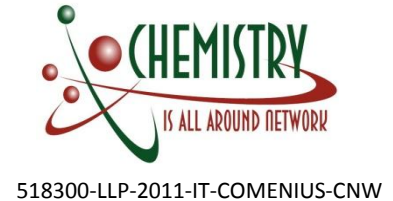


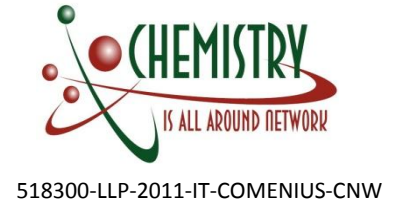
PhDr. Milan Veselský, PhD.

Student motivation in teaching chemistry in Slovakia



Our paper deals with the importance of interests in student learning motivation in chemistry in Slovakia.

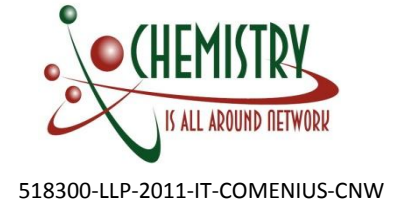
Based on research investigates the level of interest in chemistry for the high school students and its relations to the evaluation of chemistry and various aspects in teaching chemistry.



- according to PISA researchers from 2006 and 2009 the Slovak students reached underaverage score within OECD member countries in the natural science knowledge.

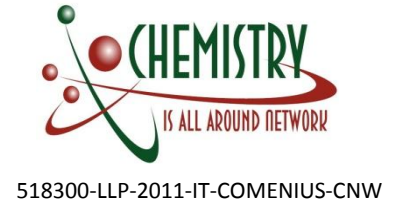
-approximately **one fifth of Slovak students (20% in 2006 and 19% in 2009) are included in the risk group of pupils finishing compulsory school education without acquiring basic level of scientific literacy**

- as main causes are primarily regarded educational culture with an emphasis on factual knowledge, the separation of education from first-hand experience of the child, and ignoring real life in education.



Research

- the primary goal of the research was to find out the **level of interest in the subject of chemistry for the students.**
- next goal was to find out the **evaluation of the subject of chemistry for the students of both genders in terms of its contribution to life preparation, for knowledge enrichment and the use of the obtained knowledge and skills in the future careers of the students.**
- the last goal referred was to **quantify and interpret the relations among various aspects of schooling as they are evaluated by the students as well as their interest in the subject of chemistry.**

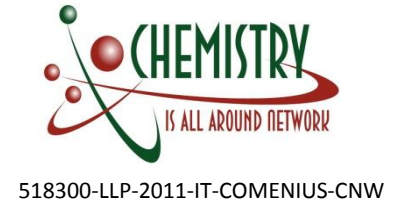


- as a research tool was used a **five level verbal scale questionnaire with a mean**
- the sample consists of **223 first year students (93 boys and 130 girls)** of the secondary schools in Bratislava, Banská Bystrica (major cities), Banská Štiavnica, Martin (mid-size cities), Skalica and Moldava nad Bodvou (small towns). High school students expressed their opinions and attitudes toward teaching chemistry at the elementary school level.
- table 1 in paper shows that **interest in chemistry had 57.0% of boys and 64.6% of girls. Conversely, lack of interest showed 33.4% of boys and 18.4% girls.** Higher interest of girls in chemistry was also confirmed by the statistical analysis

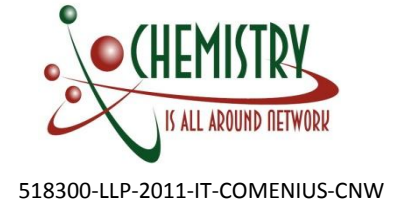
- Comparing these results with the results of research that was conducted in the past , when interest in chemistry declared 66.7% of respondents and lack of interest 14.4% of respondents allow us, even in the absence of statistical analysis, to note a **decline in interest in the subject of chemistry.**
- A more obvious decline of interest in chemistry was found in second year high school students who were reflecting on the subjects and teaching at the high school level . In the latter research **interest in chemistry reported only 38.1% of respondents, compared with 42.7% of respondents who declared a lack of interest in chemistry.** Similarly, however, as in the current research, girls showed more interest in the subject of chemistry than boys.

- **the importance of chemistry in preparing for life declared 43.1% of boys and 46.9% of girls of our study.** Chemistry as a subject is considered less important or unimportant from the point of view of 43% of the boys and 39.2% of the girls
- boys and girls, however, were not significantly different in the evaluation. **The results can be viewed as negative.**
- The results indicate a requirement for the teachers to teach chemistry with more emphasis on the practical issues of everyday life, to give students the opportunity to address the challenges and problem solving that include realistic contexts and ill-structured problems.

