DE LA SALLE UNIVERSITY

PREDICTORS OF STUDENTS' CONCEPT OF LIFE

A Dissertation

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Doctor of Philosophy in Science Education
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by

AZUCENA A. CASTAÑEDA

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DE LA SALLE UNIVERSITY

DISSERTATION ABSTRACT

Title: "PREDICTORS OF STUDENTS' CONCEPT OF LIFE"

Statement of the Problem:

Main Problem:

The purpose of this study is to describe students' views on the concept of life: to establish their stability of framework across-context, and to establish the predictors of students' concept of life based from their views and some identified demographic variable.

Sub-Problem:

Specifically, it sought answers to the following:

1. How do students understand the concept of life?
2. Which of the different identified demographic variables are good predictors of students' concept of life?
3. How do students predictors of the life concept differ across level of students cognitive development?

Procedure:

The research procedure involved combination of techniques to solicit information on conceptual frameworks. The respondents consisted of 105 students in the interview phase and 1028 secondary and tertiary students in the survey phase.

The identification of scientific and nonscientific concept of life was done by presenting different tasks through interviews with individual students known as the Interview-About-Instances (IAI). A survey technique was utilized using paper and pencil, an objective

survey, which composed of a set of multiple-choice items known as the Life Concept Test (LCT). Cognitive level of development of student sample was taken using the cognitive test developed and validated by the PSMC.

The cognitive test was administered on one day and content test (LCT) was administered at the same time to all classes involved on another day.

Treatment of Data:

Qualitative analysis was employed in the interview phase, and the survey phase was statistically laden. Correlation was done to determine the significance of the dependent variable (LCT) with other variables. Stepwise regression was sought to find which of the independent variables is the best predictor or which has the greatest influence on the stability of framework.

Findings:

The following are the major findings of the study:

1. In general, all the respondents were able to correctly classify objects that are alive. The seven characteristics of living things were the criteria used in classifying living things.

2. The different demographic variables that showed correlation effect with the dependent variable (LCT) were: the type of school the respondents attended; respondents achievement grade in science; and respondents cognitive level of development.

3. The four different identified demographic variables that were found to be good predictors of concept of life were: cognitive

level of development; type of school attended; course taking; and age.

4. Majority of the respondents belong to concrete level of intellectual development and below the level of intellectuals. Respondents who were formal operational thinkers were found to be those who came from private school; those enrolled in the collegiate level taking engineering courses; and those who are older, whose ages range from 17-19.

Conclusions:

1. Generally, all respondents were able to identify living things from non-living things and could enumerate scientific reasons to support their answers.

2. The Life Concept Test is statistically significant at 95% level of confidence with students' cognitive level of development; achievement grade in science and the type of school attended.

3. Specifically, the different independent variables that are good predictors of the concept of life are: cognitive level of development; type of school attended; course taking and age.

4. Majority of the respondents were below the level of cognitive development based on the Piagetian table. Most of the formal thinkers were in college.

Recommendations:

1. Since the product of private institutions ahowed higher scientific inclination to life concept, it is suggested that quality not quantity of students should be considered, i.e., a maximum of

35 to 40 students per laboratory classes, to enable the science teacher the chance to know his students better. Instructional programs can be developed and taught in such a way that may significantly increased the number of students who acquire the reasoning pattern involved in advance scientific thought. This should not only pay off in terms of better achievement and wide variety of disciplines, but it should pay off in a better informed, more thoughts and more effective citizenry.

2. School heads should look into upgrading their science facilities so that curiosity and scientific reasoning is developed among students. Students should be given the opportunity and be encouraged to explore their own ideas and be introduced to the scientific explanations of the observed phenomena in order that student's views be guided to scientific concepts by providing materials which will challenge and encourage children to change their views and which support student's attempts to rethink their ideas and to elaborate their views (Osborne, 1982).

3. Considering the students who have alternative conception on the concept of life, additional research is needed to determine if concepts taught to children are too abstract for the majority of the group at their age or if different methods or teaching strategies and materials would increase their understanding. Science materials to be used in teaching must be something that can be examined, tested under various conditions and mapped into a wide variety of situations than those leading to the original formulation that is useful in

developing effective ways in constructing meanings of science word for long-term memory. Since pupil try to create meaning of a word from the teachers explanations, teaching should help pupil to generate appropriate meanings incoming information to link these meaning to other ideas in memory and to evaluate both newly constructed ideas and the way old ideas are related in memory.

4. Qualitative differences in the explanations given by student as their age increases is found among the respondents in this study. Along this line, teachers should find methods that they themselves explore the views that children bring with them to lessons and can themselves determine how to build on these ideas in their teaching.

5. Teachers and curriculum developers must be encourage to motivate and actively search for student's views and to attempt to design teaching which build on, rather than ignores such views. Science curricula could be developed in such a way as to pay explicit attention to those various ideas, to provide other opportunities for students to make their ideas explicit so thay are open to inspection and to provide counter example to stimulate conceptual change.

6. The lack of cognitive nourishment is a widespread problem that can be solved by appropriate instructional programs. It is suggested that teachers, textbook writers and curriculum makers should carefully develop appropriate instructional programs that take intellectual development as a primary aim.

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