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The Influence of Concrete Pictorial Abstract Teaching Approach on Students' Concepts Understanding and Retention in Mathematics in Rwandan Lower Secondary Schools

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Abstract : This study investigated the influence of Concrete Pictorial Abstract (CPA) teaching approach on mathematics achievement based on a sample of eighth-grade students (N = 10,345) from the Rwandan Lower Secondary School quasi-experimental study with pre-test and post-test control group of 2019 (RLSQES19). Key aspects studied included mathematics concept understanding and mathematics concept retention and how these are influenced by teacher's teaching approach. Specifically, the study aimed to a.) investigate students' concept understanding and concept retention in mathematics when exposed to CPA approach and to those exposed to non-CPA approach before and after the intervention, and b.) ascertain the significant difference between the performance of the students exposed to CPA approach and those exposed to non-CPA approach in terms of post-test scores and retention test scores. Two groups (control and experimental) undergone pre-test, post-test, and retention test. The assignment of control and experimental group among senior two classes from 10 schools was done randomly. The materials used to determine the performance of the students is a teacher-made test. Descriptive statistics and ANCOVA were used for the analysis of the study. For determining the improvement in concept understanding of mathematics, Hakes methods of calculating gain were used to analyze the pre-test and post test score. The level of performance of the two groups in the pre-test is below average level. During the post-test and retention test, the performance of students in non-CPA group is on average level, and students in CPA group are on above average level. Hakes methods of calculating gain revealed higher significant performance in the post-test and retention test of CPA group of students than non-CPA group of students.

Keywords : concept understanding, concept retention, performance, teaching approach
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