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LIFESPAN DEVELOPMENT
AND EDUCATIONAL SCIENCES

THE EFFECTS OF SMALL GROUP COOPERATION METHODS AND QUESTION
STRATEGIES ON PROBLEM SOLVING SKILLS, ACHIEVEMENT, AND
ATTITUDE DURING PROBLEM-BASED LEARNING (283 pp.)

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The purpose of this study was to examine the effects of integrating instructional strategies during problem-based learning (PBL) on student learning. A quasi-experimental 2 by 2 factorial design with an appended control was used to examine the effects of traditional teacher-led instruction compared to problem-based learning instruction with the interactions of cooperative learning methods—Jigsaw and traditional small group—and teacher question strategies—Socratic and didactic—on grade 5 student problem-solving skills, achievement, and attitude toward science.

The sample consisted of grade 5 rural middle school students in an Ohio public school district. Six teachers were randomly assigned to the appended control group consisting of a teacher-led lecture-based environment or an experimental group consisting of a PBL environment with modified instructional strategies. Each experimental PBL group consisted of one of the following: traditional small group with didactic teacher questioning, traditional small group with Socratic teacher questioning, Jigsaw cooperative learning with didactic teacher questioning, and Jigsaw cooperative learning with Socratic teacher questioning.

Results of the study support the use of PBL to improve student achievement. Students achieve at higher levels in science when compared to traditional teacher-led

lecture instruction. The Socratic questioning groups had significantly higher achievement scores compared to the didactic questioning groups. The 2 PBL groups that used Jigsaw had a significantly more positive attitude towards science than the traditional small groups. There were no significant differences in problem solving between the groups. To assist in higher achievement and more positive attitudes when implementing PBL, the results of this study support the integration of Jigsaw cooperative learning method and Socratic questioning.