

Concept Mapping as a Strategy For Teaching and
Developing the Caribbean Examinations Council (CXC)
Mathematics Curriculum in a Secondary School

Kenneth Mazoor Khan

Purpose of the Study

This study was designed to assess the usefulness of concept mapping as a strategy for the teaching and learning of mathematics and the development of the CXC mathematics curriculum at the secondary school level. It focussed on two dimensions of mathematical thinking: (1) conceptual understanding that encompassed the theoretical-thinking aspect; and (2) mathematical performance which dealt with the methodological-doing aspect of knowledge. Within the context of Gowin's Knowledge Vee, it embodied a constructivist perspective that viewed knowledge as constructed by the learner, based on his prior knowledge. It was derived from the Ausubelian assimilation theory of learning as developed by Novak, Gowin and associates.

Methodology and Analysis

Data were collected during an eight-week period from: (1) 72 fifth form students across four intact groups by means of a battery of CXC-type mathematics tests; (2) 20 fifth form students in the treatment

group by means of concept maps, questionnaires, quizzes and interviews. A replication of the study was done with 49 fifth form students across three intact groups. The main statistical methods employed were analysis of covariance, correlation analysis and comparison of sigma scores.

Findings

The main findings were:

- (1) The concept map strategy did not produce any significant difference in students' performance in certain mathematical topics when compared with conventional methods.
- (2) Scores obtained by students on their concept maps correlated significantly with the scores obtained in the comprehension and reasoning components of the CXC examinations in mathematics.
- (3) Students who obtained high concept map scores did not tend to obtain high scores in the comprehension and reasoning components of certain CXC-type mathematics tests.
- (4) Concept maps enabled students to acquire a more positive view of meaningful learning.

The overall conclusion was that concept mapping served as a useful instructional, curricular and formative evaluation tool.