



518300-LLP-2011-IT-COMENIUS-CNW

## **Workshop on Networking Activities on Successful Experiences 10.04.2014 at 15.00 CET**

### **Minutes**

#### **Results Presented**

The workshop on Teacher training under the Chemistry is all around Network Project was held on (the 1st of April, 2014) 01.04.2014 in Santo Tomás de Villanueva School in Granada. Twelve people, among them teachers (9) from various school levels and experts (3) were present.

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

- Teachers' and experts' personal successful experiences
- Analysis of international papers and publications on successful experiences and good practices
- Analysis of testing of teaching resources made by partners (uploaded on the project portal)
- Discussion on teaching resources tested at national level (if already done)
- Planning of future/possible testing.

They came to a variety of conclusions:

#### **1. Teachers' and experts' personal successful experiences**

During the meeting university teachers and secondary teachers showed us educational experiences that have helped to improve students' motivation and meaningful learning. Some of these experiences were: cooperative learning based methodologies, laboratory experiences, organization and participation in science fairs, and the use of ICT resources in the classroom. The use of ICT resources in some schools has been in using electronic devices like digital tablets. These devices make digital textbooks and educational multimedia applications directly accessible to students. We looked at applications like 3D "Molecules Edit&Drill", designed to enable students to build, construct, modify and examine molecules in 3D. This application fosters learning experiences about chemical structures and isomers, and the students used it to create a databank of molecules.

Some teachers have been using social networks like Twitter as an instrument for motivating their students. Pupils and teachers have been publishing photos of their educational activities and laboratory experiences, as well as links to webs and videos about chemistry. Also, there is a facebook site about the project "Chemistry is all around network in Spain" that lets us share information among teachers about successful experiences and educational resources.

Some teachers are beginning to experiment a new teaching model named "the flipped classroom" that inverts traditional teaching methods, delivering instruction online outside of class and moving "homework" into the classroom. In this model, students watch lectures at home at their own pace, communicating with peers and teachers via online discussions and concept engagement takes place in the classroom with the help of the teacher. The traditional role of the teacher changes and the teacher turns into a guide of students learning. Some examples of brief explanations that have been used within this approach can be found in some videoblogs like "Veritasium", "Minute Physics" and "Minute Earth".

Teaching of inorganic chemical nomenclature was one of the main topics of discussion during the meeting. One of the experts, Manuel Fernández, whose research is about Science Education, has recently written a paper about the teaching of inorganic chemical nomenclature. This expert supports a reduction of learning contents, teaching only familiar and everyday compounds to avoid pupils' demotivation





518300-LLP-2011-IT-COMENIUS-CNW

and overall rejection of chemical contents. Teachers felt that it was an interesting paper and suggested including it in the publications section of the project portal.

## 2. Analysis of international papers and publications on successful experiences and good practices

Most of the papers and publications commented on by teachers and experts were those that were written in Spanish. These publications dealt with use of ICT resources in the classroom and educational approaches based on a constructivist interpretation of teaching and learning: contextual science, STS contents, inquiry and argumentation in the classroom, experiments about everyday chemistry and recreational chemistry, cooperative learning, etc.

All the teachers and experts agreed on the importance of ICT resources. We can find ICT resources in virtual labs in applications about visualization of molecules and videos about chemistry lectures. There was unanimity on the need for laboratory experiences, but they are not effective under all circumstances, because it is necessary to prepare such experiences by giving the students a conceptual basis that link to science laboratory instruction.

University and secondary teachers agreed that a methodological change must be accompanied by a lower teacher-student ratio, given that nowadays all of them have too many students and they can't apply non-traditional teaching approaches. Furthermore, the university admission tests are designed with a traditional approach that does not promote new teaching methodologies.

## 3. Analysis of testing of teaching resources

Some teaching resources in the Chemistry is all Around Network portal have been used by some teachers and some group of students. Three of the most useful resources suggested are:

- FQ-Experimentos (FQ-experiments), by Fernando Díaz Escalera.

This resource proposes activities about problem based learning and propose simple experiments that pupils can watch in video-records. This resource has been used to support physics and chemistry learning in 4<sup>o</sup> course of compulsory secondary education, with very satisfactory results. The use of this resource in particular improved student motivation.

- Iniciación interactiva a la materia (interactive incitation to matter), by Mariano Gaité Cuesta.

This resource has been applied in 1<sup>o</sup> course of baccalaureate during the didactic unit about atomic models and elemental particles. Its application in the classroom has been developed with the use of digital tablets and the students evaluation has been positive.

- Tabla periódica de los elementos (periodic table of elements), by Benito Navarro.

This resource has been applied in some schools by a cooperative learning activity which consisted in building a giant periodic table during the science fair in the school. It is a resource that has been valued positively by teachers and students. This website shows us several ways to classify chemical elements depending on different criteria.

We have planned the future evaluation of portal resources in several schools. This evaluation is still pending and it will be organized in the near future, and the schools involved will communicate with each other by email.