A new approach to teaching is helping to raise standards in science and mathematics in secondary schools across Tanzania

In their own words, Christian Social Services Commission (CSSC) describe how a learning platform for tablet computers supported by HDIF is helping to facilitate a positive shift from teacher-led to student-centred education and improve academic performance.

HDIF case study
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Introduction

The Christian Social Services Commission (CSSC) is a faith-based organisation delivering education in Tanzania. Recognising that many students are challenged to fully understand the concepts of science and mathematics, CSSC forged links with an international partner with expertise in creating content for education technology (edtech) and developed the Performance Enhancement by eLearning for Secondary Schools project. The primary aim was to create a learning platform for tablet computers that would raise standards in science and mathematics. This pilot has met and addressed many challenges and will use the learning to influence government strategic planning and create the opportunity for scaling-up.

The innovation opportunity

The Tanzania Government aims to reach middle-income status by 2025. A programme based on seven critical sectors (energy, agriculture, water, education, transport, resource mobilisation, and business environment) was initiated to advance the implementation of its five-year Development Plan. The 2012–2013 Annual Assessment Report for Tanzania by Uwezo reported poor basic literacy and numeracy skills at primary and secondary levels. Learning outcomes at the time of appraisal in April 2014 showed continued decline (World Bank 2016).

Through the project, CSSC looked to address poor mathematics and science standards in schools with a new approach to teaching and technology at the core of the methodology. Historically, science and mathematics are taught through traditional teacher-centred methods where the teacher is active and the student is passive. There is much talk nationally about a shift towards student-centred learning but there is little evidence that this is taking place.

The innovation

CSSC introduced quality teaching resources preloaded on tablet computers to 47 secondary schools (working with the government to ensure validity). The selected schools were identified as having good infrastructure with both managers and teachers willing to cooperate and assist with installation and implementation. The preloaded teaching materials included animation, video and interactive exercises. Teachers were given technical instruction and trained in learner-centred teaching.

The project had three distinct activities:

1. Deployment of the platform to schools. This component gave schools, administrators, teachers, students and parents access to a unified electronic learning system. The facility was crucial as it provides the basic tools and infrastructure for a modern, more effective way of teaching and learning.

2. Teacher training. Teachers are the single most important link to getting the e-learning system accepted by all stakeholders: they manage ICT resources amongst excited students and introduce the technology to them, and deal with their youthful creativity. Good and ongoing teacher training in this project is therefore crucial.
3. Marketing across a wider stakeholder group for systemic change. This includes policymakers and the general public: only if the platform becomes popular will it be economically sustainable, and only if policymakers catch on will e-learning be scalable.

**The challenge**

“As we did not have a mathematics teacher at our school, I used to listen to a maths video and followed the instructions on how to solve a mathematics question, and this helped me to understand the procedures of solving mathematics questions.”

– Student

In a number of schools, however, the combination of having technical problems, a limited number of devices, and an unreliable internet connection has caused frustrations and loss of confidence in using the tablets for formal classroom teaching. Even so, there have been some positive comments: the teachers like the technology; and the students enjoy using the material and value working independently as they can explore topics working in their own time at their own pace.

As a result, some teachers adapted the model by encouraging students to use the tablets to reinforce learning. When teachers were asked to state the greatest benefit of tablets, replies included: “Students search learning materials on the internet independently’ and ‘Where there are too few computers or where using computers in a formal lesson becomes problematic, students are for self-study”.

Students are clearly excited animation and video. They access them in their free challenges have been to are connected to the content that can be updated

“I have changed a lot through this e-learning. ...now I allow democracy during my lesson: students have time to explain, narrate and sometime demonstrate the issues. They are happy with me.”

– Teacher

by the graphic interface, enjoy using the tablets, and time where possible. The ensure that the tablets work, Internet and host appropriate and improved when required.

**Learning**

**Without robust and reliable technical solutions with appropriate content, teachers and students may abandon the use of technology altogether.** To be successful and to have the desired impact at national level, CSSC aimed to demonstrate clear and decisive improvements in standards of educational attainment by introducing this innovation. National examination results in these pilot schools have improved on previous years.

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