Contribution of Student and Demonstration Experiments to the Quality of Students’ Knowledge about Matter in the Initial Chemical Education

Abstract

The aim of the paper is to determine whether there is a difference in student knowledge at all cognitive levels when the content about physical-chemical properties of matter are taught with the use of demonstration and student experiments in the third grade of primary school. Research sample consisted of 142 students. Experimental, comparative and descriptive – analytical methods were used. The survey instrument was a test. The students who had independently performed experiments obtained better results at the cognitive level of analysis, synthesis and evaluation on the final test and retest than the students to whom experiments had been demonstrated by the teacher.

Keywords: demonstration experiments, initial chemical education, student experiments, student knowledge of physical-chemical properties of matter.

Introduction

Primary school students learn chemical content through the integrated content of science. In the education system of the Republic of Serbia students learn the integrated content science through the World around us compulsory subjects (the first and the second grade – aged from 7 to 9) and Nature and Society (the third and the fourth grade – aged from 9 to 11). In the initial chemistry education it is important to enable students to observe (Ahtee, 2009), directly or indirectly, certain natural processes and phenomena (Agranovich, 2013; Lamar, 2012). The