Extended Summary

Changes of the Chemistry Teacher Candidates’ Attitudes towards and Views about Information and Communication Technologies: ChemBioDraw Application

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Introduction

Chemistry is a field that is interested in atoms, molecules, and their interactions to each other. Hence, chemistry is known as a hard subject to understand by science students. These also affect students’ attitudes towards chemistry lessons. Recently, the information and communication technologies (ICT) have offered effective solutions for this problem. Research has shown that Yapılan araştırmalarda, BİT ve teknoloji destekli öğretimin fen bilimleri öğrencilerinin derse yönelik tutumlarını olumlu bir şekilde geliştirdiği ve derse yönelik başarıyı arttırdığı görülmüştür (Aki, 2005; Büyüköztürk, 2000; Çekbas, 2003; Özarslan, Çetin, & Sarıtaş, 2013; Yenice, 2008; Yiğit, 2003). ChemBioDraw software is one of these technologies that have educational applications. In this study ChemBioDraw software were utilized in the course of Organic Structural Analysis. The aim of this study is to examine effects of a four-weeks long computer aided teaching program on chemistry teachers candidates’ attitudes towards ICT. It is also aimed to explore the participants’ views regarding the usage of similar technologies in education system in general and chemistry in particular.

The research was carried out in accord with the nature of the mixed research approach. Thus, a pre- and post-test single group experimental design was employed to examine the change of the participants’ attitudes. Their views about the usage of technology in the education purposes were determined by individual interviews.
The sample of this study consisted of 20 fourth-year chemistry teacher candidates who registered to organic structural analysis class in the department of chemistry of a university located in the southeast Anatolia for the 2014-2015 spring semester. Technology attitude scale and semi-structured interview protocol were used for data collection to determine the views of the participants regarding the usage of technology in the field of chemistry teaching. The data collected before and after the treatment from the attitude scale were analyzed via a statistical software to reveal changes in attitudes. Paired t-test was run for the data to compare the participants’ attitudes before and after the treatment. The participants’ responses to the interview questions were subjected to content analysis. The frequency tables were composed according to similarity and differences in responses.

It is found that the technology attitudes of chemistry teacher candidates have increased significantly. Furthermore, the chemistry teacher candidates have noticed that technology is an effective tool in chemistry education. On the other hand, a candidate stated that reliability and abuse of technology would be considered as the disadvantage of technology while utilizing it in educational settings. In addition, lack of native language support (e.g. Turkish) in cutting edge technological devices and/or software may alienate users to use educational technology for pedagogical purposes. Based on the results of the study, it is suggested that more technology based pedagogies should be integrated into pre-service teacher training especially in chemistry teacher training programs.