ABSTRACT

CONCRETE AND FORMAL THINKING ABILITIES IN ARAB POST-ELEMENTARY STUDENTS IN JERUSALEM AND THE RAMALLAH DISTRICT OF THE WEST BANK

The purpose of this study was to find out the grade level at which the majority (75%) of Arab post-elementary students in Jerusalem and in the Ramallah District of the West Bank successfully perform in some Piagetian tasks. The tasks selected for this purpose were: conservation of solid amount, conservation of weight, conservation of displacement volume, reciprocal implications, and exclusion of irrelevant variables. Moreover, the effect of the variables of grade, sex, and task on the performance of students in the Piagetian tasks selected was studied.

The sample consisted of 128 students, 64 males and 64 females. Of these, 48 males and 48 females were randomly selected from grades 8, 10, and 12 from four private schools in Jerusalem. The rest of the subjects were selected in a stratified random manner from the four post-secondary institutions in the Ramallah District. The subjects were interviewed individually in their schools or institutions.

A three-way analysis of variance with repeated measures on the task variable revealed that the grade and task variables were significant ($P < .01$) while the sex variable and the interactions between variables were not significant ($P < .05$). The findings indicated that the subjects in this study lagged in the attainment of the conservation of solid amount and weight in comparison to other populations in Western and non-Western cultures. The findings also revealed that some formal operations might develop in students before some conservation operations. Moreover, it was found that formal operations do not develop simultaneously.

The results of this study appear to have implications for instruction in the post-elementary cycles in the West Bank: Curricular activities should start with concrete experiences and be sequenced towards abstraction; there is no basis, on cognitive grounds, to separate males from females; and alternative methods should be applied in teaching concepts and care for individual students should be increased.

The results, also, might provide evidence to question the concept of stages of cognitive development proposed by Piaget. The findings confirmed the results of other studies in that a time - lag exists in the

attainment (of their subjects) of different concrete and formal operations in comparison to what Piaget has proposed in his early writings.

Piaget's revised position: that formal operations might develop between 15-20 years of age, that they are dependent on cultural and educational factors, and that they are not content-free seems to be a more suitable one to explain the findings of this study.