Insight study: exploring the impact of the Academy school module

1. Overview

The iKnowledge project aims to improve the quality of education in Tanzania by addressing key challenges the educational sector currently face in the delivery of ICT programmes in schools. These challenges include connectivity, accessibility, capacity, ICT resources and infrastructure. iKnowledge has been rolled out in 100 primary and 200 secondary schools across Tanzania. The project advances primary school teachers' digital literacy and understanding through a sustainable 'train the trainer' training model, and provides educational content for teachers to apply directly into their classrooms, which has been shown to greatly improve educational engagement[1].

This study was carried out by Camara Education Tanzania, a partner within the iKnowledge consortium, as part of a series of insight studies conducted by the project to assess impact. The iKnowledge platform provides a varying intensity of inputs within participating primary and secondary schools. On top of this platform sits a range of modules designed to test specific sets of interventions. The Academy school module receives a high intensity of inputs in regard to

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[1] Ace Africa. (2017). iKnowledge phase 2 (Tanzania): Second midline monitoring and evaluation report for phase 1 schools. Avanti plc. Page 36: students reported a high usage of ICT for their learning, which referenced the use of the iKnowledge portal for specific lessons/subjects.

hardware and training provided (as listed below within the box in chapter 2).

This study explores the impact within the Academy school module through in-depth qualitative examples from Nyanza primary school in Geita, grounded within wider data from the 2nd Midline M&E report (see footnote 1) as well as the Camara final education report[2]. This insight study illustrates how the Academy schools not only achieved the intended objectives, but leveraged the project to attain additional educational, technological and social benefits, generating encouraging changes in three key thematic areas: student and teacher benefit from the use of ICTs, financial sustainability in Academy schools, and the Academy school being a central point of learning for members of the community. These thematic areas are addressed in sequence in chapter 4.

<blockquote>
Academy school hypothesis:
Through additional ICT equipment and a higher number of teachers trained beyond the platform level, students in Academy schools will have more hands-on experience and thus be well equipped to use ICT for learning.
</blockquote>

2. Context

Although Tanzania is one of the least developed countries in sub-Saharan Africa, it has a renewed focus on strengthening its educational system with the implementation of policies and interventions aimed at improving and boosting the sector. Tanzania has provided free access to education from primary to secondary school which has increased enrolment but has put additional constraints on limited resources. Like many other developing nations, Tanzania still faces many challenges involved in providing quality education at all levels.

It is well researched that integrating ICT into education systems can increase the quality of education and bolster educational outcomes, especially if it includes capacity building for teachers which enhances the quality of pedagogy[3]. The use of ICT in formal and non-formal education also offers the potential to facilitate greater access to information and services to marginalised groups and communities. Although ICT can play a role in achieving the Sustainable Development Goal 4 of quality education[4], implementation efforts of ICT programmes have encountered many challenges such as poor ICT infrastructure, insufficient access to ICT devices, lack of connectivity, poor quality of online resources, and a shortage of qualified teachers within the ICT space.

<blockquote>
Academy school module provision

- 17 laptops
- 2 projectors
- 2 content servers
- 1 VSAT
- 1 UPS
- Training for 8 teachers
- Training of school leadership and community members in running and sustaining ICT in schools
- Access to a Learning Management System
- Ongoing technical and educational support of ICT within Academy schools for the duration of the project
</blockquote>

The iKnowledge project brings a solution to the above problems by providing a portfolio of interventions which provide a sustainable approach to addressing these key challenges. The iKnowledge platform operates in both primary and secondary schools. The project interventions within iKnowledge primary schools includes the provision of ICT equipment and subsequent maintenance, reliable internet access through satellite connectivity, teacher capacity building for digital skills acquisition, in-school support, and access to educational teaching resources. A total of 25 Academy schools were established as a separate module

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[2] Lacasse, M. (2017). iKnowledge 2 Final Education Report. Camara Education Limited
[3] United Nations Educational, Scientific and Cultural Organisation (UNESCO), 2018. ICT in Education. https://en.unesco.org/themes/ict-education
[4] United Nations Division for Sustainable Development, 2018. UN Sustainable Development Goals. https://sustainabledevelopment.un.org/

of the iKnowledge project across 25 regions of Tanzania, each of them receiving the highest intensity of inputs available to iKnowledge primary schools (see table below regarding provision). Although the project is not yet operating at full maturity, the preliminary findings show that there have been compelling positive outcomes associated with iKnowledge interventions with significant direct and indirect impacts on the students, teachers and surrounding communities.

