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

TOPIC:
DEVELOPMENT OF SUSTAINABLE HYBRID DIGITAL LIBRARIES FOR SECONDARY SCHOOLS IN UGANDA

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PUBLICATION
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ABSTRACT
This paper shows how hybrid digital libraries were implemented in disadvantaged, poor, rural advanced-level girls' secondary schools to support Physics and Mathematics education in Uganda. The schools are Muni and Ediofe girls' senior secondary schools in the rural District of Arua, Uganda. Both schools are boarding and government-aided with good physical libraries but with hardly any relevant text-books. The schools have no librarians, and the teachers together with the students had very low computer literacy skills. Internet connectivity and the costs of bandwidth are extremely high for rural schools and thus not affordable. Hybrid digital libraries were introduced in these schools using Participatory Rural Appraisal methods. Local digital content for the subjects were collaboratively developed using senior teachers from an 'elite' urban secondary school- Makerere College School. Interactive multimedia training CD-ROMs were produced from the local content and delivered to the schools. All the teachers and students were trained in ICT skills. The students and their teachers were allowed access to the Makerere University, Faculty of Technology ICT Research Center with VSAT Internet connectivity for more content they needed from the Internet and some Websites. The Center has an offline digital library with a lot of science and Mathematics content developed by experienced Ugandan teachers from advantaged urban secondary schools. The subject teachers were encouraged to transfer relevant content from the Internet and websites to the offline digital library server for use later by students. This was done to enable access to content even if the ISP disconnected service to the Center due to non-payment of bills. While at the ICT Research Center, students and teachers have free access to resources from the Internet, from the project website http://www.aruaeduc.com and other websites. Setting up of the Research Center was based on the collaboration between Faculty of Technology, Makerere University, Arua District Local Council and the Business Community. The Triple Helix Methodology was used in that instance. The paper concludes that because of the difficulty of Internet connectivity, maintenance of networks and purchase of adequate bandwidth for educational purposes by rural schools, the structure and organization of hybrid digital libraries should be separated from their distribution media. Physical distribution of information on recordable devices can provide an attractive alternative to networks. This means that CD-ROMs are very practical format for areas with little Internet access. The advantages of CD-ROMs are - big memory capacity (650-700MB), multimedia capability, high data-transfer rates (up to 1200kbps) and their popularity and standardization. Furthermore, relevant content can be transferred from the Internet and relevant websites to the offline content server using CDs and other portable digital devices like memory sticks/flash discs.

Keywords: Gender; Hybrid Digital Library; Rural Secondary Schools; Uganda; Digitization; Collaborative Research; Participatory Rural Appraisal; Triple Helix