International Partnership
Space Programme

UK SPACE
AGENCY

Case Study

iKnowledge

iKnowledge

Overview

Remote and rural schools in developing countries often have limited funding and teaching resources, and struggle to attract prospective teachers. As many of the schools are beyond the reach of traditional network infrastructures, they also lack ICT resources and reliable connectivity. However, by providing broadband access via satellite, both pupils and teachers can benefit from online courses, the latest teaching materials and general access to the web. Schools can also act as community hotspots, powered by solar panels, allowing members of the community to access the internet through Wi-Fi which subsidises the schools' broadband access.

With funding from the UK Space Agency's International Partnership Space Programme (IPSP), Avanti Communications has developed a sustainable, satellite-based broadband solution for underserved schools, which includes specially produced educational content focusing on core subjects. The pilot programme in 250 schools across Tanzania will result in improved pupil and teacher retention, while providing benefits for individuals and small businesses in the villages and small towns where the schools are based.

Partners

- Camara Education Tanzania
- Infinity Africa Network, Tanzania
- Tanzania Universal Communications Service Access Fund (UCSAF)
- International organisation collaborations – Ministry of Education, Science and Technology (MEST) Tanzania; Tanzanian Education Authority (TEA)
- Monitoring and evaluation partners – Ace Africa; Jigsaw Consult

Challenge

In Africa, schools in rural and underserved areas face greater challenges than their urban counterparts, which tend to attract more attention and more funding. A combination of limited funding and geographical constraints means that rural schools can lack any basic ICT infrastructure and have little internet connectivity. This prevents schools from benefiting from online educational resources.

In addition, finding qualified teachers who are willing and able to teach in rural schools is hard, as there is little opportunity of career development and advancement.

Solution

Avanti has developed the iKnowledge programme for rural and underserved schools in developing countries (www.iknowledge. co.tz). Through iKnowledge, schools are equipped with high speed broadband access via Avanti's HYLAS 2 Ka-band satellite and are also provided with servers and laptops.

The project has launched in 25 regions across Tanzania. The schools involved in iKnowledge are organised into groups which can support each other. Many of the 100 primary schools involved are 'Academies' which receive staff training through iKnowledge and in turn train staff in 'Teaching Lab' schools. Each school receives ICT equipment, alongside internet connectivity. In order to create a sustainable training model, the training at Academy schools includes ICT skills building, leadership and academy management, which helps teachers become trainers.

Along with general internet connectivity, schools also receive broadcast educational content. Teachers have been trained to take advantage of the ICT facilities and new resources that provide them with extra skills, including digital literacy. This aspect of the project aims to aid teacher retention and also, with support from educational ministries, encourage teachers from urban areas to teach in rural communities. Additionally, 150 secondary schools have received internet connectivity. These are known as 'Administration' schools that tend to have existing ICT knowledge.

Selected schools are also installed with solar-powered community Wi-Fi hotspots which are available to local residents and businesses for a fee, which subsidises the schools' internet costs. This approach is being trialled for sustaining the service beyond the initial project period.

IPSP benefits

IPSP funding has supported this project which will improve the facilities in rural schools across Tanzania to match those in urban areas. Pupils have a more stable environment as teacher retention has improved, and local communities now have access to the internet.

The funding has enabled this programme to be deployed across 25 regions, leading to a greater buy-in from stakeholders and has resulted in both national and international partnerships. A small-scale deployment would not have had the same impact or effect.

"Before our satellite broadband connection was installed, Zeze Secondary School was cut off by poor connectivity, but now, thanks to iKnowledge, we can share ideas with schools from all over the world."

Joseph Mabuye, Headmaster, Zeze Secondary School, Kigoma

Outcomes & Future

The initial IPSP-funded programme focused on 250 schools in rural and underserved areas of Tanzania. Delivery was supported locally by Camara Education Tanzania, an educational non-governmental organisation, and service provider Infinity Africa Network. Already the project has seen an impact on teaching in the classroom and 'ripple effects' into the local communities:

"Internet connects us with the world. It has also cut down the cost of my travel from Bagamoyo to the ministry's office (PMO-LARG) in Dodoma as I receive information through emails from the ministry now."

Ally Muyango, Headmaster, Miono Secondary School, Pwani

In Avanti surveys, 44% said helping teachers obtain educational materials at school was the primary benefit of iKnowledge; 16% said improvement of teachers' literacy; 13% said students being able to use the internet for educational research; 12% said use of the internet for administration; 11% said helping teachers find opportunities to further their careers and qualifications; and 4% said personal use.

Avanti suggests that the project can become sustainable by deploying the infrastructure in both underfunded schools and well-funded schools that can afford broadband; the latter can subsidise the former. Individual schools can then use income earned from their own Wi-Fi hotspot by offering community access to invest in the ongoing operation of their installation.

Avanti's IPSP INSIGHT

Be aware of the differences in approach to business and projects in Europe and Africa – the former is very process-oriented whereas in Africa they tend to adopt more of a "go with the flow" approach. Both can learn from each other, but communication and relationships are very important factors in projects in Africa.

Additionally, project management must take into account the geographical scale in Africa which is so much greater than in Europe, including not just the original installation but also repairs and replacement of equipment.

IPSP
The International Partnership Space Programme was a two year, £32 million pilot programme established and led by the UK Space Agency. The aim of the programme was to open opportunities for the UK space sector to share expertise in real-world satellite technology and services overseas and develop international partnerships for mutual benefit. The objectives for this programme were to show the benefits that UK satellite or space technology can provide above and beyond terrestrial solutions; these were provided in terms of societal or economic benefits, for countries that currently do not have these capabilities or wish to develop them further. The aims were for the UK to learn from partnerships with these countries and to establish the UK as the partner of choice with these countries once they are in a position to acquire or enhance their own space or satellite infrastructure.

UK Space Agency
The UK Space Agency is an executive agency of the Department for Business, Innovation and Skills (BIS) and lies at the heart of UK efforts to exploit and benefit from investment in space technologies and satellite applications. The Agency was created on 1 April 2011, and for the first time integrated UK civil space policy and the majority of programme funding from across Government, the Research Councils and Innovate UK (formerly known as the Technology Strategy Board).

To view profiles of IPSP partners and learn more about satellite applications in emerging markets visit: **starhub.sa-catapult.co.uk**

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