THE EFFECTS OF COLLABORATION, GIVING EXPLANATION, AND GUIDING QUESTIONS ON INDUCTIVE REASONING

TING-YU WU MING-HWA WU RUEY-YUN HORNG
Department of Industrial Engineering and Management
National Chiao Tung University

Inductive reasoning has two subcomponents: hypothesis formation and hypothesis testing. Studies have shown that people often fail to form more than one initial hypothesis and furthermore show a strong confirmation bias in hypotheses testing. The purpose of this study was to investigate the effects of collaboration, giving explanation, and guiding questions on inductive reasoning. One hundred and sixty-one undergraduate students were randomly assigned to one of the 2 (collaborative vs. individual learning) × 2 (explanation vs. no explanation) × 2 (guiding vs. no guiding questions) experimental conditions to work on 16 inductive reasoning problems similar to Wason's 2-4-6 task. At the practice and the learning phase, subjects in collaborative condition worked in pairs. At the testing phase, all subjects were tested individually. Results showed that collaborative experience indeed led to more correct rules discovered, both at the learning and the testing phase. Subjects who were asked to provide explanations to their reasoning were, on the other hand, found to generate more alternative hypotheses, use more instances to test their hypotheses, use higher proportion of falsifying testing instances, and discover more rules only at the testing phase. Furthermore, giving explanation also effectively lowered the overconfidence tendency exhibited by subjects in no explanation condition.

Keywords: Inductive reasoning, Collaboration, Explanation, Guiding questions