

Insight study: Camara Learning Academy module pilot



1. Overview

The iKnowledge project provides a platform of ICT-related interventions to 100 primary and 200 secondary schools across Tanzania. These interventions include the provision of internet connectivity, ICT devices, relevant educational content, and capacity building for teachers to use ICT in their teaching. On top of this platform sits a range of modules designed to test specific sets of interventions. One of these modules is the Camara Learning Academy (CLA), which provides teachers with self-paced, affordable, needs-driven courses. This study is part of a series of insight studies conducted by the iKnowledge project to assess the impact of the platform and modules. The data collection and analysis for this study was carried out by Camara Education Tanzania, a partner within the iKnowledge consortium, as part of their learning report regarding a pilot micro-course offered to iKnowledge teachers within the Camara Learning Academy module. The report narrative and accompanying data was inserted into this insight study by Jigsaw Consult, Avanti's strategic Monitoring and Evaluation (M&E) advisor for the iKnowledge project.

This insight study presents an overview and analysis of the CLA micro-course pilot activity, assessing the impact the pilot has had on the participating iKnowledge teachers. This includes exploring the enrolment and completion numbers for the course, teacher learning gains, and

teacher response to and reflections on the pilot. The insight study concludes with a discussion of implications and recommendations for future programming.

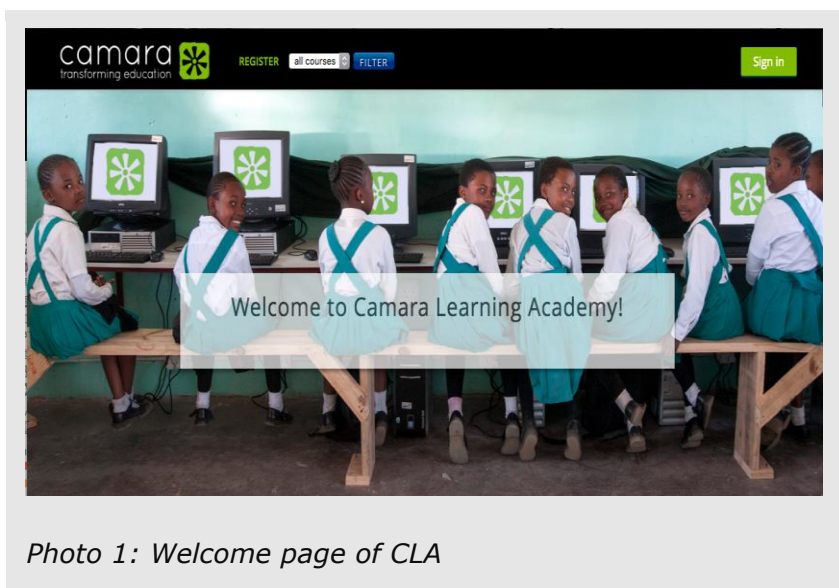
CLA micro-course pilot goal: To demonstrate teachers' interest to access relevant online courses.

2. Context

The Tanzanian education sector faces a range of challenges in the delivery of ICT programmes in schools. These challenges include the lack of connectivity, ICT infrastructure, devices and online resources, as well as low teacher ICT qualifications and capacity to integrate ICT in their teaching practices. The iKnowledge project addresses these challenges through the provision of a platform that combines connectivity, devices, content, and capacity building in a consistent offering that will ultimately be provided across every participating school.

The CLA module sits on top of the iKnowledge platform to address additional requests from teachers for support in becoming more effective in using ICT to meet administrative demands and learning to better integrate ICT in their teaching practices. While online professional development courses for teachers are widely available, it is difficult to find ones focused on the specific needs of a teacher in the Tanzanian context. The CLA module was developed to address this gap, with a philosophy to enable teachers to complete a specific task or to develop specific competencies within two hours. The courses incorporate videos, quizzes, assessment activities and discussion, and certificates of achievement are awarded to those who complete them. As part of the localised model, CLA micro-courses are either fully developed in or translated into the local language.

