Understanding the primary school students van Hiele levels of Geometry Thinking in learning shapes and spaces: a Q- methodology

ABSTRACT

This study was conducted using a new hybrid method of research which combined qualitative and quantitative designs to investigate the viewpoints of primary school students' conceptual understanding in learning geometry from the aspect of shapes and spaces according to van Hiele theory. Q-methodology is used in this research to find out what factors (level) of geometry understanding in van Hiele theory contributed to the geometry learning of primary school children. Q-methodology involved creating a concourse - Q set which was developed through a literature review and the statements were later refined by experts and then conducted to 30 participants aged 12 at a primary school. The respondents expressed their understanding through Q sorting, by ranking strategies according to their geometry understanding. The results indicated that students' van Hiele Levels of Geometry Thinking are at the factor (a) Level 1 - Analysis (or Descriptive); and factor (b) Level 0 – Recognition (or Visualization). This common outcome revealed that the students' geometry understanding according to van Hiele theory is at the lower level. Significantly, the findings indicate that the deficiency of van Hiele Levels of Geometry Thinking appears to be global in nature, crossing the boundaries of educational practices and curriculum.