

An Example of the Effectiveness of the Work Complexity Sequence Method in Mathematics Learning in terms of Cognitive Level, Cognitive Load, and Self-Efficacy

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ABSTRACT

The main objectives of this study were to reveal: (1) differences in the effectiveness of the order of complexity of examples done by simple-complex and examples done by complex-complex in terms of cognitive level and cognitive load, (2) differences in the effectiveness of social persuasion learning strategies and without social persuasion in terms of cognitive level and cognitive load, and (3) the effect of the interaction between successive sample complexity sequences (simple-complex and complex-complex) and learning strategies (social persuasion and no social persuasion) on cognitive level, cognitive load, and self-efficacy. Cognitive levels are divided into LOTS and HOTS.

This study was a quasi-experimental study using a 2 x 2 factorial design: complex sequences worked out by examples (simple-complex vs. complex-complex) * learning strategies (social persuasion vs. no social persuasion). There were 126 beginner students (aged 12-15 years) in class VIII of SMPN in Klaten who were involved. The research was carried out in three phases, namely Phase I (LOTS), Phase II (HOTS), and Phase Test. Data related to LOTS and HOTS were collected through short essay tests and essay tests (Cronbach's Alpha = 0.698 and 0.655), while cognitive load was collected using a 9-point Likert scale. Data were analyzed using a two-way MANOVA.

The results of this study are as follows. At the LOTS level: (1) there is no difference in the effectiveness of the order of complexity of examples done by simple-complex and examples done by complex-complex in terms of cognitive level and cognitive load, (2) learning strategies of social persuasion are more effective than learning strategies without social persuasion in terms of only from the cognitive level, but (3) there is no interaction effect between the order of difficulty and learning strategies on the cognitive level and cognitive load. At the HOTS level: (1) there is no difference in the effectiveness of the order of complexity of the simple-complex work examples and the complex-complex examples done in terms of cognitive level and cognitive load, (2) there is no difference in the effectiveness of social persuasion learning strategies and without social persuasion in terms of cognitive and cognitive load levels, and (3) there is no interaction effect between the order of difficulty and learning strategies on cognitive levels and cognitive load.

Kata Kunci: *cognitive load, cognitive level, self-efficacy, work examples*