Quality face-to-face courses are often expensive and can be difficult to physically access. CLA micro-courses, however, allow for a more sustainable professional development option, particularly with the newly acquired ICT skills teachers have gained through participating in the iKnowledge project. Access to CLA was made available via the iKnowledge portal to ensure that teachers could access it easily. During the iKnowledge training sessions conducted by Camara, the teachers were introduced to CLA so they understood what was available and how to use the platform.



In June 2017, the first micro-course, "Creating a Presentation with LibreOffice Impress - for Teachers¹", was launched on the Camara Learning Academy as a pilot. This needs-driven course was available at a cost of TSH 5,000 (approximately £1.60²) and was available in Tanzanian Kiswahili. The initial target for this pilot was to reach a total of 100 iKnowledge primary school teachers. To meet this objective, the course was made available to 98 iKnowledge primary schools.

¹ Translated from the original Kiswahili: "Uwasilishaji kwa LibreOffice – kwa Walimu".

² As calculated with the daily exchange rate in December 2017.

This insight study identifies and explores the impact of this CLA micro-course pilot, drawing on the following data and discussing the results in corresponding sections:

- Enrolment and completion rates
- Learning gains
- Teacher response to pilot

3. Research methods

To measure the effectiveness of the CLA pilot, the Kirkpatrick training evaluation model was employed. This model considers the value of any type of training, formal or informal, across four levels:

- Level one (reaction): Evaluates the degree to which teachers respond favourably to the training.
- Level two (learning): Measures the extent to which teachers acquire the intended knowledge, skills and attitudes based on their participation in the training.
- Level three (behaviour): Considers the extent to which teachers apply what they learned during the training when they are back in the classroom.
- Level four (results): Evaluates the degree to which targeted outcomes occur as a result of the training.

It is considered that this model helps to objectively analyse the effectiveness and results of training programmes and identify ways to improve them for the future. This study focuses mainly on level one (reaction captured through the survey) and level two (knowledge, attitude, and skills acquired).

The data used for this report was drawn from the Camara Learning Academy Insights Platform, including teacher enrolment rates, teacher course usage data, and completion rates. In addition, a post-course survey was designed and administered through Google Forms and stored on an online data repository.

4. Impact and evidence

This section presents the results and analysis of the CLA micro-course pilot, framed within the following three sections:

- Enrolment and completion rates
- Learning gains
- Teacher response to pilot

It is noteworthy that the CLA pilot was implemented within a short timeframe (18 Jun 2017 to 18 November 2017), with teachers experiencing restricted access to project resources such as laptops and internet connectivity during the school holidays (2 Jun 2017 to 3 July 2017), as well as the preparation for the final examination period (7 August 2017 to 5 September 2017) and the examination dates (6-7 September 2017). In addition, most of the teachers were only informed of the pilot when they joined the Camara Education Support Officers for the third Educational Support Visit on 24 July 2017 to 15 August 2017 and therefore enrolled late.

4.1. Enrolment and completion rates

The level of enrolment in the CLA pilot is an important factor in measuring the impact of the initiative, as the financial aspect (i.e. an enrolment fee) was introduced for the first time to teachers and it was important to gauge their willingness and capacity to pay. The number of teachers and the initial target are presented in Figure 1. The actual number of teachers who enrolled in the pilot superseded the target number by over twice the amount. The recorded data on completion varied, however. Out of the 208 teachers who enrolled in the pilot, 49 (24%) attempted to start the course and 115 (55%) have yet to complete the pre-course test.

This result, however, does not indicate that teachers have not been impacted by the course, but rather points out that they have omitted or did not have time, at the time of data collection, to complete the pre- and post-course tests. The results presented rely on data collected in November 2017, however more teachers may have revisited the course since then. Figure 2 presents the breakdown of the course completion.

Number of teachers enrolled	Target
208	100

Figure 1: CLA pilot enrolment vs target

Figure 2 presents the breakdown of the course completion.

