

ABSTRACT

The main purpose of this study was to assess the extent to which the science content knowledge, process skills and attitudes of a sample of grade 7 students had improved after their exposure to the Reform of Secondary Education (ROSE) curriculum. The effects of three independent variables (gender, school type and school location) on the students' performance were also explored.

A hands-on science process skills test to measure students' acquisition of three process skills (SPST), a multiple choice test (to measure science content) and a science attitude scale were the three instruments used to make the assessment. The study was carried out using a pretest / posttest design.

The three process skills tested (observing, classifying and inferring) were selected on the basis of the relative frequency with which they occurred in the grade 7 science curriculum objectives and their complexity as described by Molitor & George (1976). The skills were operationally defined in terms of measurable behaviours associated with each skill outlined by Nneji (1991). Three science education experts scrutinized the test items to determine content validity before they were pilot tested. The pilot sample consisted of 106 grade 8 students from three urban schools (one from each school type). Based from the feedback from the experts and the pilot test, the final instrument which consisted of seven items was produced.

Five attitude indicators selected from the ROSE Science Curriculum Guide, served as the basis for the development of the science attitude scale (SAS). Items were adopted and adapted from scales developed by Clayton-Johnson (1993) and Shrigley et al. (1991).

The test to measure knowledge of science content (SCT) was a standardized test developed by the Jamaican Ministry of Education Youth and Culture to assess students' knowledge of the grade 7 science curriculum. The main study sample of 154 students consisted of 51 traditional high, 63 comprehensive high and 40 junior high students drawn from three rural and three urban schools in the county of Surrey.

Seven main research questions were investigated and six major hypotheses tested. The highlights of the findings from the study include the following:

- a) Students displayed very positive attitudes to science in both the pre and posttests.
- b) Students' performance on the SCT and SPST pre and posttests were only average although there was some improvement in performance from pretest to posttest.

- c) There was little relationship between gender and students' learning outcomes. Significant relationships were found on the SPST pretest with the girls doing significantly better than the boys.
- d) School location was significantly related to students' performance on the posttest for all the instruments in favour of urban children.
- e) School type was significantly related students' performance on all the instruments with the junior high school students displaying the worst performance on all three instruments.
- f) The traditional high school students performed significantly better than the comprehensive high and junior high students on the SCT and SPST posttests.
- g) Of the three process skills, classifying was the best developed and inferring the worst.
- h) School location showed the strongest relationship with the students' performance, showing significant correlations with all three instruments in the pre and posttests.

Based on the main findings, it was concluded that there is evidence that students using the ROSE integrated science curriculum have developed in terms of knowledge of science content, process skills acquisition and attitude to science. Levels of achievement are still below expectations for science content knowledge and process skills. However, the disparity in students' performance among school types and school location is cause for concern and needs to be addressed.