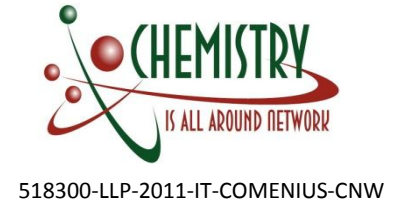
- Chemistry as a subject is considered for the development of **self-knowledge as an important or very important for 64.6% of boys and 66.1% of girls**. Conversely, little important or unimportant in this context was considered by 18.3% of boys and 14.6% of girls. Students by gender, however, in its assessment were not significantly different
- Solutions require teachers emphasize active **learning that is meaningful for the students, the use of cross-curricular activities**. Students would be provided by more comprehensive knowledge enabling them to understand the world more deeply. Higher cognitive value of the curriculum would probably **encourage the students not only to study but to deeper cognitive strategies as well**.



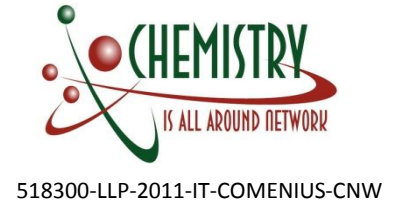
- Chemistry was positively appreciated in terms of use of the acquired knowledge and skills in their future careers by 36.6% of the boys and 37.7% of girls. For less important or not important it was considered by 51.6% of boys and 40.8% girls.
- According to our findings, the highest value of chemistry students see in **enriching their own knowledge , followed by consideration - general preparation for life and finally aspect - the use of knowledge and skills in their future careers .**
- most students appreciate the study of chemistry to **enrich their knowledge and less so for its importance to the life and future career.** It is a challenge for the teachers to interlink the evaluation aspects in teaching chemistry. It can be reasonably assumed that the **emphasis on practical use of chemistry in real life, hobbies and extracurricular interests of students and in extending and deepening their knowledge can significantly stimulate students' interest in learning the subject of chemistry** and, ultimately, their interest in the study of chemistry in future.



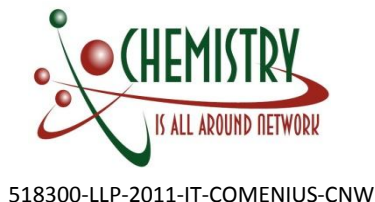
- **we found a significant relationship interest of students in chemistry and the understanding of the students of the subject matter**
- this finding confirms that meaningful learning of students is closely linked to the interests of students in the subjects. Such learning can only contribute to satisfying the interests of the students, as well as arouse them.
- **we also assumed the possibility of students to apply in study independence and their own approach as well as the motivating effect and relationship to the focus on chemistry.** This was confirmed . This assumption corresponds well with the outcome of the theory of self-determination motivation (Deci, Ryan, 1985), where self-determinating behavior (conducted by an individual of their choice from their own internal approval) is closely related to the internal motivation and thus the interests, in terms of learning also with the depth and durability of learning.



- Our research **confirmed the expected relationship between the interest of students in chemistry and teaching opportunities to discover knowledge, procedures, find explanations of phenomena and contexts , as well as opportunities to show students and satisfy his own curiosity**
- It is not a surprising finding that the **relationship between the interest of students in chemistry and evaluation studies is quite high as chemistry develops creative thinking, creativity and a sense for new issues**
- The explanation is that the **implementation of creative activities for many students is a manifestation of their autonomy and spontaneity that connect these activities with interest.** Interest and creative activities are also accompanied by not only intensive "immersion" into implementation, and therefore the learning activities, but also by significant related positive emotions.



- We did not expect, however, that there will be showed **no relationship between the interest of students in chemistry and opportunities to ask questions**, what they do not understand or what interests them
- Asking questions in class is not only an opportunity for students to deepen their understanding of the curriculum, but also **to show their curiosity and interest. The reason for our findings could be the lack of opportunity for the students to ask the teacher and class mates questions in the class**, and also experiencing that their questions often do not get satisfactory answers.
- Similarly equally low, even though important can be considered the **relationship between the opportunities for the students to handle experiments in the class and their interest in chemistry** . We assume that one reason can be the **insufficient amount of the opportunities for the students to perform such activities in the class, or as well their unsatisfactory realization**. It is a paradox however, because the laboratory classes in chemistry are irreplaceable source of skills and knowledge, as well as situation experience for the students.



Conclusion

The solution for natural science education, including chemistry, is **teaching focused on students, with a strong use of constructive approach in knowing the students.**

It assumes rich communication environment, research approaches with an opportunity for the students to show and satisfy their curiosity and interest in learning, authenticity of the teaching environment and also the use of ICT in teaching chemistry.