Completion of the pre- and post-course tests	Number	%
Fully Completed	44	21%
Partially Completed	49	24%
Not Attempted	115	55%
Total	208	100%

Figure 2: CLA completion of pre- and post-course tests

To explore the particular circumstances underlying the completion rates, teachers were called by the Camara Education Support Officers at the beginning of November 2017. Their responses identified that one of the main reasons for not having completed the tests was due to a lack of time or access to laptops because of the Primary

School Leaving Examination (PSLE) and the Standard Four National Assessment (SFNA). During the examination period, some schools did not allow teachers to use the ICT equipment, therefore impacting the pilot usage rate. A large majority of the teachers who were spoken to during these calls stressed that they intended to complete the course when the school reopens in 2018 and they regain access to the ICT devices.

The successful completion rate, or pass rate, represents teachers' reaching or exceeding the passing grade initially set at 70%. Figure 3 presents the completion / pass rate for this pilot.

Successful Completion Rate	Number	%
Teachers who fully completed the pre- and post-test	44	21%
Teachers who passed the post- test	42	95%
Total number of teachers enrolled	208	-

Figure 3: CLA successful completion rate

4.2. Learning gains

Teacher learning gains represent the teachers' growth over time as measured by the difference between their post-course test result and the average of the pre-course test results. A summary of the teachers' learning gains is presented in Figure 4. The data shows that there is generally a gain between the pre- and post- tests. As can be seen in the graph, the relationship trend indicates that even with a low score in the pre- test, teachers can progress by completing the course activities.

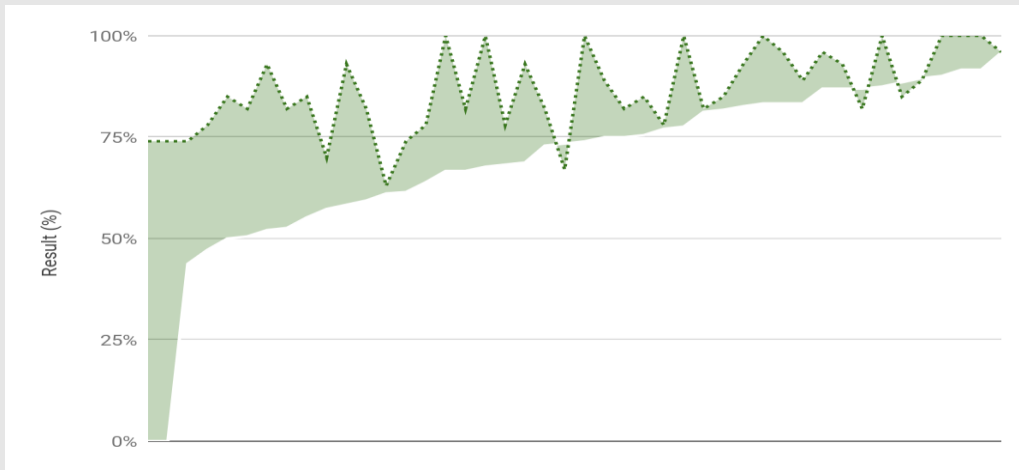


Figure 4: Learning gains of all teachers who fully completed the pre- and post- test

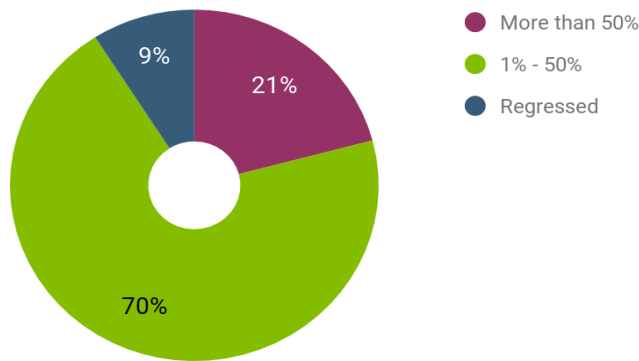


Figure 5: Teachers' learning gains - November 2017

As seen in Figure 5, there is a gain in 91% of cases. 21% of the teachers who completed the pre- and post- tests progressed by more than 50%. With an overall learning gain of 24%, the course has proven positive impact. Figure 6 presents a series of statistics related to measures of centrality, range, and the results of a paired *t*-test from the pre- and post- test results. The lower standard deviation of the post- test results indicates a smaller variation in the post- test results compared to the pre- test results.

