Abstract

The purpose of this study was to invistigate the effects of the level of cognitive development, and the advance organizer on the achievment of students of teacher training colleges in physics.

The aim of this study was to find answers to the following questions:-

1) What is the effect of the level of cognitive development of the students of TTCs on their achievement in physics ?

2) What is the effect of the Advance Organizer on the achevement of the students of TTCs in physics ?

3) Is there any interaction between the Level of Cognitive development and the use of the Advance Organizer in the achievement of the students of TTCs in physics ?

The Hypotheses of this study were :

1) There is a significant difference (α =0.05) between the mean scores in the achievement test in physics of the concerete Level students and the Formal Level ones.

2) There is significant difference (α = 0.05) between the means scores in the achievement test in physics of the experimental and the control groups.

3) There is a significant difference (α = 0.05) between the mean scores of the students in the achievement test in physics attributed to the interaction between the Level of cognitive development and the use of the Advance Organizer .

The subjects of the study were 98 first year students specializing in science and Maths. in Ramallah Men's Teacher Training Center and Ramallah Women Training Center , during the scholastic year 1980 - 1981 . The subjects in each center were randomly divided into experimental and control groups.

The level of the cognitive devlopment of the subjects was measured by using on Arabic Version of Longeot Test for cognitive development.

The students with early formal thinging were excluded, because the study concentracted on students with concrete thinking and students with late formal thinking.

An achievement test consisting of (22) questions was prepared to measure the students achievment on three levels from Bloom's Taxonmy, manely knowledge , Comprehension and application . The reliability coefficient of the test was calculated using (KR-20) and was found to be 0.76.

A comparative Advance Organizer was used in the study. It was given to the experimental group in the first class period of the study and it was withdrawn from the students at the end of the period after it was discussed. No advance organizer was given to the control group.

The duration of the study was one month at the rate of two class periods per week. Imediatly after the end of the study , the subjects sat for an achievement test.

The Hypotheses were tested using a (2 x 2) factorial analysis of variance . The values of "F" showed that : -

1) There was a significant difference (0.01) between the mean scores obtained by the students with concrete thinking and these of the students with formal thinking in the achievement test favoring the group with higher level of cognitive development.

2) There was a significant difference (0.05) between the mean scores of the control group and the experimental group on the achievement test favoring the experimental group.

3) There was no significant difference between the mean scores of the students on the achievement test that may be attributed to the interaction between the level of cognitive development and the treatment.

The - t - test was used to comare the mean scores of the students at all levels of cognitive development and treatment on the achievment test. The values of -t- showed that : -

1) No significant increase was found in the mean score of the concrete level students in the experimental group over the mean of the students in the contol group.

2) Asignificant increase was found (0.05) in the mean score of the students with formal thinking in the experimental group over the mean score of the similar students in the control group.

3) The mean score on the achievement test of the students with formal thinking in the experimental group was found to be significantly (0.01) higher than the mean score of the students with concrete thinking in the same group.

It was worthmentioning that the study has shown that the treatment group needed 12.5 % less learning time than the control group.