



**Notes from the Interviews with Teachers in the Czech Republic**  
**- Barriers of Higher Interest to Study Chemistry**

There are many problems with teaching chemistry at secondary schools as well as at years 8 and 9 of primary schools. From the Interviews with Teachers it is clear that it is complex problem, we have to look into many aspects and try to find proper solution that would lead into improvement in teaching technical and natural sciences subjects.

**Bad teachers**

Why we have bad quality teachers? They are tired, without interest and illusions. Their classes are too big, their wages low and they are not only teaching chemistry, but also concentrating on problems with student's behaviour. Chemistry is usually last popular subject among students.

Some chemistry university graduates want to start teaching chemistry but this career change is quite difficult. They have to study again, at least three years bachelor degree in pedagogy and that usually puts them off. We miss faster pedagogy course for these people. It would be quite suitable as they usually have great chemistry knowledge, but also young families cannot afford to spend so much time on studies.

**Lack of requisites and equipment**

The situation differs a lot at the secondary schools. Strictly speaking, it is not the biggest problem, but still, there are some schools that are incredibly behind with basic requisites. Some governing bodies do not provide funds for lab equipment, study handbooks, requisites etc. I was shocked when I met teacher from secondary school specialized in natural sciences, with 10 chemistry lessons per class per week ... but with almost no labs and very "ancient" requisites. I would hope for some kind of check and control from the Czech Ministry of Education that would at least guarantee some standard level of equipment and requisites. Parents and students should have some kind of quality assurance. It is also true that Head teachers and teachers can apply for grants to improve schools equipment but to be honest, I found the teachers almost exhausted and overloaded. They do not have the capacity for additional activities.

There is I believe possibility to connect schools to local businesses and factories, to scientific institutes etc. Schools could maybe regularly use their labs, students could see the application of science in everyday life. This is very rare in the Czech Republic. These days students have no idea about application of chemistry in real life, do not know the careers in chemistry and science...they even often do not know their parents jobs!!

**Lack of MOTIVATION**

I write motivation in capital letters as this is probably the "key to success". We have to show students careers in chemistry, introduce them to successful scientists, and show the jobs in industry. We were proudly turning the society into services only to see that now there is nobody able to produce ☺ ...drugs, clean water and environment, food and much more, based on chemistry...



Students are motivated by the prospect of lucrative careers and we have to show them, that there ARE such careers in chemistry. At the moment they only know chemistry as boring subject with a lot of theory and memorizing - without understanding what the hell is this good for!

### **Chemistry as a “Difficult subject”**

For majority of students chemistry is difficult, without interesting topics and with lack of time for interesting experiments. Topics with no sign of practical use. Chemistry is also very complex and students have to understand it from the beginning, one topic is based on the previous one so it is necessary to have good teachers all the time of the study cycle and to get students attention also all the time.

Year 1 at secondary schools seems to be crucial and very difficult. There is enormous difference in the students' knowledge of the subject. The ones with excellent teacher at the primary schools have to slow down now as the teachers are very busy helping students from primaries with poor quality of chemistry. It can sometimes put off the good ones as well as the bad ones and it is all up to the teacher what the result will be. I would suggest that the students really interested in chemistry should attend some courses at the university already at the secondary school age, some “chemistry – students – incubator”. There they could meet similarly oriented peers, professors, use the labs...as the secondary school teachers usually do not have time and equipment for this.

### **Others**

Another problem is the secondary schools system. We have so called gymnasiums, usually generally oriented secondary schools. These can be 8, 6 or 4 years long. Often the 8 and 6 years long have good, talented students, while the 4-years long have usually students who were not successful to enter the 8 or 6 years long schools after finishing the 5<sup>th</sup> grade at the primary school. This means that the quality of these schools is worse. Some of them, historically very good natural-sciences oriented secondary schools, are only 4 years long and their quality is declining as is declining the quality of students.

These are the main barriers that we have found out during the interviews with chemistry teachers at Czech secondary schools.

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