Within this broad context, this insight study identifies and explores the impact the Academy school module has had on its beneficiaries, highlighting three key areas of impact: student and teacher benefit from the use of ICTs, financial sustainability in Academy schools, and the Academy school as a learning centre for members of the community.

3. Methodology

The impact of the Academy school module was explored in this insight study through in-depth qualitative data collection at one participating school: Nyanza primary school. This was grounded within the data from the 2nd Midline M&E report as well as the Camara Final Education Report.

Figure 1: Geita district, Tanzania

Nyanza primary school, located in Geita (see Figure 1 to the left) was selected for this study because the school clearly demonstrates the positive direct and indirect impact as a result of the iKnowledge project. This school was not intended to be representative, but rather a targeted sample school that could provide clear evidence of what is possible in ideal circumstances through the provision of iKnowledge interventions and additional intensive interventions through the Academy school module.

Camara Education Support Officers conducted four in-school visits in 2017 which provided an opportunity to observe, discuss and analyse various key factors and assess the outcomes. Camara used rigorous qualitative research methods to facilitate the systematic capture of accurate and relevant information. Classroom observations, focus group discussions and interviews with key stakeholders including the parents, teachers, members of the school board and the District Education Officer (DEO) of Geita were conducted to support the study. Data from the 2nd Midline M&E report and the Camara Final Education Report were consulted to triangulate findings. This included the insights that emerged from the focus group discussion with students in the 2nd Midline M&E report, as well as conclusions regarding teacher confidence in using ICT for their own learning and student usage of computers and internet as was documented in the Camara Final Education Report.

4. Impact and evidence

There is evidence that indicates Academy schools are outperforming others within the iKnowledge platform that did not receive the same concentration of inputs of hardware and training. This section highlights three key areas of impact: student and teacher benefit, financial sustainability, and community learning. Each area is described in further detail below, drawing on evidence from Nyanza primary school grounded within the wider available data of participating Academy schools where possible.

4.1. Student and teacher benefit from the use of ICTs

The 2nd Midline M&E report showed indications of students in Academy schools benefiting from the iKnowledge project through their ICT-trained teachers as well as through accessing the hardware directly. This included indications of students in Academy schools becoming more confident in using the computers and internet, and having an increased understanding of ICT
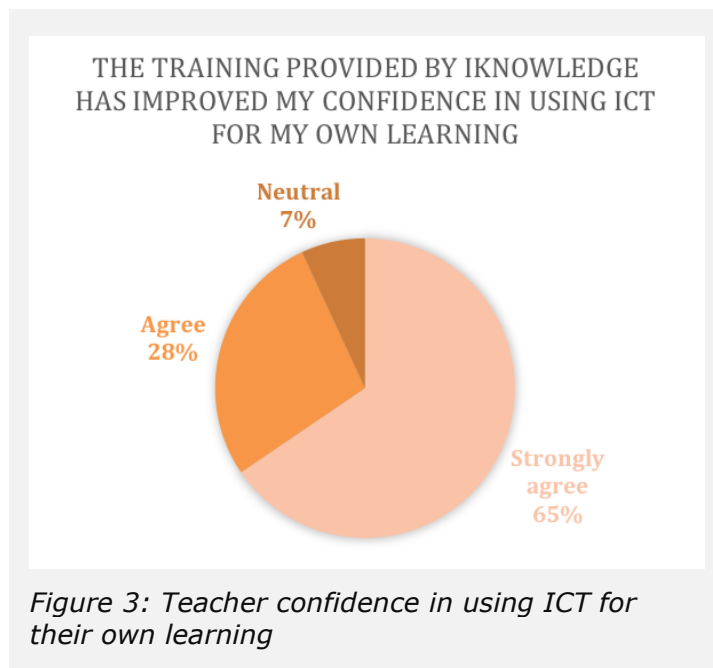
than students in the other participating schools within the iKnowledge platform.

