The effect of green chemistry education based on practical activity on learning and attitudes of pre-service chemistry teachers

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Abstract

The purpose of this research is education of green chemistry through the curriculum related to the principles of green chemistry in General Chemistry Lab 1 and the effect of this educational course on learning and attitude of the pre-service chemistry teachers toward green chemistry principles. This educational course involves two green experiments implemented according to green chemistry principles. The experiments include determination of molar mass relation in a chemical reaction and determination of the amount of ascorbic acid in a tablet of vitamin C. The research methods are practical, experimental and quasi-experimental and the used instruments were the researcher-constructed tests in the field of learning and attitude domain. Statistic population of this study consists of experimental group (N=30) and control group (N=30) of the student teachers at Shahid Rajaee Teacher Training University in the academic year 2017-2018. Data analysis was done using descriptive and inferential statistics with SPSS software. The obtained results show that among 12 principles of Green Chemistry, students have learned the principles of 1 to 4 and 7 to 12 of these 12 principles and they have been attracted to them. In addition, the implementation of a curriculum related to the principles of green chemistry has had a positive impact on the attitude of the pre-service chemistry teachers.

Conclusions

- Students have learned the principles of 1 to 4 & 7 to 12 of these 12 principles and also have been attracted to them.

- In addition, the implementation of a curriculum related to the principles of green chemistry has had a positive impact on the attitude of the pre-service chemistry teachers.