

Abstract

Access to mathematical concepts has for long been a major talking point, not only in South Africa, but throughout the world. Sadly, debate on ways of assisting learners to improve their understanding of mathematical concepts appear not to be yielding desirable results. One of the major barriers to effective and meaningful mathematics learning is errors which usually arise from misconceptions. To my knowledge and experience, learners hold a lot of misconceptions in the area of variability of data. In spite of this, little ground has been covered in misconception research around the study of statistics. In this regard, the study aimed at establishing the nature of errors which arise from misconceptions which learners hold particularly in representing and interpreting variability of data on ogives, frequency polygons and box plots. In addition, the study sought to establish the extent to which teaching intervention could assist towards error minimisation. Using ideas of constructivism and sociocultural theory, the study involved a group of eighteen Grade 11 learners and the researcher. It was conducted at a township high school in Gauteng, South Africa. The researcher was involved in the delivery of ten lessons on statistics. Upon completion of the topic, two tasks were assigned to learners prior to as well as after conducting a constructivist-based intervention lesson. The rationale for conducting the lesson was to determine the extent to which remediation could assist in minimising incidences of these errors. In order to capture as much data as possible, particularly on the thinking behind the errors, an interview was conducted on a sample of four learners.

The study found that most errors made by learners emanated from application of irrelevant prior knowledge (conceptual errors) which led to the use of unsuitable methods (procedural errors). Through interviews, it emerged that misconceptions in the study of statistics arise from poor language proficiency. Learners struggled to express themselves in giving verbal responses to questions posed to them by the interviewer.

The study recommends that teachers should always use the language of teaching and learning all the time so as to enable learners to improve their communication skills as well as enhance understanding of statistical concepts. Moreover, this study recommends that future studies be carried out on the statistical content knowledge of teachers as this could be yet another source of misconceptions held by learners in statistics.

Key words: Error, misconception, teaching intervention