The chart in Figure 2 illustrates this whereby 93% of Academy school students strongly agreed or agreed that the iKnowledge project has had a positive impact on the student learning environment. The other primary schools that participated in the iKnowledge project at the platform level (not Academy schools) had lower results, with only 54.8% of students strongly agreeing.

THE IKNOWLEDGE PROJECT HAS HAD A POSITIVE IMPACT ON THE STUDENT LEARNING ENVIRONMENT

STRONGLY AGREE	72.40%
AGREE	20.70%
NEUTRAL	6.90%

Figure 2: Impact on student learning environment
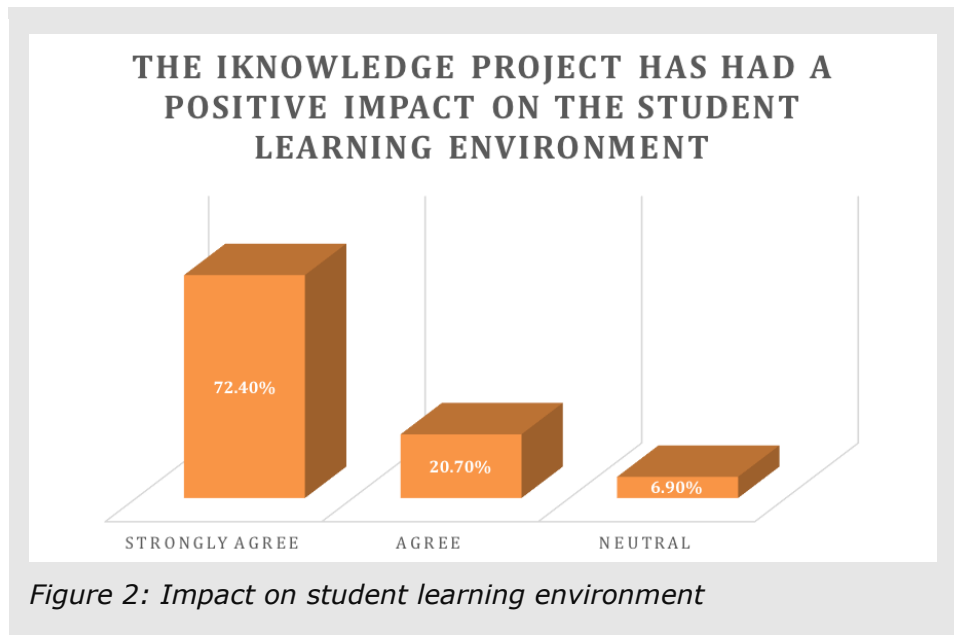
"This project has changed me because I used to think that using computer is very hard but now I know how to use it and it helps me in my studies. It has made me feel different." (Abisi, Standard 5 student, Academy school, Morogoro)

Through the data collection for the 2nd Midline evaluation as well as through conversation with teachers in Nyanza primary school, it has quickly become apparent that the iKnowledge project has also offered a range of benefits for teachers. This includes the improvement in the level of digital literacy, quality of teaching in core curriculum subjects, and confidence in integrating ICT in the classroom. This section will discuss the impact of the Academy school module on teacher professional development specifically.

THE TRAINING PROVIDED BY IKNOWLEDGE HAS IMPROVED MY CONFIDENCE IN USING ICT FOR MY OWN LEARNING

Neutral 7%
Agree 28%
Strongly agree 65%

Figure 3: Teacher confidence in using ICT for their own learning

In Nyanza primary school, the iKnowledge project has enabled teachers to advance their knowledge, skills and abilities by using the computer lab to participate in evening classes. The 2nd Midline M&E report indicates that 94% of teachers across all Academy schools who participated in iKnowledge training have attested that the iKnowledge training has improved their confidence to use ICT for their own learning, with 65.5% of teachers strongly agreeing that they have improved confidence for their own learning (see Figure 3). Teachers have used the connectivity provided by iKnowledge to obtain teaching materials that they were unable to access previously, as well as to complete their coursework and submit assignments as part of their diplomas and degrees.

