155.