DE LA SALLE UNIVERSITY

THE EFFECT OF EXPOSURE TO PIAGETIAN TASKS ON THE COGNITIVE DEVELOPMENT AND ACHIEVEMENT IN GENERAL CHEMISTRY OF COLLEGE STUDENTS

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ABSTRACT

This study sought to find out the effects of exposure to Piagetian Tasks on the cognitive development and achievement in Chemistry of freshmen college students enrolled in General Chemistry I. It was also aimed at determining the levels of cognitive development of freshmen college students before the exposure to Piagetian Tasks. This study also sought to establish the possible relationship of the levels of cognitive development after the exposure to Piagetian Tasks and their achievement in General Chemistry.

Two intact sections composed of fifty-nine freshmen college students enrolled in General Chemistry (CHEM 11) at the Isabela State University at Cabagan were the subjects used in the study.

A pretest-posttest control group design was employed in this study. The statistical techniques used in analyzing the data gathered were the measures of central tendency, t-test for dependent samples, t-test for independent samples, Pearson Product-Moment Correlation Coefficient, and Analysis of Covariance (hereinafter referred to as "ANCOVA") through Stepwise Regression. Pretest scores on the Longeot Test on Cognitive Development,

Pretest scores on the Achievement Test in Chemistry, Mental Ability and National College Entrance Examination (hereinafter referred to as "NCEE") standard scores were used as independent variables to predict the dependent variables, the posttest scores on the Longeot Test on Cognitive Development and Achievement Test in Chemistry.

Using these statistical techniques, the study indicates that:

1. The exposure to Piagetian Tasks was effective in enabling the students to perform better on the Longeot Test on Cognitive Development.

2. The exposure to Piagetian Tasks showed no significant effect in enabling the subjects in this study to perform better on the Achievement Test in Chemistry, except for transitional subjects (concrete 2B stage).

3. Majority of the freshmen college students are concrete thinkers.

4. Cognitive development is significantly correlated with chemistry achievement.

5. Pretest scores on the Longeot Test and mental ability are the best predictors of posttest scores on the Longeot Test.

6. Pretest scores on the Achievement Test in

Chemistry are the best predictors of the students' post-test scores on the same test.

In the light of the findings, the following conclusions were deduced:

1. Exposure to Piagetian Tasks was effective in enabling the students to have better scores on the Longeot Test on Cognitive Development.

2. The exposure to Piagetian Tasks did not show significant effect in improving the scores on the Achievement Test in Chemistry but it was successful in enabling transitional thinkers (concrete 2B) to perform better on the same test.

3. Cognitive development and chemistry achievement are significantly correlated.

4. Majority of the freshmen college students are below formal operational stage of cognitive development.

5. Pretest scores on the Longeot Test and mental ability may be used as indicators of students' posttest scores on the same test while only the pretest scores in the Achievement Test are the best predictors of posttest scores in the same test.

The author recommends to future investigators and science teachers as well that:

1. A longitudinal study could be further conducted

to see if benefits of the exposure to Piagetian Tasks are long lasting.

2. Further research could be done on the benefits of programs directed toward improving general cognitive skills versus those concentrating on preparation for learning subject matter.

3. An analysis of the content of science courses appropriate for the cognitive level of the students be formally conducted.

4. Instruction in the elementary grades could include the development of general cognitive skills of pupils so that they would be better prepared to tackle formal concepts. Improvement of instruction in the elementary grades thru high school thru especially designed curricula for the purpose could be done.

5. The development of formal thinking be made a course objective.

6. Further investigations to develop teaching strategies that promote formal thought be done.