

Abstract

High-school students are less interested in science than before. Despite importance of science for our life and for description of nature around us, students lose motivation for studying it.

The approach of teacher is critical for focusing students' attention. Lessons should be based on linking of the education with daily-life and biology provides plenty of possibilities to achieve the goal, especially employing hand-on education, practical examples and exercises. One of the most effective way to show the beauty and a complexity of organism structure is by using microscopes. Many different techniques have been used to prepare education materials – picture, videos or whole movies from micro-world. Nevertheless, a classical optical microscopy is by far the most common training activity during the practical courses. An evaluation of this education aspects is, therefore, critical for further method development.

This diploma thesis is focused on establishing of evaluation techniques and subsequent analysis of the current state of students' microscopy skills. First of all, the elementary set of knowledge and the correct microscopy work-flow were established in collaboration with eleven experienced teachers. Based on these results, two types of surveys were designed. One of them was dedicated to teachers and the other to the students. Accept the objective evaluation there was also an auto-evaluation part in the student's one. On the top of that, the students' work-flow was evaluated by my own observation of their behavior during the lessons. The survey-based research and the observation were performed in five grammar high-schools in Prague and outside it. The description of correlation between student microscopy skills and their favorite school subjects, hobbies and parents' professions were main task of subsequent data analysis.

Key words: high-school, laboratory lessons, microscopy, evaluation of microscopy skills, motivation