

# Abstract

The purpose of this study is to explore the effects on learning performance of 11th graders based on two factors – teaching methods and learning styles. This study was conducted as a quasi-experimental design. Two classes, which have a total of 80 students, were sampled from a high school in Taoyuan County. One was assigned as an experimental group and the other one as a control group. The first one took a “composite assessment embedded in mathematics teaching” method learning, while the second one took a “traditional mathematics teaching” method learning respectively. This study used the learning styles inventory (LSI) of Kolb to classify learners into two groups – “active experimentation (AE)” and “Reflective Observation (RO)”. Two-way ANCOVA was conducted to test all hypotheses in order to find variations of mathematical learning attitudes, mathematical learning achievements, and mathematical learning retention. The study also investigated the views of points of the students in control group after the experiment. According to the analysis, we reach the following conclusions :

1. In mathematical learning attitudes:
  - (1) Teaching methods and learning styles don't interact significantly.
  - (2) There is no significant difference between two learning styles.
  - (3) There is a significant difference between two teaching methods. The effect on experimental group is better than that on control group significantly.
2. In mathematical learning achievements:
  - (1) Teaching methods and learning styles interact significantly.
  - (2) For the control group, there is a significant difference between two learning styles. The effect on style AE is better than that on style RO significantly.
  - (3) For the style RO, there is a significant difference between two teaching methods. The effect on experimental group is better than that on control group significantly.
  - (4) The effect on control group with the style RO is the worst.
3. In mathematical learning retention:
  - (1) Teaching methods and learning styles interact significantly.
  - (2) For the experimental group, there is a significant difference between two learning styles. The effect on style AE is better than that on style RO significantly.
  - (3) For the style AE, there is a significant difference between two teaching methods.

The effect on experimental group was better than that on control group significantly.

(4) The effect on experimental group with the style AE is the best.

4. After the experiment, most of the students in the experimental group like “composite assessment embedded in mathematics teaching” method. They also agree that “composite assessment embedded in mathematics teaching” should be conducted in the future.

Finally, suggestions for the teachers and future researches are also discussed.

Keywords: composite assessment, learning style, mathematical learning attitude, mathematical learning achievement, mathematical learning retention, ANCOVA