The range of the results also decreased from the pre- test to post- test, from 52% to 37%, as a result of the greatly improved minimum and slightly improved maximum values. Coupled with the lower standard deviation, this suggests that teacher improvement was widespread.

To assess whether the difference in the means observed is significant, a paired *t*-test was conducted. A paired *t*-test is an analysis of the means of two populations, with the results of the pre-course test acting as the first population and the results of the post-course test acting as the second population. A *t*-test with two samples is commonly used with small sample sizes, testing the difference between the samples when the variance of two distributions are unknown. The *t*-test questions whether the

Pre- and post- test results comparison	Pre- test	Post- test
Average score	69%	87%
Median	74%	85%
Standard Deviation	10.2%	20.6%
Minimum	44%	63%
Maximum	96%	100%
<i>t</i> -test	$p=0.0000000503$	

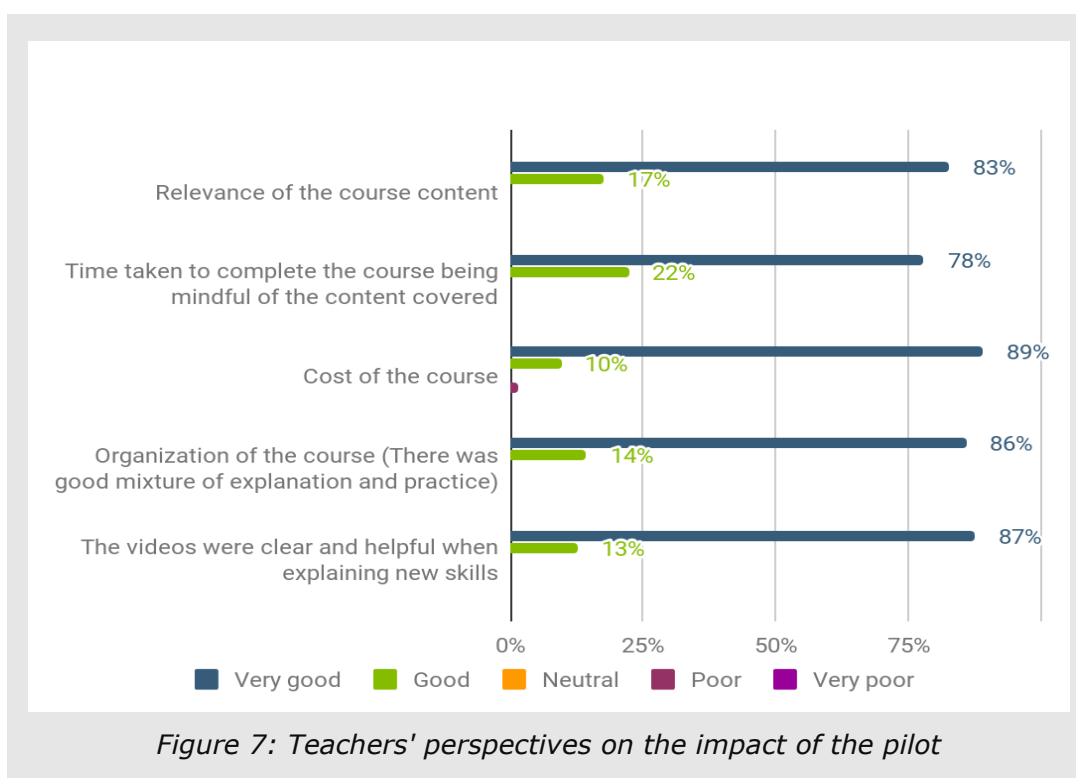
Figure 6: Pre- and post- test results comparison

difference between teachers' results is representative of a true difference between teachers who have and teachers who have not completed the micro-course or if it is likely a meaningless statistical difference. In the context of this analysis, if $p \geq .05$, the difference is insignificant and likely is a result of chance. However, if $p \leq .05$, it is not likely to be a result of chance and the difference is significant.

