

ABSTRACT

THE DEVELOPMENT OF THE CONCEPTS OF SPEED AND ACCELERATION AMONG ARAB SCHOOL CHILDREN IN JERUSALEM

The purpose of the study was to determine if the mechanism described by Piaget in attaining the concepts of speed and acceleration was identifiable among the subjects of the study, and to determine the ages at which the subjects reach the different developmental stages, in case these stages were identifiable. The effects of grade-level, task, and sex were investigated.

The sample consisted of 128 students, 64 males and 64 females. In each of four private schools in Jerusalem selected through stratified random sampling, 32 students were randomly selected from grades 4, 6, 8, and 10. The subjects were interviewed individually in their schools. Six tasks were used in this study: three measuring the concept of speed, and three measuring the concept of acceleration.

A three-way analysis of variance with repeated measures on the task variable revealed that the grade variable and the task variable were significant at the .01 level, and the sex variable was significant at the .05 level in favour of the boys. The average ages at which the subjects attained the concepts, as measured by the tasks, were found

to be greater than the ages proposed by Piaget. The findings also revealed that the performance of students differs significantly on tasks supposedly requiring the same developmental level of thinking.