

## Abstract

The main goal of the thesis is to describe a position of the real experiment in chemistry at the beginning of the 21<sup>st</sup> century and to contribute to solution of speculations if this didactic tool is or is not at current schools such a rarity as it's often described.

The starting point of the thesis is extensive research of the literature related to history of natural science literacy which is condition not only for the right experiment interpretation but also of its suitable usage in the lessons. The theoretical part observes also the ensuring of the chemical experiment in the curricular documents and its position in the chemistry teaching in recent past. The experiment is a dynamic visualia therefore the visualias are classified in particular part of the thesis and their occurrence and function are described - in today's information society, chemistry textbooks, as a part of hypermedia programs for chemistry teaching and in lessons in general. The thesis focuses partly on hypermedia programs, especially then on materials for chemistry teaching that proved to be helpful in e-learning.

Through the questionnaire inquiry at primary and secondary schools in Czech Republic were discovered not merely material also personal options of the schools and chemistry teachers in relation to the experiment implementation in the lessons. The gained data are analyzed through statistical methods and comparisons are deduced e.g. within regions, types of school and length of the teacher's experience. Awareness of particular experiments among the educators is observed on the basis of few basic experiments with aluminum as available metal. There are presented the exploitable resources and different modifications of these experiments.

Through the statistical evaluation it was found out that the experiments implementation is the most dependent on qualification of the educator, material equipment of school and suitable background for the lesson. Some published theories which report that experiment implementation in chemistry lessons depends especially on the teacher's gender and length of his/her experience were not confirmed.

Important part of the thesis is the hypermedia program „Chemistry of the aluminum and elements of the 13<sup>th</sup> group of periodic table“, created as HTML sites with accessible source code. This program provide to the users, teachers, pupils and students not only range of digitized video recordings of the chemical experiments to the particular topic but also next usable information about aluminum, its compounds and their practical importance for everyday life.

The main output of the thesis is the fact that the position of the real experiment in chemistry education today is not as weak as it's often mentioned. The teachers know the experiments, search for them in different resources and if the conditions and equipment are enough suitable, they are also able to use them within the chemistry lessons. By the approached educators are highly searched also the digitized records chemical experiments and next visuals.