



518300-LLP-2011-IT-COMENIUS-CNW

Spanish Workshop Minutes Santo Tomás de Villanueva School in Granada (ES) 3 June 2013

The workshop (seminar) on Teacher training under the Chemistry is all around Network Project was held on (the 3rd of June, 2013) 03.06.2013 in Santo Tomás de Villanueva School in Granada. Twelve people, among them teachers (6) from various school levels and experts (university professors) (6) were present.

During the meeting, participants were asked to discuss the following topics:

- Teacher training courses in Spain.
- Methodologies to teach a specific topic, analysis and comparison between positive and negative experiences.
- The importance of scientific knowledge and pedagogical content knowledge and the need of training science teacher to keep them updated.
- The use of ICTs: videos, simulations, webquests and suggested resources.

They came to a variety of conclusions:

Teacher training:

- The current teacher training program (a sixty credit master) has a lot of limits. Teachers finish their university studies with a huge lack of didactic knowledge. The first part of the program is about general teaching but without specific science teaching content. These specific content are later explained during the second part. Some teachers and experts suggest starting the Master with these content that connect their scientific knowledge to teaching contents.
- University teachers can also attend teacher training courses. We can find pre-service and in-service training courses available to teachers, and an evaluation system is in place in which the teachers are evaluated through a student satisfaction survey, but the survey results are not recognized by (some?) teachers.
- Participants agree that there is training available for secondary and university teachers. One can find in-service training programs but they are not compulsory and only teachers with a strong interest in sharpening their knowledge and teaching activity take the courses.





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- Some teachers suggested the use of online training courses and highlight the growing importance of social networks. A lot of Facebook and Twitter profiles offer scientific content like news, discoveries and current events. Some of these content are designed by experts and provide teachers (with) a wealth of updated information on the world of science and technology.

Methodologies to teach:

- Most participants agreed that the application of new methodologies in classroom is difficult due to lack of time and resources. Most teaching programs are too long and theoretical and many textbooks are designed for teachers who apply a traditional methodology. All the participants stress the need for a methodological change in the teaching of content like chemical formulation, whose current approach discourages students from studying subjects related to chemistry.
- University teachers observe big differences between first course students. More than a third of first course students don't know basic facts about chemistry and how it is related to daily life. This may be caused by a lack of science content in the educational pathway or by a wrong educational approach of science.
- Some participants suggest an investigative teaching methodology and propose that we begin our classes introducing experimental devices or everyday phenomena, and to follow a more interactive approach by allowing time for learners to ask questions or make comments before starting theoretical concepts. One of the everyday approaches proposed was one resource that some authors name "Kitchen Chemistry", illustrating some chemical principles through cooking experiments.
- In some schools teachers are applying approaches related to Howard Gardner's concept of multiple intelligences and promote creativity in the classroom. Activities like alternative representations of the periodic table of elements or the creation of educational videos and theatre performances have a great impact on student learning. In this context, the use of Science History and STS content with the students was proposed.
- One of the most important resources mentioned during the meeting was the use of laboratory practices. Organising them is very difficult and they must be suitably prepared if we want to assure their successful completion. The Inorganic Chemistry department of University of Granada is developing a training innovation project called "Chemistry from another point of view" (La química desde otras ópticas), that promotes laboratory practices in schools and shows students how scientists do their job in the university laboratories. The experiences with some schools have been very positives.
- Visiting Science Museums like the Science Park of Granada is another interesting teaching resource. The activities in science museums that have (thoroughly) been prepared in schools beforehand involve an improvement in science teaching for primary and secondary schools, showing the way in the right direction every year with holding "Science fairs" created with direct student involvement.





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- All the teachers and experts in the meeting agreed on the need for institutional support in the cooperation between universities and schools. Every year some initiatives are launched, but not enough. University experts and secondary teachers asked for this cooperation and they had the idea of creating “laboratory kits” with guides and basic equipment to distribute to schools upon request, but always with the economic support of the government to ensure their sustainability.

ICT resources:

- Most resources proposed by the teachers who attended the seminar can be found in the portal of “Chemistry is All Around Network”. Websites like “The periodic table of videos” or “A química das coisas” , or “Periodic table of Elements” by Benito Navarro have been applied with success in some secondary classes.
- Some participants suggest visiting some new places:
 - o the facebook profile of “Real Sociedad Española de Química (RSEQ)”
<https://www.facebook.com/pages/Real-Sociedad-Espa%C3%B1ola-de-Qu%C3%ADmica/120321771460907?ref=ts&fref=ts>
 - o The Blog about chemistry “El cuaderno de Calpurnia”
<http://elcuadernodecalpurniatate.blogspot.com.es/2013/06/calpurnia-en-las-ondas-4-blogs-espacios.html?showComment=1370416530524#c3245582124154169632>
- The meeting participants proposed the creation of an open mailing list, a blog or a facebook profile where we can share all the interesting links we find in the future. Both university experts and teachers agreed on a commitment to work together and increase and support all initiatives on the way to mutual collaboration.

