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ABSTRACT

This study compared the effects of the constructivist and the traditional models of teaching problem-solving strategies on the students' problem solving and critical thinking skills. The constructivist model included small-group discussion, modeling and thinking aloud, and journal writing while the traditional model was mainly lecture type.

The study used the quasi-experimental method of research and employed both qualitative and quantitative analyses. Two intact classes consisting of a total of 52 second-year Bachelor of Elementary Education (BEEd) students who specialize in mathematics were the subjects of the study. These students were classified as high ability and low ability on the basis of their average grades in three mathematics subjects. The study used a researcher-made Problem Solving and Critical Thinking test which had a reliability of coefficient of 0.82.

The students in general were reluctant to raise their own questions. It was the teacher who initiated asking questions that were merely responded to by the students. In the experimental group, the teacher's mediation and support through asking guide questions and giving hints during small-group discussion enabled the members of the group to generate ideas that eventually helped them start with the solution of the problem. The same students also showed more active involvement and enthusiasm to solve a problem, especially during small-group discussions.

The students exposed to the constructivist model of teaching problem-solving strategies posted higher but not significant posttest mean scores on the problem-solving test than those exposed to the traditional model. Likewise, there was no significant interaction between ability level and the method of teaching used.

The students exposed to the constructivist model of teaching problem-solving strategies posted significantly higher mean scores on measures of critical thinking than students exposed to the traditional model. However, there was no significant interaction between students' ability level and the treatment conditions.

Within the framework of the limitations of the study, the constructivist model for teaching problem-solving strategies has a positive impact on the overall critical thinking skills of the students. Although it did not differentiate significantly the problem-solving performance between the experimental and control groups, the trend in the results was still in favor of the experimental group and that it benefited the low ability students more than the high ability students in terms of problem-solving performance. The qualitative assessment of data showed that the most important benefit of the constructivist model was that it raised the level of motivation and enthusiasm of the students in solving non-routine mathematical problems.