SUB-PROGRAMME 6:
ICT/GIS for sustainable rural development

TOPIC:

LONGITUDINAL ANALYSIS OF PERFORMANCE OF UGANDAN RURAL ADVANCED-LEVEL STUDENTS IN PHYSICS PRACTICALS

AUTHORS:
P. O. Lating, *Sub-Department of Engineering Mathematics, Makerere University, Uganda*
S.B.Kucel, *Department of Mechanical Engineering, Makerere University, Uganda*
L.Trojer, *Division of Technoscience Studies, Blekinge Institute of Technology, Sweden*

PUBLICATION:
This paper was presented at the Conference on Collaborative Research for Technological Development, 17-18th December, 2007, Kampala, Uganda. Proceedings of the conference not yet published by Faculty of Technology.

ABSTRACT
Hybrid e-learning was introduced for two years in two typical rural girls' advanced-level secondary schools (Ediofe and Muni) in the rural district of Arua to support the learning and teaching of Physics and Mathematics and was expected to result in an improvement in the achievement scores. The main course delivery platforms in the project were the multimedia interactive training CD-ROMs that were developed based on the requirements of the local curriculum. Multilevel analysis methods were used to analyse repeated measures scores of 19 participants from both schools in advanced-level Physics Practicals. Four waves of results of the external examinations were recorded and later analyzed as incomplete longitudinal data. The intraclass correlation was found to be 32% which shows that within the contexts of rural schools, 68% of the variability in scores is attributable to within-person factors. The hybrid e-learning was found to contribute 64% of a student's scores, making it a very viable proposition for disadvantaged rural schools. The findings also show that even in situations where there is no significant support from teachers, the hybrid e-learning can still lead to achievement of good scores. These results were discussed in light of the Ugandan national policies on science education and achievement of Millennium Development Goal No.3.

Keywords: Multilevel Analysis; Hierarchical Linear Modeling; Incomplete Longitudinal Data; Triple Helix Methodology; Rural Secondary Education; Advanced -Level Physics; Gender