The t -test score between the pre-test and post-test results ($p = 0.0000000503$, as seen in Figure 6 above) shows that the change in results is highly significant. It is therefore safe to conclude that the difference in results between the teachers who have completed the course activities and the results from teachers before being exposed to course activities is significant.

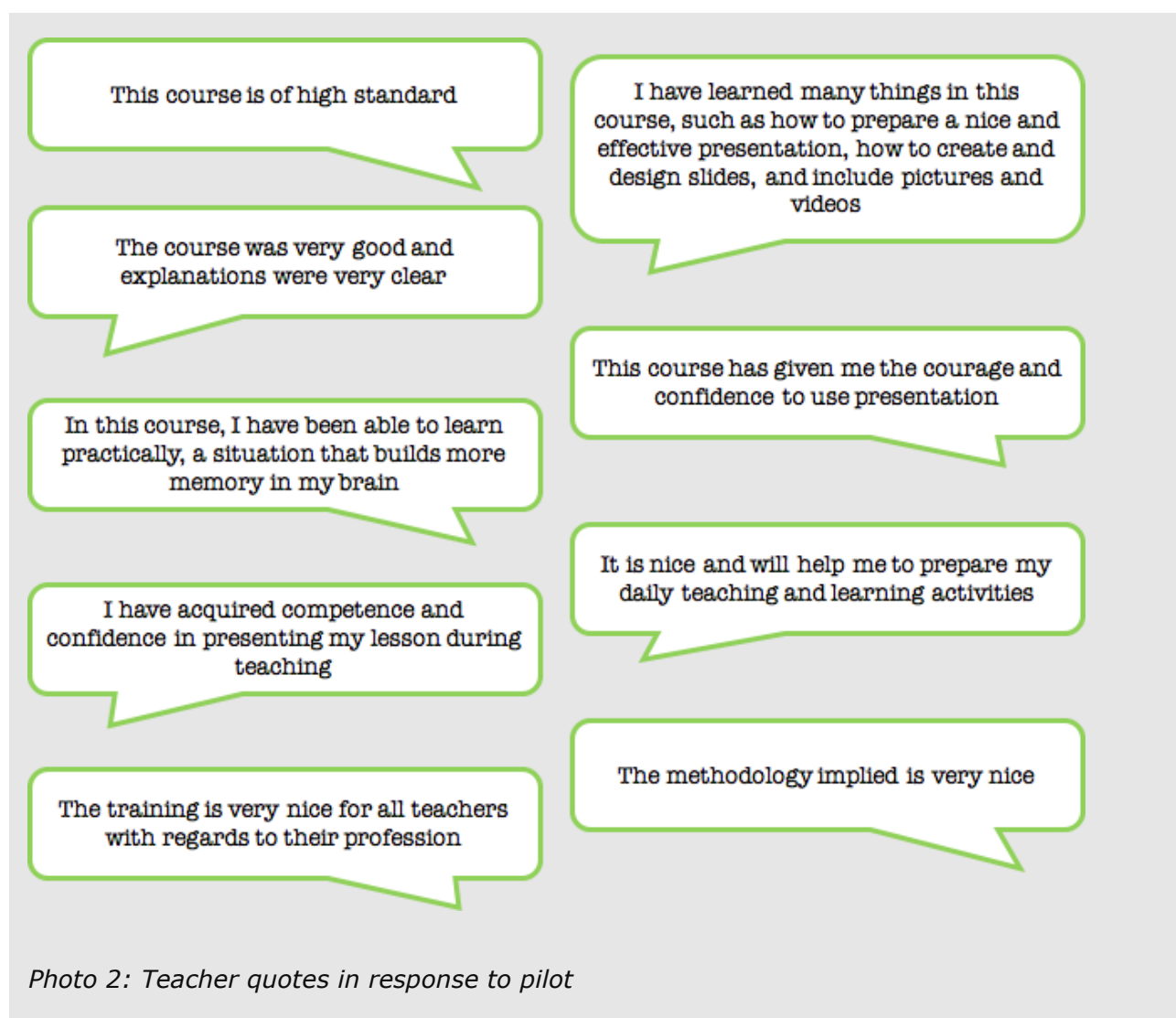
4.3. Teacher response to pilot

Teachers were asked a range of questions to gain further insight into their experiences within the pilot and the impact the course has had on them. The survey was completed by 63 of the enrolled teachers (30%). A sample of the results are presented in Figure 7 below.



The responses from teachers indicate that 100% found the relevance of the course content to their career path to be good or very good. All surveyed teachers also agreed that the time taken to complete the course was good or very good. 99% of the respondents believed that the course cost was good or very good value for money. 100% of responding teachers agreed that the organisation of the course and balance of lecturing and practice was good or very good. All surveyed teachers also agreed that the videos were clear and helpful when explaining new concepts and skills. Lastly (and not included in the above Figure), all surveyed teachers also indicated that the course structure and the resources provided in order to complete the micro-course were satisfying and appropriate.

When asked about the strengths of the pilot, teachers answered positively, with quotes included in Photo 2 below. These quotes are a sample of those from the survey and have been translated into English by the Camara Education team for their pilot learning report.



When asked about which aspects of the micro-course could be improved, the teachers highlighted five key areas:

- **Speed of the videos:** Teachers found the speed of the videos too fast in some cases and felt that they would have benefited from having more time to watch them. They suggested the videos be accompanied by functionality that would allow them to control the speed (i.e. to slow down the videos if necessary).
- **Translation of ICT terminology:** Teachers mentioned that some technical ICT-related terminology was difficult to understand when translated into Kiswahili. They suggested that ICT terminology also be presented in English.
