DIFFERENCES IN THE EFFECTIVENESS OF COLLABORATIVE MATHEMATICS LEARNING STRATEGIES: WORKED EXAMPLE VS. GOAL-FREE PROBLEMS

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ABSTRACT

The aim of this research is to compare the effectiveness of successful strategy examples (WE) and problem free targets (GF). WE and GF are two strategies suggested by CLT to help novice students construct knowledge well. In PBL with a goal-free strategy, students are asked to understand a basic concept or procedure by completing problem solving that is not determined by the question. With successful examples of strategies, students are asked to understand basic concepts or procedures in examples of implementing problem solving. However, empirical evidence is needed which is most appropriate for collaborative learning.

The research participants were class VII junior high school students who had not yet mastered the competence to understand and solve problems related to the angles formed by two parallel and transverse lines and the angles in triangles and quadrilaterals. To test the differences in the effectiveness of WE and GF, researchers designed an experimental design with two dependent variables, namely learning settings, consisting of two factors (individual and collaborative) and problem-solving based learning designs consisting of two factors (work examples and goal-free problems). Before the experiment was carried out, assistance was given to students' initial abilities, developing learning schemes and learning implementation plans. After the experiment was carried out, a judgment was made on the cognitive load experienced by students through skills and an assessment of transferability through a description test that was near transfer (understanding test) and far transfer (application test).

For students who are beginners in the learning topic, objective free questions are thought to be able to direct students to build various problem solving strategies collaboratively compared to the examples worked because there is a lot of interaction between elements of learning material in objective free questions compared to the examples worked. Collaborative learning is thought to improve problem-solving abilities compared to individual learning because students can interact with other students in learning various problem-solving strategies. It is suspected that there is an interaction effect where the use of goal-free problems is thought to increase the effectiveness of collaborative learning. The results of this study are expected to be able to develop PBL based on CLT and become a reference for teachers/lecturers who wish to use PBL.

Kata Kunci: *cognitive load, goal-free problems, collaborative, problem based learning (PBL), worked example, mathematics*