

## Teacher's Training in the Czech Republic

**Zdeněk Hrdlička, Eva Krchová**

Institute of Chemical Technology Prague (Czech Republic)

[Zdenek.Hrdlicka@vscht.cz](mailto:Zdenek.Hrdlicka@vscht.cz)

### Abstract

*The paper deals with the current situation on teachers' training in the Czech Republic. Training of teachers once they have graduated from universities is not as spread activity as desirable. Sure some workshops and training lessons take place but in overall view, the general interest is low and there is no required standard of teachers' life-long learning. The most important idea is that teachers can teach these "old" topics in modern way. This is the main aim of teacher's training: How to train professors to teach in more attractive way, how to impress the attention of students. The five articles reviewed in the paper can give us the illustrative example trying to put boring science into more interesting way.*

### Introduction

Training of teachers once they have graduated from universities is not spread and obvious activity in Czech Republic. Sometimes, some workshops and training lessons take place but in overall view, the general interest is low. What does it cause? Why are teachers not trained frequently in scientific subjects? The paper tries to summarize shortly this topic.

Teaching has a very long tradition in the Czech Republic. Teachers must teach what has to be taught according to curriculum and don't have enough space to try extremely new methods and procedures. They can prepare them in their free time only.

Let us look at this problem from the other side. The teaching according the traditions doesn't mean teaching these things different. The most important idea is that teachers can teach these "old" things in modern way. This is the main aim of teacher's training: How to train professors to teach in more attractive way, how to impress the attention of students. The five articles reviewed in the paper give us the illustrative example trying to put boring science into more interesting way.

### 1. Actual trends in chemistry teaching: Past, present and perspectives [1]

The article deals with the innovative approach to learn chemistry. The authors state that using computers is the basic way to educate professors as students. The use of information and communication technologies (ICT) or just computers in teaching chemistry as well - learning the subject at various levels of the educational system is the mastery of different types: software and hardware designed or suitable for teaching chemistry, their inclusion in the preparation, implementation and evaluation of teaching a particular subject matter.

Math and science are now no longer able to do without the significant support of computers, in the wider sense, the information and communication technologies (ICT). Digital technology is becoming their organic components and allows a significant discovery of new knowledge, principles, and a shift in perception of the current theories. This is still significantly aware by most of the teachers, students and pupils of various levels of school systems. For these reasons, the current science teacher must control not only taught discipline but also the foundations of computer science, supplemented by user knowledge of applied software. However, (s)he must have a basic orientation in the principles and focus more attention on prospective information systems according to the nature of the field (s)he teaches.



Application of new resources to the teaching of specific subjects, both material and immaterial, is always secured in a theoretical and practical level didactics. The modern concept of didactics, which respects the rapid development of new technologies, one can no longer suffice with the characteristics of field didactics as the intersection of pedagogy and taught discipline, but it is necessary to discover much wider relationships and links.

A new branch begins to grow over individual field didactics - technology of education. This new momentum supported by serious research work should pave the way for latest technologies and their models to teaching. Only then can the educational sphere to "keep up" with the development of society, referred to as information society.

## **2. Possibilities to create stereoscopic materials for learning chemistry at high schools [2]**

The education and training of professors is very prior nowadays. In some cases, it is very advisable for them to apply new methods of teaching. The article focuses on possibilities to create stereoscopic materials to learn chemistry. Videos and other stereoscopic materials are the way how to increase the interest in learning chemistry. Lots of pupils don't want to deal with the area where traditional approaches prevail. Due to the popularity of 3D videos, it has been decided to create some as a suitable motivating element in teaching chemistry, where it can help out on displaying structures of various substances or organization. In the first phase there have been tested and found suitable parameters for shooting in amateur conditions similar to the situation in the laboratory of the authors.

They observed ratio of the distances from the camera lenses to the target. They revealed that, compared to preferred ratio of 1:20, for chemical objects ratios in the range of 1:12 to 1:8 are also applicable. This finding resulted in a limitation of camera movement towards the object and away from it, which is recorded and restrictions on focusing when shooting an object detail. Further, possibility was tested of implementation of keying in shots that can be despite the considerable time complexity in its implementation and use, that are keyed both images at once. It is also shown that in choice of framing the scene (placement of objects) and of action, number limitations exist that must be taken into account. Indicative survey aimed at identifying pupils' preferences regarding to the method of video processing showed interest in the form of an entertaining approach to these images.

## **3. Specifics of chemistry lessons at non-chemical secondary vocational schools [3]**

The article was selected because it is a short but useful study focused on teaching chemistry at secondary vocational schools (SVS) with non-chemical specialization in Czech Republic with special focus on school experiment and new facilities available for chemistry teachers at these schools.

The article describes difficulties that chemistry teachers at secondary vocational schools face, current situation of educational system, grade of education achieved and specialization of teachers that currently teach chemistry at SVS. Authors of the article introduce two motivating means that can teachers use in chemistry lessons at SVS.

The means of motivation described in the article are relatively new and can motivate not only pupils but also teachers. Teachers of chemistry at SVS often need not only facilities – due to lack of them at more than a half of SVS, but also methodological support and inspiration. Both portable labs and virtual experiments can offer the support needed. Both these means are motivating not only for the teachers but also for pupils, which is also very important for efficiency of lessons.