- **Delays in opening pictures and videos:** A few teachers mentioned delays in opening pictures and videos and suggested reducing the resolution.
- **Additional instructor support:** Teachers considered that it would be helpful to have a facilitator who is available at specific times to answer their questions. Other teachers noted that they would have liked to have access to an online support officer in case they are facing any challenges, such as a moderator in the course discussion forum.
- **Expansion of micro-course catalogue:** A large number of respondents urged the iKnowledge project consortium to expand the micro-course catalogue and ensure that teachers from all schools have access to the Camara Learning Academy.

5. Implications and next steps

This section presents an overview and brief analysis of the investment in the pilot, key challenges and areas of recommendation.

5.1. Programme investment and teacher investment

The CLA module provides a unique mechanism of financial and educational sustainability, and a long-term solution for iKnowledge to have continued impact at a lower cost. The evidence from the CLA pilot suggests that there is a linear relationship between the completion of the micro-course and learning gains. Although teachers did not always complete the pre- and post- test, those who completed all the course activities gained knowledge and skills.

With 208 teachers enrolled in the course, the cost of programme investment to date is approximately £71.52 per teacher. As the course enrolment grows, this cost per teacher will reduce. Between 18 June 2017 and 18 November 2017, 208 iKnowledge teachers purchased access to the micro-course pilot through a personal investment of TSH 5,000 (approximately £1.60). To date, the total teachers' investment is TSH 1,004,000 (£337.90), which corresponds to 2.27% of the total cost. As a proof of concept, the intention of this micro-course pilot was to gauge interest for such modes of learning and seek whether or not teachers were willing to invest in courses of this nature. Even though there was no financial target for this pilot, it is important to recognise that teachers were indeed willing to financially contribute to their learning and in particular sought relevant needs-driven courses. This is contrary to other educational programme initiatives that target primary school teachers where stipends and incentives are considered necessary for teacher engagement.

