Effects of Special E-Learning Program on Hearing-Impaired Learners' Achievement and Perceptions of Basic Geometry in Lower Primary Mathematics

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Abstract

Achievement in mathematics is an issue of great concern not only to students and parents but also to employers and researchers in Kenya. This is because the Kenya National Examination Council (KNEC) has continuously reported dismal results in this area, and especially in geometry. Also, KNEC indicates that it presents difficulties to both the teachers and learners during instructional sessions. In an extension of research demonstrating causal effects of electronic learning environments on special education learners' achievement and perceptions of mathematics instruction, the present study experimentally examined the effectiveness of a special electronic learning program (SELP) to improve hearing-impaired learners' achievement of basic geometry and their perception of the Geometry learning environment. Sixty-six hearing-impaired learners from four special education schools situated in Rift Valley province were sampled purposively on the basis of the school's accessibility to participate in the study. The study employed the Solomon-Four Group Design research method. The specific dependent measures were the learners' achievement in geometry and their perception of the classroom learning environment. Measurement of achievement and perception were conducted using two instruments: (i) the Geometry Achievement Test (GAT), and (ii) the Special Learners Classroom Environment Questionnaire (SLCEQ). GAT's reliability was computed using K-R20 formula yielding a reliability of 0.78. On the other hand, SLCEQ reliability was determined using Cronbach alpha yielding a reliability coefficient of 0.82. The study established that SELP was modestly effective in improving the achievement of hearing-impaired learners on geometry and their perception of the classroom environment. The study concludes that teachers can arrest the special learners' problem of poor performance in geometry through the use of electronic learning programs

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