

## **Titul: Creation and validation of complex learning chemistry exercises**

**Autor: Mgr. Lenka Vondrašová**

### **Summary:**

Every student, who has taken the final exam, should acquire a set of key competences that comprise a number of complex learning exercises focused on problems of today's real world.

I already worked on complex learning exercises in my diploma paper and created 20 complex exercises. Then I chose five of them and verified them practically at various grammar schools. As I got interested in this project and managed to use it in practical teaching lessons I decided to continue with the project in my PhD thesis. The aim of the project was to create a set of complex learning exercises, which would be useful in chemistry lessons and verify them in practical lessons.

In the theoretical part I focused on RVP and basic natural literacy, to which complex learning exercises strongly contribute. I set its contents, structure and ways of using. Then I described statistical methods, data and different ways of processing and evaluating the complex exercises used in my project.

In the other, practical, part of the project I focused on making my own complex learning exercises. I chose topics that students find interesting and encounter in everyday life. All in all I managed to create 10 new exercises.

Each complex learning exercise comprises an introductory text and a picture, which motivates students as well as gives them useful information to find a solution. A set of partial tasks, which are part of the introductory text, follows. A recording form, where students write their solutions, is also a part of the exercise.

In the third part of the project I analyzed tasks verified by CERMAT. CERMAT verified 5 complex exercises, which I chose from my diploma paper. Students solved the given tasks with interest, which was shown in the students' results 74,2% and 52,7% on average.

Verification of the complex learning exercises led to the conclusion that students have problems with reading texts, understanding tables and graphs. I came to the conclusion that students are not fully able to apply their knowledge and skills to everyday situations.