Three teachers at Nyanza primary school study at the Open University of Tanzania: Kundi Kimaro, pursuing a diploma in Education, Jumanne Ibrahim, pursuing a degree in Education, and

Said Maduka, also pursuing a degree in Education. The teachers noted that before iKnowledge they had to use internet cafés, which charge a fee, in order to submit their assignments but because of the project they now have access to computers and the internet at the school. In addition, they have been encouraged by the iKnowledge project to pursue Continuing Professional Development (CPD), complete degrees and/or advanced qualifications. The capacity, devices and connectivity provided by the iKnowledge project, alongside the encouragement to pursue CPD, has made it easier for teachers to engage with their course material more actively, submit assignments on time, and has encouraged new teachers to enrol at the Open University. The teachers at Nyanza primary school noted that because of the training provided by iKnowledge, they are now more confident in using the internet for their online classes.

> *"iKnowledge has changed my way of thinking and doing things. I had very little computer knowledge and no interest in learning the computer. I thought computers were not for me, not for a primary school teacher, but for someone with a higher education level like a banker or a doctor. After the completion of the ICT Skill-builder programme, I was very motivated and encouraged to learn more about computers and ICT in general. I have been spending more than one hour every day on the internet learning about computers, watching YouTube videos and many other things. I can now confidently teach my colleagues on how to search for teaching materials over the internet, create email accounts or write a letter by using a computer. I really believe that computers and the internet can change anyone's life as it changed mine."*
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> (Mr. Prudence, teacher, Nyanza primary school)

4.2. Financial sustainability in Academy schools

Prior to the iKnowledge project, Nyanza primary school was spending approximately 1.5 million TSH (750 USD) annually on administrative costs including typing and photocopying as part of their operational expenses. Since the introduction of the project, the school has reduced this cost through the use of the ICT hardware provided by iKnowledge to type up their own examinations and through generating money from teaching ICT skills to members of the community. Additionally, the school has generated income from their own vegetable garden. They used the connectivity and devices provided by iKnowledge to conduct research regarding the design and maintenance of the garden (see Photo 1).

The produce from the garden is now being sold to community members, which has resulted in a reduction of the school administrative costs by half, making substantial and sustainable savings. These savings, combined with parents' contributions, enabled the school to purchase a printer and photocopier. When asked about the motivation behind these purchases, the head teacher described the capacity building of the teachers as the reason, explaining that they are more confident in using ICT equipment to perform their tasks more efficiently. It is considered by the head teacher that these two new pieces of equipment will improve their teaching environment and further the school's efficiency.

Photo 1: The vegetable garden Nyanza primary school

Financial sustainability is an area still under development within the iKnowledge project and it is not yet possible to measure the impact at scale. Evidence has surfaced, however, within other Academy schools (see 'catalytic impact insight study'[5]) that are leveraging the available connectivity, equipment, software, and their capacity to use ICTs in order to financially sustain both the school and themselves personally (e.g. teachers using their computer skills to promote their side businesses online).

4.3. Academy school as a learning centre for members of the community

During phase one of the iKnowledge project, six teachers, the assistant head teacher and the head teacher from Academy schools participated in the capacity building activities administered by Camara. Four selected teachers from the Academy schools participated in 'Teaching of Trainers' modules. All trained teachers were expected to train other untrained teachers from their schools as well as other schools and members of the community.

Looking at Nyanza primary school as an example, their trained teachers have trained more than 500 students and 30 teachers from nearby schools to-date, free of charge. In addition, they have also conducted training activities with over 50 community members and have generated a total of 500,000 TSH (250 USD) between September 2016 and March 2017.

The school charged community members a fee of 10,000 TSH (5 USD) per training module. These included modules from the iKnowledge Skillbuilder for Educators Programme such as 'Basic ICT'[6], 'LibreOffice Impress', 'LibreOfficer Calc' & 'LibreOffice Writer' as well as guidance on accessing and using the internet. The school also conducted training for students who had already completed Standard Seven (i.e. students who have completed their studies and are waiting to go into further education). This included the 'Basics of ICT'[7] and 'Introduction to Computer Studies'. The participants were charged 200 TSH (10 cents) to attend. The school used the money they generated to pay the electricity bills, cover the cost of tap water, and contribute towards paying for the new ICT lab facilities (see Photo 2 below).

