

Farklılaştırılmış Fen Deneylerini Değerlendirme Sürecinin Öğrencilerin Fene Karşı Tutum ve Motivasyonları Üzerindeki Etkisi

The Effects of Differentiated Evaluation Process for Science Experiments on Students Attitude and Motivation for Learning Science

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EXTENDED SUMMARY

Introduction: Differentiated instruction is defined as an approach in which instruction's dimensions of content, process and product are differentiated in consideration of student differences and which includes diversifications in certain stages of the instructional process (Demir and Gürol, 2015). Students have different options for obtaining and making sense of information and expressing what they learn in differentiated instruction. By the help of these options, it is ensured in an effort that all students go through different paths and learn subjects and concepts in an efficient way (Yabaş and Altun, 2009). Enabling students' active participation and increasing their performance through several different instructional applications, differentiated instruction is regarded as an approach that offers multiple approaches toward contents, processes and products of instructional programs and is composed of a mix of student-centered large groups, small groups, and the individual instruction.

Purpose: When thinking about the importance of practice in science classes and instructional processes differentiated for practice, it is obvious that the two subjects need to be combined. In the light of these facts and opinions, it was aimed within the scope of this study to investigate whether the process of examining differentiated science experiments with the station method has an impact on students' attitude towards science classes and their motivation for learning science.

Method: The study group of the research was composed of the elementary school students who participated in the project named “Evaluating the Effects of Differentiated Science, Reading and Peer Mediation Teaching” and passed the fourth grade. As the project had been separated into two terms, 48 students in total participated in the study in the two periods. The answers given by 48 elementary 1st-stage students who participated in the project to the scales were analyzed in the SPSS software package. The paired samples t-test was used for the analysis of the data collected from the students before and after the experiment and it was looked into whether there was a statistically significant difference between students' pre- and post-experiment attitudes toward science and motivation for learning science. The statistical significance level was accepted to be .05.

Results: According to Table 1, no significant difference was observed between students' attitudes toward science before and after the process ($p>0.05$). The results of the analysis performed on students' motivations for learning science in terms of subdimensions are presented in Table 2. According to Table 2, no significant difference was observed among students' motivations for learning science only in the subdimension of “research motivations” ($p>0.05$). A significant difference was observed between students' pre- and post-application scores in other subdimensions of performance motivation, communicational motivation, cooperative motivation and participative motivation and it was understood upon the examination of average scores that this difference was in favor of the post-application scores.

Discussion and conclusion: Consequently, the instructional process of differentiated evaluation activities using the station method did not cause any change in students' science attitudes. This result can be explained by the opinion that relatively longer periods are needed to provide students with affective characteristics. In contrary to this argument, the results achieved in the study also showed that the process had a positive impact on student motivations. This result, as articulated in some other studies mentioned in previous sections, is in parallel with the results of the studies which revealed positive effect of differentiated instructional designs on students' academic achievements as well as other variables that influence learning such as attitude and motivation. In an overall consideration of the findings obtained both in this research and other previous studies, it is seen that differentiated instruction has a positive impact on students' affective characteristics. This should be also paid attention to in regard with the element (content, process, product) to be differentiated.