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ABSTRACT

Title : The Effects of Teaching Methods and Cognitive Styles on Students' Achievement in Plane Trigonometry

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Subject Area : Mathematics
Degree Conferred : Doctor of Philosophy in Science Education
Major in Mathematics

The Problem

This exploratory study was designed to investigate the integrated effects of teaching methods and cognitive styles on student achievement in Plane Trigonometry. The two teaching methods, namely, the reinforced-lecture method and the lecture-only method, were compared in light of the differing cognitive styles of the students classified as Sensing and Intuition as measured by the Myers-Briggs Type Indicator. Specifically, the study sought to answer the following questions:



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1. How do the achievement scores of the students compare when grouped according to their cognitive style?

2. How do the achievement scores of the students compare when grouped according to the methods of teaching?

3. Is there an interaction between the students' cognitive styles and instructional methods?

The Methodology

A quasi-experimental design with non-equivalent groups involving four-experimental classes was used to test the hypotheses. Two sections were used as experimental groups with the reinforced-lecture method. Two other sections were used as control groups with the lecture-only as the mode of instruction.

The study was conducted at the Nueva Vizcaya State Institute of Technology, Bayombong, Nueva Vizcaya during the first half of the second semester of school year 1990-1991. The sample population consisted of 100 first year college students with different courses.

The researcher handled all the classes with the



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lecture method as the teaching procedure. However, the experimental groups were provided with study guides and audiovisuals.

The four groups were given the pretest, the Otis-Lennon School Ability Test and the Myers-Briggs Type Indicator, at the start of the experiment. After seven weeks of instruction, the posttest was administered to measure the achievement of the students in Plane Trigonometry.

For statistical treatment, analysis of covariance procedures were utilized with the pretest and IQ raw scores as covariates.

Findings of the Study

The following findings were drawn from the analysis of covariance:

1. There was no significant difference in the achievement scores between the sensing type of students and the intuitive type of students. However, the intuitive students tend to achieve better than the sensing students.



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2. There was a significant difference in the achievement scores between the students under the reinforced-lecture method and the lecture-only method. Students who were taught with the reinforced-lecture method achieved higher scores than the students who were taught with the lecture-only method.

3. There was a significant interaction between the students' cognitive style and the teaching methods. The sensing students tend to achieve higher scores under the reinforced-lecture method. On the other hand, the intuitive students performed equally well under the two instructional methods.

Recommendations

In the light of the findings, the researcher recommends the following:

1. There is a need to adjust trigonometry instruction to assist the sensing type of students since they tend to achieve less than the intuitive type of students.

2. The study guide and the use of the overhead



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projector helped adjust the achievement scores of the sensing type of students. It is, therefore, recommended that these be used to complement the lecture method. Other approaches such as the mathematics laboratory and small group study could be used to reinforce the lecture.

3. Similar studies should be conducted using different samples from different learning institutions so that more general conclusions can be formulated.

