

**Chemistry is All Around Network**  
**Workshop on "Student's Motivation"**  
**Bragança, Portugal, 20<sup>th</sup> September 2012**

**Minutes**

<b>Participants Name and surname</b>	<b>Institution</b>
Filomena Barreiro	LSRE-Instituto Politécnico de Bragança
Olga Ferreira	LSRE-Instituto Politécnico de Bragança
Olga Nunes	Escola Secundária Miguel Torga
Noélia Vilas Boas	Escola Secundária Miguel Torga
Maria João Afonso	ESTiG-Instituto Politécnico de Bragança
Teresa de Jesus Pinto	Escola Secundária Emídio Garcia
Luísa Fernandes	Escola Secundária Emídio Garcia
Adília Tavares da Silva	Escola Secundária Abade de Baçal
Arnaldo António Fernandes	Agrupamento de Escolas Abade de Baçal
Abílio Ferreira Lousada	Escola Secundária Paulo Quintela
Mara Dias	Escola Secundária Emídio Garcia
Célia Bento	Escola Secundária Emídio Garcia
Lília Braz	Escola Básica e Secundária Macedo de Cavaleiros
João Paulo Matos	Escola Básica e Secundária Macedo de Cavaleiros
Paula Plasencia Matos	ESTiG-Instituto Politécnico de Bragança
Teresa Palas	EBA Nº10 Campo Redondo
Carla Morais*	Faculdade de Ciências da Universidade do Porto

**Minutes**

The "Teachers and Experts Portuguese Workshop" promoted by the Polytechnic Institute of Bragança (IPB) partner, was held in the School of Technology and Management (ESTiG) of IPB at 20 of September 2012 (14:00-18:00) in Bragança. The objective was to analyze the material of the portal in what concerns the following points: (1) Papers and database of publications on students' motivation and (2) Teaching resources. Seventeen persons, among teachers (13) from various school levels (including two teachers from primary school), IPB staff (4) and experts (1) were present. Due to professional compromises the expert Carla Morais had to cancel her presence in Bragança. To surpass this last minute cancelation, her presence was replaced by a recorded testimony. From the promoted discussion the following main conclusions/comments were made:

- It was considered by the teachers, as well as by the contacted experts, that September presents several constraints to attend project meetings. Among the referred reasons the major one pointed out was the fact that September corresponds to the beginning/preparation of the school year. It would be recommended to schedule the next years' programmed meetings to October.
- It was generally consensual that chemistry is a difficult subject. Additionally, the motivation to study chemistry in the Portuguese context decreased as a result of the last years government measures,

namely: (1) Chemistry started to be an optional subject in 12<sup>th</sup> grade, (2) Too much long programs, which are considered difficult to be carried out and finalized by the teachers, and (3) Reduction of the laboratorial classes, which are undoubtedly recognized as a key motivation element.

- It is also widely accepted by the participants on the meeting that motivation to study chemistry can be improved by implementing laboratorial activities and by using everyday life examples. Moreover it was recognized as crucial to motivate students to have a motivated teacher. The use of teaching resources is also welcome. Nevertheless, its use must be carefully planned and its use during the full class is not usually recommended. They must motivate an active participation of the student rather than a passive one. Interactive resources, as well as inquiry-based ones are suggested as more adequate.
- ICT-based teaching resources could not be seen as a teacher substitute. It is generally accepted by the Portuguese involved teachers that students like and privilege the direct contact with the teacher. Having this in view, long movies or other non-interactive resources should be avoided. Short non-interactive resources are only recommended to be used as an introductory motivation element or to introduce a specific subject.
- When questioned about the utilization of ICT-based teaching resources the teachers pointed out that, among the possible types, they generally prefer simulations. Ideally these simulations must be accompanied by an oriented guide with final checkout questions, which could be prepared by the teacher having in view the desired outcome learning objectives. Ideally simulations must be followed by experimental practice in the laboratory.
- In a general way teachers prefer web resources suitable to be used in an offline basis to avoid dependence on the web connection. The chosen resources must also be centered on the student, motivating an autonomous and active thinking/learning process. Moreover they seek for validated resources, at least they feel more comfortable to choose resources belong to well recognized institutions. In that view the “Chemistry is all around network” project was welcome.
- Phet was mentioned as one of the most popular teaching resources being widely used by Portuguese teachers of all school levels; with an exception for the primary school ones. In that case teachers pointed out a lack of background preparation to teach experimental sciences in general, as well as to use digital resources. Even if experimental activities are recommended at these school levels, most of the times they are carried out with the help of other school level teachers. As so, experimental science teaching training for teachers of these early school levels are recommended and welcome.
- One question emerging from the general use of the Phet portal was the fact that it is an English-based resource. Nevertheless this was not considered a constraint for its use with students integrated on secondary levels.
- It is consensual among the involved Portuguese teachers that schools are well equipped as a result of the strong investment carried out by the Ministry of Education in the past recent years. Even the physical means exist, including laboratorial equipment; some teachers, including the ones from the secondary level, reported a lack of background knowledge to take full advantage and give proper use to it.
- Primary teachers have highlighted that in the actual context, financial funding for teaching science subjects at this school level, namely to acquire the needed consumables, is very low. They urge from a more effective financing from the Ministry of Education at these school levels.
- When asked about the information collected in the “Chemistry is all around network” project portal they have highlighted the quality, nevertheless they pointed out as preferable to have more focused and subject dedicated resources. This means that teachers would prefer, and found more useful, to have individual activities rather than portals with a high amount of information, which are time consuming to find the needed/adequate resource.



518300-LLP-2011-IT-COMENIUS-CNW

- A last recommendation from the involved teachers, mostly proceeding from the region of Bragança, is related to the need of training concerning technological subjects. Even they have this type of training courses promoted by the Ministry of Education in other cities of Portugal they would prefer to have this offer in Bragança. This is in phase with next year's project objectives.

