

# THE EFFECTS OF CREATIVE PROBLEM SOLVING TRAINING COURSES ON VERBAL CREATIVE THINKING, SCIENCE ABILITY, AND SCIENCE RELATED ATTITUDES OF SENIOR HIGH SCHOOL STUDENTS

SHU-CHUAN CHEN

*Department of Educational Psychology and Counseling  
National Taiwan Normal University*

## ABSTRACT

The purpose of this study was to examine the effects of the Creative Problem Solving Training Courses (CPSTC), which were designed based on the Parnes Creative Problem Solving framework, on verbal creative thinking, science ability, and science related attitudes of senior high school students.

Total of forty-eight gifted and non-gifted senior high school students were randomly assigned into two groups, the experimental group and control group. The experimental group was composed of 24 students who attended the twelve-week creative problem solving courses, while the control group was constituted with another 24 students who received no training courses. The measures used in this study included: the Willian Tests of Creativity( WTC), the Torrance Tests of Creative Thinking(TTCT), the Tests of Science Ability(TSA), the Tests of Science Related Attitudes, and the Questionnaire on CPSTC. The data were analyzed by using two-factor analysis of variance and co-variance.

The findings suggested that senior high school students, especially those with giftedness, could benefit from the Creative Problem Solving Training Courses. It was evident in the following results: (1) Most of the training courses were appreciated and perceived to improve the problem-solving ability by the subjects. (2) Both the gifted students and those in the experimental group were scored significantly higher on Verbal Fluency, Flexibility, and Originality in the TTCT than the nongifted students and those in the control group. There was an interaction effect of classes and group on Verbal Fluency. The same results were also found when the pretest scores on the WTC were used as the covariance variable for determining the effect of the training courses on the posttest scores on the TTCT. (3)The gifted students scored significantly higher on Creative, Problem Solving, and Critical Thinking in the Tests of Science Ability than the non-gifted students. No differences were found between the experimental and control groups on the performance in the TSA. (4) The students in the gifted education program performed better on Social Implications of Science, Leisure Interest in Science, and Career Interest in Science on the Tests of Science Related Attitudes. Similar performance on the same test were found between the students in the experimental and control groups.