In recognition of the iKnowledge Academy school module interventions and the school's efforts to build the capacity of the community, the District Education Officer announced that the Geita District Council is planning to make Nyanza primary school the District ICT Centre for fostering the integration of ICT in teaching and learning. The DEO explained that teachers and community members are eager to receive additional training and that other schools in the district have shown interest in integrating such interventions (David Mkumbo, DEO). This wider impact has made a significant contribution to establishing the school as a learning centre for the wider community.

The successes seen in Academy schools and the wider iKnowledge project has captured the attention of other ministry representatives who participated in a 'cluster meeting' in July and August 2017

Photo 2: Construction of the new ICT lab at Nyanza primary school

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[5] http://www.iknowledge.co.tz/wp-content/uploads/2018/08/Jigsaw-Catalytic-impact-insight-study_v3.pdf

[6] The 'ICT Skill-builder' module included the basics of ICT, an introduction of iKnowledge resources, portal and teacher content, and effective teacher methodologies for ICT integration and designing for integration.

[7] The 'Basics of ICT' sub-module included discussing the importance of ICT in personal and professional life, explored various ICT components for teaching, and provided instruction on identifying and using different ICT devices.

where teachers and head teachers from all 25 Academy schools, alongside ministry representatives and Camara Education Support Officers met in order to address the challenges that were faced by schools and teachers. They discussed how best to communicate and engage all stakeholders, and sought to find solutions to sustain the integration of ICT in the classroom.

5. Implications and next steps

Academy schools have shown great success from both an educational and socio-economic impact perspective while simultaneously providing financial and sustainable solutions to the school and communities within which they operate. This insight study explored the successes shown in Nyanza primary school, which has been able to leverage their skills attained through the iKnowledge Academy school module and the hardware provided to generate revenue and to implement a sustainable business model. In addition, they have seen improvements in teacher professional development and benefits for students. This provides a clear example of the positive impact that can come from the inputs provided to Academy schools.

To further the successes seen, the Academy schools need to source additional training activities for their teachers and encourage students' direct use of computers. In order to gather key information to assess the effectiveness, impact and attainment of targets, it is also imperative that the Academy schools maintain the required information to monitor the teachers, students, and revenue-generating activities. Finally, in order to continue to see positive impact, it is important for the schools to share the lessons learned and good practices with one another so they can all reach and maintain a sustainable model and approach to integrating ICTs in their schools.

Annexes

Annex A: Nyanza primary school data

School data	
School data	
Number of students	2139
Number of teachers	57
Provision from the iKnowledge project	
Connectivity	✓
Portal content	✓
Number of iron safes	1
Number of laptops	17
Number of projectors	2
Number of servers	2
Number of monitors	1
Number of speaker sets	2
Additional training programmes and support services	**21st century leadership:** programme for two school leaders, including the following modules: • Overview of ICT in education • Leading and managing change in ICT • ICT integration policy, vision and plan • Monitoring, evaluation and review
	ICT skill-building for teachers: programme for six teachers to introduce the basics of ICT including basic use of equipment and accessing the internet, using Ubuntu, safe storage of ICT devices, using the iKnowledge portal and teacher content, and effective teacher methodologies for ICT integration.
	Managing an Academy: programme for two teachers, who then trained 51 other teachers from the school. This programme included the following modules: • Developing a business plan • Working on your marketing strategy • Managing revenue and sales • Managing and delivering services
	Refresher training for 6 teachers and the head teacher
	Four in-school educational support visits

Annex B: list of interviewees

School/district	Interviewees and role
Nyanza primary school	- Happy Kimambo, Head Teacher - Jumanne Ibrahim, Teacher - Kundi Kimaro, Teacher - Said Maduka, Teacher - Mr. Prudence, Teacher
Geita Educational District Office	David Mkumbo, District Education Officer