

Abstract

The aim of this study is to investigate the influence of using conceptual map strategy on students' achievement and maintenance of scientific concepts with relation to other variables such as instructional method, grade level, and the gender of the student. The population of the study is the students of higher intermediate grades (eighth grade, ninth grade, and tenth grade) instructed by the new curriculum of general science in Palestine.

While the conceptual map strategy is one of very used strategies in foreign countries, it is still unused in our Arab countries of its positive influence on students' achievement. In this context, the researcher of this study employed this strategy on the instruction of new general science curriculum taught to the higher intermediate grades in public schools in Ramallah and Al-Bireh district.

Population of the study is 2456 students in eighth, ninth, and tenth grades in public schools in Ramallah and Al_Bireh district in the scholastic year 2004/ 20005 . The sample of the study consists of 1130 students who were purposefully chosen.

The sample was divided into two groups: experimental group and control group. The experimental group consists of 560 students (283 male and 277 female) distributed on 12 instructional classes who were instructed by conceptual map strategy. The students in control group (570 students; 284 male, 286 female)were distributed on 12 instructional classes instructed by the traditional method without intervention.

The main hypothesis of the study is: there is no difference between using the conceptual map strategy and the traditional method in improving

students' achievement in the higher intermediate grades of the new general science curriculum in Palestine.

The other hypotheses are:

1. There is no difference of statistical significance on students' direct achievement when instructed by conceptual map strategy that can be attributed to the instructional method.
2. There is no difference of statistical significance on students' direct achievement when instructed by conceptual map strategy that can be attributed to the gender of the student.
3. There is no difference of statistical significance in the students' achievement in terms of scientific concepts when students are instructed by conceptual map strategy that can be attributed to grade level. (eighth, ninth, and tenth grades).
4. There is no difference of statistical significance in students' direct achievement of scientific concepts that can be attributed to the interaction between the variables of gender, grade level and instructional method.
5. There is no difference of statistical significance in students' maintenance of scientific concepts when students are instructed by conceptual map strategy that can be attributed to the instructional method.
6. There is no difference of statistical significance in students' maintenance of scientific concepts when students are instructed by conceptual map strategy that can be attributed to the gender of the learner.
7. There is no difference of statistical significance in students' maintenance of scientific concepts when students are instructed by conceptual map strategy that can be attributed to the grade level.

8. There is no difference of statistical significance in students' maintenance of scientific concepts when students are instructed by conceptual map strategy that can be attributed to the interaction among the variables of gender, grade level, and instructional method.

To answer the questions of the study and to test the previous suggested hypothesis, the researcher prepared three achievement tests for eighth, ninth, and tenth grades for the first and second semesters. The tests included questions of different styles: definitions, multiple choice, and completion of conceptual maps). The tests were introduced to specialist judges who approved these instruments to measure what is intended.

The experimental and control groups were tested by the prepared achievement tests on February 20, 2004 for the first semester. After two weeks, students were retested by the same prepared tests to measure their maintenance of scientific concepts. At the end of the second semester, the experimental and control groups were tested by an achievement tests on May 14, 2005. Students retested again by the same instruments after to weeks. *The statistical analysis of the data has indicated the following results:*

1. There is a difference in students' direct achievement that can be attributed to the instructional method in favor of experimental group. There is no difference of statistical significance in students' direct achievement of scientific concepts that can be attributed to the gender of the student.
2. There is a difference of statistical significance in students' direct achievement of scientific concepts that can be attributed to

grade level (eighth, ninth, and tenth grades) in favor of ninth grade, eighth grade and tenth grade in sequence.

3. There is a difference of statistical significance in students' direct achievement that can be attributed to the interaction among the variables of instructional method, gender, and grade level.
4. There is a difference of statistical significance in students' maintenance of scientific concepts that can be attributed to the instructional method for the favor of experimental group.
5. There is no difference of statistical significance in students' maintenance of scientific concepts that can be attributed to the gender of the students.
6. There is a difference of statistical significance in students' maintenance of scientific concepts that can be attributed to grade level in favor of ninth, eighth, and tenth grade in sequence.
7. There is no difference of statistical significant in students' maintenance of scientific concepts that can be attributed to the interaction among the variables of the instructional method, gender, and grade level.

The researcher *recommends* the following:

1. The adaptation of conceptual map strategy in the new modified curriculum.
2. Preparation of training courses about the topic of conceptual maps. Preparation of training courses attended by teachers about how to use and teach this strategy in their classes.
3. Encouragement of competition among students in building conceptual maps to promote their intellectual creativity.