The article is not too long and offers enough information, links and inspiration. We consider it useful for teachers as a starting or inspiring source of information and sources, where they can find further information.

#### **4. Teaching chemistry at the 2nd level of elementary schools and at secondary schools from the viewpoint of educational practise - suggestions for beginning teachers [4]**

This publication is, in our opinion, of high quality. As its name suggests, it is all about the integration of theoretical knowledge that a student of education has acquired during his/her studies, about its application in practice at lower and upper secondary schools. The text is based on the assumption that a beginning teacher (student of undergraduate studies) does not have enough experience to handle the situation in the classroom both in content and disciplinary site. Study this support requires some theoretical knowledge gained in the study of educational disciplines, especially chemistry didactics and additional seminars. Study text is somewhat different than classic textbooks. It is somewhat different from the formal point of view (symbols, borders), and especially in terms of content (text, questions, tasks, part of the candidate, etc.).

It is a comprehensive study text which targets beginning teachers at primary and secondary schools in the subject of chemistry. The level of the teaching textbook is very good. Experiences and knowledge of experienced teachers are presented for future teachers, but not in the form of advice and guidance, but with a systematic methodology. It presents good examples and concrete solutions. There are analyzed characteristic difficulties, obstacles and problems that are beginning chemistry teachers struggling both in terms of subject and in terms of children's collective interest in learning. The text has significant potential to improve the level of chemistry teaching at primary and secondary schools in the Czech Republic. The authors of the project did a good job.

#### **5. Analysis of Chemistry Lessons Supported by Video Records [5]**

The paper deals with important topic of assessment of school classes and feedback at training of future teachers. Practical component of teachers' training is one of the most difficult parts of education curriculum, mainly because that the fundamentals of it are formed on the basis of empiric procedures, they are not theoretically developed in sufficient extent and they are characterized mainly by created ability structures. For this reason, every contribution enabling efficiency increase is extraordinary useful. In this case, improvement of diagnostic procedures in pre-gradual teachers' training seems to be an essential condition of professional development. We agree with the reason that a teacher becomes successful and professional even during his/her practice. Direct inspections of classes are essential parts of lives of every either professional or future teacher. The question is how to assess pedagogic output of future teacher so that the feedback is immediate, as efficient as possible and in the same time, the fragile social environment of the class is not affected. Video records of classes offer sets of information about particular pedagogic situation. The sets can be analyzed in the presence of other students of pedagogy and their teacher. One can suppose that after diagnostics of "foreign pedagogical situations", a student will understand his/her own teaching. Thus, reflexion becomes the basic aspect of teachers' professionalization. Properly edited video record containing key minutes of the lessons can help to improve the level not only of a student of pedagogy but also of a current teacher.

The reviewed publication was created as a study material for students of pedagogy : future teachers. However it can also help educators of educators, current teachers, school directors or members of school inspection. The paper is rather theoretical and does not offer simple solution how to improve chemistry teaching or how to prepare future teachers. However it analyzes the key aspects of teachers' professionalization in serious way with emphasis on feedback. In more details, it is devoted to the topic of inspection of classes performed with the use of video technique. The paper can contribute to increase of quality of future teachers, not only chemistry ones.

## References

- [1] BÍLEK, M., 2010. Actual trends in chemistry teaching: Past, present and perspectives. [online]. Media4u Magazine X3/2010. Page 38. ISSN 1214-9187. Available on: <http://www.media4u.cz/mmX32010.pdf>
- [2] BRÍŽDALA. J; ŠMEJKAL. P; STRATILOVÁ URVÁLKOVÁ. E., 2010. Possibilities to create stereoscopic materials for learning chemistry at high school. [online]. Media4u Magazine X3/2010. Page 68. ISSN 1214-9187. Available on: <http://www.media4u.cz/mmX32010.pdf>
- [3] RUSEK. M; BENEŠ. P; ADAMEC. M., 2010. Specifics of chemistry lessons at non-chemical secondary vocational schools. [online]. Charles University in Prague, Faculty of Education, 2010. Available on: <http://userweb.pedf.cuni.cz/wp/kch/files/2010/10/Specifika-vzd%C4%9Bl%C3%A1v%C3%A1n%C3%AD-v-chemii-na-SO%C5%A01.pdf>.
- [4] SOLÁROVÁ. M. A KOL., 2009. Teaching chemistry at the 2<sup>nd</sup> level of elementary schools and at secondary schools from the viewpoint of educational practise - suggestions for beginning teachers. [online]. Ostrava. 2009. Available on: <http://projekty.osu.cz/synergie/dok/opory/solarova-metodika-vyuky-chemie-na-2-stupni-zs-a-ss.pdf>
- [5] RYCHTERA. J., 2011. Analysis of Chemistry Lessons Supported by Video Records. [online]. Palacky University Olomouc, Faculty of Science. 2011. Available on: [http://ucitelchemie.upol.cz/materialy/studijni\\_texty/prednaska\\_analyza\\_vyucovacich\\_hodin\\_rychter\\_a.pdf](http://ucitelchemie.upol.cz/materialy/studijni_texty/prednaska_analyza_vyucovacich_hodin_rychter_a.pdf)

