

- The Effectiveness of Using Systems Thinking Approach in Chemistry Learning in Developing Higher-Order Thinking Skills among Chemistry Section Students at Faculties of Education

### **ABSTRACT**

The present study aimed at investigating the effectiveness of using systems thinking approach in chemistry learning in developing higher-order thinking skills among chemistry section students at faculties of education. A list of these skills was prepared after examining 36 category of the most common ones and submitted to a jury of experts in the science instruction field. A unit in environmental chemistry using the systems thinking and a student book were developed. The study participants were 43 male and female students in the third year, chemistry section, Faculty of Education, Benha University. The study instrument was a test in the higher-order thinking skills in chemistry which was administered as a pre- and post testing. The findings showed that:

- 1) There was a statistically significant difference at 0.01 between the scores means of the pre-application and those of the post-application in the sub-skills included in the test of higher-order thinking skills in chemistry and the whole score, in favour of the latter.
- 2) There was a statistically significant difference at 0.01 between the scores means of the pre-application and those of the post-application in the main skills included in the test of higher-order thinking skills in chemistry and the whole score, in favour of the latter.