

THE EFFECT OF TWO APPROACHES TO DEVELOPING REASONING SKILLS OF PRESERVICE SCIENCE TEACHERS

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Abstract

The aim of this study is to determine the effect of the Prediction Observation Explanation (POE) Method and the Cognitive Acceleration through Science Education (CASE) Project based activities on reasoning skills of preservice science teachers. A pretest-posttest quasi-experimental research, without a control group, design was used. The study group consisted of 93 students studying in their 2nd year of a Science Education program in the fall semester (2014-2015) at Gazi University. A "Scientific Reasoning Skills Test" (SRST) was implemented as the pretest to determine pre-scientific reasoning skills. Then, the students in the two classes were randomly divided into four groups and two of them were selected as the Implementation Group 1 (IG_1) ($n_1 = 47$) to complete 12 POE Method based activities. The other two groups labelled Implementation Group 2 (IG_2), ($n_2 = 46$) completed 12 activities developed for the CASE Project. SRST was implemented to all groups as the posttest. A statistically significant difference was observed in the scientific reasoning skills as a result of different activities that the IG_1 and IG_2 groups completed. It was seen that POE Method based activities were more effective than CASE Project based activities in developing scientific reasoning skills. In addition, scientific reasoning skills of males were more developed than females.

Keywords: Cognitive acceleration through science education, prediction observation explanation method, scientific reasoning.