

## PORTUGUESE WORKSHOP ON Successful Experiences and Good Practices in Chemical Education

**02 April 2014  
16:00 – 20:00**

### Minutes

**List of participants:**

<b>Name and surname</b>	<b>Institution</b>
Ana Isabel Amaral Correia	Agrupamento Escolas Emídio Garcia
Andreia Ferreira de Sousa	Agrupamento Escolas D. Afonso III – Vinhais
Andreia Filipa Nunes Póvoa	Agrupamento Escolas Dr. Ramiro Salgado
Célia Pinto Bento	Agrupamento Escolas Emídio Garcia
Cristiana Maria Veloso Morais	Agrupamento Escolas de Vila Flor
David Filipe Carvalho Maltez	Agrupamento Escolas D. Afonso III – Vinhais
Elisabete de Fátima Diegues	Agrupamento Escolas de Vimioso
Florinda Cesária Fernandes	Agrupamento Escolas Abade de Baçal
João Paulo da Veiga Matos	Agrupamento Escolas Macedo de Cavaleiros
Lígia Maria Gonçalves Paula	Agrupamento Escolas Abade de Baçal
Lília Maria Braz	Agrupamento Escolas Macedo de Cavaleiros
Luísa Maria Fernandes	Agrupamento Escolas Emídio Garcia
Margarida Beatriz Morais	-
Susana Sabina Pires Fernandes	Agrupamento Escolas Freixo de Espada à Cinta
Adília Tavares da Silva	Agrupamento Escolas Abade de Baçal
Filomena Barreiro	Instituto Politécnico de Bragança
Olga Ferreira	Instituto Politécnico de Bragança
Maria João Afonso	Instituto Politécnico de Bragança
Ana Maria Queiroz	Instituto Politécnico de Bragança
Maria José Rodrigues	Instituto Politécnico de Bragança

The workshop on “Successful experiences and good practices in chemical education” promoted by the Polytechnic Institute of Bragança (IPB) was held in the School of Technology and Management (ESTiG) of IPB at 02 of April 2014 (16:00 CET), in Bragança.

Nineteen persons, among teachers from various school levels (15) and IPB staff (4) were present. In this third year dedicated to the thematic “Successful experiences and good practices in chemistry education” the workshop comprised a practical session devoted to the exploitation of a digital resource and the elaboration of a learning guide envisaging its future use with students.

The workshop started with a brief presentation of the “Chemistry is all around network project” in what concerns main activities carried out and results achieved during the third year. The need to proceed with the analysis of the international papers and publications uploaded in the portal was remembered to the participants. An example of a review was presented.

Taking advantage of the experience of Professora Adília Tavares da Silva (Escola Secundária Abade Baçal) in the application of digital resources to support chemistry teaching, she gave a presentation on the thematic



“Learning guides as a tool to mediate student’s learning process”. The following objectives were drawn: (1) Fundamentals and advantages of using digital resources supported by learning guides; (2) Fundamentals to construct an effective learning guide and (3) Analysis of digital resources and testing of a learning guide.

Participants were organized in groups of two, sharing a common computer. An example of a learning guide was provided. The thematic chosen was “Radioactivity: beta decay, alpha decay and radioactive dating”. It aims to illustrate an example where laboratorial practice is not possible and the understanding of microscopic level applies. The tested digital resources were extracted from the portal Phet (<http://www.phet.com/>):

Alfa decay: <http://phet.colorado.edu/pt/simulation/alpha-decay>

Beta decay: <http://phet.colorado.edu/pt/simulation/beta-decay>

Radioactive dating game: <http://phet.colorado.edu/pt/simulation/radioactive-dating-game>

The digital resource was explored and tested by the teachers, following the instructions described in the learning guide and by answering the proposed challenges. The envisaged methodology was found effective by the participating teachers. They agree that the use of computer simulations in chemistry classes is useful and effective when explored within the framework of a learning guide. The learning guides are important mediation instruments to support students learning process.

Following this activity, the participating teachers have been provided with the fundamental tools to support the development of further learning guides based on the digital resources available at the “Chemistry is all around network” portal. In the period from April to June 2014, the activities with teachers will continue: each teacher will select a digital resource, develop a learning guide and test it, in the classroom, with students. We agreed that the feedback of this action will be useful for the objectives of the project.

In conclusion, the workshop and activities carried out during the third year of the project were evaluated very positively by the participating teachers. In order to guarantee the success and continuation of the actions carried out they were included in a training action with the support of CFAE-Bragança that will continue with the following topics: (1) Electrochemical series and (2) Solubility equilibrium. These future sessions will include the use of a digital resource together with experimental work.