5.2. Key challenges

The main challenges encountered for this CLA pilot were the course duration, the piloting period, and the low number of teachers who completed the pre- and post- tests. A common challenge shared by the teachers was the difficulty of accessing laptops during the school holidays and the examination period. While the low number of teachers who completed the pre- and post- tests is a limitation of the pilot, a comparison between the CLA micro-course completion rate (21%) and the average completion rate of Massive Open Online Courses (15%³), does demonstrate a comparative successful rate of completion for this pilot. With this said, Camara Education of course recognises that a micro-course should be designed to facilitate its completion.

As internet-based teacher learning solutions are relatively new to the Tanzanian context, challenges were expected, which the pilot team was prepared to deal with and adapt to where necessary. It was expected that teachers would take time to complete the course and even fully understand the different features of the Camara Learning Academy. As such, continued course activity will be carefully monitored by the Camara Education team.

5.3. Recommendations

CLA aims to add new needs-driven micro-courses designed for Tanzanian teachers to the platform in 2018. This is due to the positive results and feedback from teachers towards the pilot, as well as the increased integration of ICT in education toward the end of the second implementation phase of the iKnowledge project. To successfully achieve this, it is recommended to:

- Review the micro-course logic and flow and embed the assessment activities,
- Review the video speed and image resolution,
- Encourage iKnowledge teachers to enrol in new courses,
- Ensure head teachers promote teacher enrolment in the courses and completion of course activities,

³ MOOCs Completion Rate: The Data. Retrieved from: <http://www.katyjordan.com/MOOCproject.html>

- Provide more comprehensive support during the course and engagement on the discussion forums to engage teachers and increase the completion rate,
- Ensure the evaluations of the impact of micro-courses take place over a long enough period of time to allow for teachers to complete the course late and adjust for examination and holiday periods where teachers may be unable to access the school's ICT devices,
- Evaluate the right price point that can provide value to the teacher and also support the sustainability of the day-to-day running and maintenance costs of the CLA platform.

To grow the portfolio of courses during the initial stages of the platform, Camara Education will continue to seek investment from partners to develop courses. It is intended that the investment from teachers will eventually cover the platform running costs as well as the necessary personnel to provide support to teachers as they enrol in and complete more micro-courses.

Annexes

Annex A: CLA module micro-course pilot summary

The following table summarises the CLA module pilot. This was adapted for this insight study from a visual summary in the pilot learning report, submitted by Camara Education to Avanti.

Phase	Details
Set-up	<ul style="list-style-type: none"> • Key learning outcomes were informed by the Camara Education Needs Report (January 2017). • Course was designed by an e-learning specialist in collaboration with the Camara Education Global Education Manager. • Camara Learning Academy was translated to Tanzanian Kiswahili. • Micro-course and resources were translated to Tanzanian Kiswahili. • Mobile payment and coupon codes were installed to allow for fee payments from teachers.
Launch	<ul style="list-style-type: none"> • Camara Learning Academy orientation session was held during the second and third Educational Support Visits. • The micro-course pilot titled 'Creating Presentations using LibreOffice Impress – for Teachers' was launched 18 June 2017. • A marketing flyer was shared with iKnowledge teachers through e-mail and WhatsApp.
Results	<ul style="list-style-type: none"> • 208 iKnowledge primary school teachers purchased and enrolled in the micro-course (the target was 100 teachers). • 21% completion rate, with 95% pass rate of those who completed the course. • 91% of teachers showed learning gains. • 100% of teachers agreed the micro-course was relevant. • 100% of teachers found the time on task adequate. • 99% of teachers believed the course was good or very good value for money. • 100% of teachers believed that the course structure and training approach was appropriate. • 100% of teachers believed that the micro-course resources were appropriate.
Outcomes	<ul style="list-style-type: none"> • Positive attitude shown by teachers towards micro-courses and online teacher training. • Evidence of improved skills, knowledge and attitude for teachers who completed the course. • Evidence of positive impact of the micro-course for the integration of ICT in teaching and learning for participating teachers.

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