Effectiveness of Assistive Technology on Teaching Mathematics to Learners with Visual Impairments in Special Primary Schools in Kenya

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Abstract

There has been a problem in Mathematics of learners with VI as a result of inadequate AT and reluctance of teachers to apply appropriate teaching strategies when teaching Mathematics using AT in special primary schools. To address these problems, four objectives were formulated to identify types of AT that were available, teaching strategies, their role and factors that had influenced their use of the AT. Therefore, the purpose of this study was to evaluate on effectiveness of Assistive Technology on teaching Mathematics to learners with visual impairments in special primary schools for learners with VI in Kenya. The study was guided by the Theory of Didactical Situations in Mathematics (Brousseau, 1997). A descriptive research design was adopted to carry out the study. The study was conducted in five counties namely: Kisumu, Siaya, Mombasa, Meru and West Pokot. Purposive and stratified random sampling techniques were used to sample the study participants. The researcher sampled the following study participants, all from whom the study’s data was collected: twenty learners with VI selected from classes seven and eight, their ten teachers of Mathematics and the five deputy head teachers of the selected special primary schools. The total study sample therefore, comprised of thirty five participants. Interview guides, observation schedule and observation checklist based on the four study objectives were used to gather the information. Study data was analysed manually through narrative means using thematic information arrangement approach following the order or chronology of the study’s six research objectives. The results were also presented through tabulations and brief interpretation statements. The qualitative data generated from the structured interview guides was analysed through descriptive statistics based on Statistical Package for Social Sciences (SPSS) version 18.0. Main study finding was scarcity of AT in special primary schools for learners with visual impairments in Kenya. Largely, Low-Tech Assistive Technology was available while modern Mid-Tech and High-Tech Assistive Technology were visibly lacking. Major factors noted to influence the use of AT were; TOM lacked training in Mid-Tech and High-Tech AT, high cost of AT, costly maintenance and no time set on the time table to teach AT skills. The findings also indicated that many learners with VI had positive attitudes towards the use of AT in their learning of Mathematics. The study concluded that; inadequate use of AT especially Mid-Tech and High-Tech is real and this has contributed to lack of interest in working out Mathematics problems leading to a decline of Mathematics performance; there is a training gap among teachers of Mathematics on modern Mid-Tech and High-Tech AT and AT plays a vital role in teaching Mathematics to learners with VI. Based on the findings, the main recommendations were that: the government through Ministry of Education to allocate more funds for the physical supply of AT to special primary schools for learners with VI, ensure teachers of Mathematics are trained and also conduct regular classroom supervisions to ensure efficient use of all available AT in the special primary school.

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