

## PORTUGUESE WORKSHOP ON Teacher Training

17 May 2013

16:00 – 19:00 and 21:30 – 22:30

### Minutes

#### List of participants

Name and surname	Institution
Noélia Vilas Boas	Agrupamento Escolas Miguel Torga
Luísa Maria Fernandes	Agrupamento Escolas Emídio Garcia
Teresa de Jesus Calvo Pinto	Agrupamento Escolas Emídio Garcia
Mara Sousa Dias	Agrupamento Escolas Emídio Garcia
Adília Tavares da Silva	Escola Secundária Abade de Baçal
Cristina Falcão	Escola Secundária Miguel Torga
Olga Nunes	Escola Secundária Macedo de Cavaleiros
João Matos	Escola Secundária Macedo de Cavaleiros
Abílio Manuel Ferreira Lousada	Escola Secundária Paulo Quintela
Lília Maria Braz	Escola Secundária Macedo de Cavaleiros
Inês Soares	Escola Secundária Emídio Garcia
Paula Plasência	ESTiG-Instituto Politécnico de Bragança
Maria João Afonso	ESTiG-Instituto Politécnico de Bragança
Maria Teresa Santos Palas	EB1 Nº 10 Campo Redondo
Célia Bento	Agrupamento Escolas Emídio Garcia
Filomena Barreiro	LSRE-Instituto Politécnico de Bragança
Paulo Ribeiro Claro	Universidade de Aveiro
Olga Ferreira	LSRE-Instituto Politécnico de Bragança
Luís Pais	Instituto Politécnico de Bragança

The workshop on Teachers' training promoted by the Polytechnic Institute of Bragança (IPB) partner was held in the School of Technology and Management (ESTiG) of IPB at 17 of May 2013 (16:00 CET), in Bragança. Nineteen persons, among teachers (13) from various school levels, IPB staff (5) and experts (1) were present. From the promoted discussion the following main conclusions/comments were made:

#### 1. Teacher training

- In what concerns chemistry teachers, the initial teacher training (ITE) pattern in Portugal can be quite wide. From the analysis of the participant teachers, base formations (first cycles) in Chemical Engineering, Chemistry, Biochemistry, Physics and Physical-chemistry were registered. Continuous professional development training is therefore considered fundamental, not only as an actualization tool but also to surpass some existing lacks associated to base formation.
- It was pointed out, by the teachers, a lack of offer in what concerns in-service teacher training in the chemistry area, in the region of Bragança. In that context, the Chemistry is All Around Network project provided the opportunity to bring this point into discussion. Most of the involved teachers attended ICT related courses but not specific to chemistry teaching.



- Several topics for in-service training actions were focused. Among them, technological subjects such as “Environmental chemistry”, “Food chemistry”, “Polymer technology” and “Cosmetic chemistry” were referred. “Analytical chemistry”, particularly, the use of analytical equipment, was also mentioned. Moreover “Chemical sensors”, “Nuclear chemistry” and “Green and sustainable chemistry” were pointed out as pertinent topics.
- A special emphasis was put on the use of ICT resources and the way they can be connected to experimental activities in the laboratory. It was found interesting to develop orientated guides to support the use of ICT resources, either as an introduction to the experimental activity or as a tool to consolidate knowledge. More, it was found important to offer training focusing this duality ICT-experimental activity.
- In-service training was found essential to promote teacher’s actualization. This was found even more important in the region of Bragança where the opportunities for specialized training, focusing both in fundamental and technological chemistry areas, are reported as scarce. In that context, the IPB project team will promote the organization of in-service chemistry teacher training in cooperation with the training institution “Centro de Formação da Associação de Escolas Bragança Norte”, starting with the organization of the 15 hours course entitled “Instrumental Methods of Analysis”, during September 2013.

## 2. The use of ICT resources in teaching and portal resources analysis

- An overview of the portal was made to the participants putting in evidence the updates, mainly in what concerns papers and publications on the thematic “Teachers’ training”. An explanation of the forms to be filled was done, as well as, a remembering of deadlines.
- Teachers participating in the workshop reported that they use very often ICT resources to support their teaching activities. Among the cited resources the most used are: A Química das coisas (<http://www.aquimicadascoisas.org/>), Casa das Ciências (<http://www.casadasciencias.org/>), Ptable (<http://www.ptable.com/>) and Phet (<http://phet.colorado.edu/pt/simulations/category/chemistry>).
- ICT resources are found useful to support the explanation of concepts that are difficult to be visualized by students. The following examples have been cited: (1) concepts that involve microscopic level and (2) experiments that are impossible to perform in the laboratory (e.g. nuclear reactions). Moreover, simulations that are interactive, enabling students to test different variables/hypothesis were pointed out as the most effective.
- An example of good practices using simulations in an educational context was given: a class focusing acid-base titrations could be planned to start with the experimental activity followed by the computational simulation to visualize the microscopic level (ionic hypothesis) and to test the effect of changing variables (titrant volume, concentration etc.).
- Concerning the “Chemistry is All Around” Portal, teachers recommended a reorganization of the topic “Teaching resources” in order to add more categories to the field “Type of product”.

## 3. Other

- The project “A Química das coisas – The Chemistry of things” was presented by Professor Paulo Ribeiro Claro (one of our scientific experts) to the teachers. He reported a growing use of this



resource as an educational tool, which was not foreseen in its creation. The participant teachers corroborate its value and reported they use it mainly as an introductory motivation element. According to them, its success relies on the fact of being scientifically rigorous and appellative, but short enough not to compromise the time needed to work with students.

- As an extension to the meeting, Professor Paulo Ribeiro Claro gave a seminar at Museu Ciência Viva de Bragança (one of our Associated Partners) open to teachers, students and general public. This activity entitled “The Chemistry of Love” is also one of the thematic of the above mentioned project “The Chemistry of Things”. In the first part, there was a seminar and, after, a discussion with the public about the chemistry involved in this emotion, in particular, about the action of chemicals on the brain.