WATU MOJA LEE ACADEMY - SMART LEARNING

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final report

Executive summary

With **learning for all** at the core of the technological education program wiLearn has been privileged to open up transformative learning opportunities to more than 320 children at Watu Moja Lee Academy situated in Kibera, the largest slum in Kenya. In just one year over 25 primary school teachers, facilitators and IT Interns were trained to implement and multiply new learning strategies they acquired during our two workshops. This was the first wiLearn "urban poor" projects where mobile learning technology has been introduced to a private school. The setup with 70 tablets and 2 mobile learning labs at the private school happened to be in a very low resourced environment. This made the Smart Learning pilot an ideal high impact incubator giving wiLearn, donors and stakeholders ample lessons to learn from for future smart learning projects in underserved communities at a larger scale.

In November 2018 the Kickoff gathering at Watu Moja Lee Academy took place in the courtyard of the school. With high expectations and a warm welcome they received Roland, from wiLearn Switzerland and his mobile tech equipment. A joyful beginning turned out to become a successful trial with **over 60'000 connections** to the wiFi library in 14 months of recorded activities. It is the free access of digital media from a mobile learning lab in a slum area that has been the most prominent achievement. Teachers now enjoy access to visual and interactive education material. They have acquired new skills to manage wi-Fi devices, search for digital media relevant for their subject and organise classroom presentations with their own foto or video content. Pupils have discovered new language learning tools and enjoy the interactive lessons with simple information technology that proofed to be well adapted to the situation. The learning lab operation was reliable with minor weaknesses of certain components that were addressed in good time. Despite irregular power from the city we had an interruption free workshop thanks to the backup batteries in the wiLLi kit.

Learning progress at the first workshop varied because only a few teachers were familiar with the use of a smartphone. For those without previous web experience the learning curve was steep. Because of a large numbers of learning modules covering multiple sectors it has been challenging for newcomers to find the information relevant to their needs. To establish a library that is aligned with the Kenyan primary school curriculum is work in progress that can proof invaluable to achieve countrywide adoption of the system. The first 6 month the progress of classroom integration was minimal due to the pending tablet delivery. The highest learning output could be achieved when teachers received technical support from young interns or mentors. The interns enrolled in a Government lead program under the supervision of Virtual Learning Solutions made a great contribution to the actual smart learning classroom application.

The aspiration of linking the 1 year pilot project to a local production unit for software and hardware proofed to be too ambitious. Producing curriculum aligned education material and getting it approved by the Kenya Government is an ongoing process best embedded in a long term project with sufficient funding.

Our final evaluation revealed positive change in basic digital skills development by the majority of participants. While mobile learning labs have become firmly embedded in the school routine the pupils extracurricular access to digital learning tools remained lower then expected. However the regular use of mobile learning labs for community engagement was a highlight. So could Nairobi's street children benefit from the portable and self-powering learning labs. They have become very excited to play educational games on tablets. Despite challenging security issues WMLA staff took good care of the equipment and had no losses.

Looking back we have taken the right measures to give teacher and pupils in Kibera the opportunity to adopt future looking learning principles. We are confident that the mobile learning structures put in place at Watu Moja Lee contain great potential to expand and enhance quality education in Kibera. With this project the children are better equipped to follow their Motto "Strive to Excel".

Table of contents

1   Background

1.1   A Private School in the largest Slum in Africa

Watu Moja Lee Academy – Life changing opportunities

The primary school at the heart of the Kibera slum has been built on a vision to make life better for children growing up in the harsh environment of the Kibera slum. Yakub Jaffar is the founder and constructor of the school with now 9 classrooms. With a difficult start in life Yakub had become a feared gang leader in Kibera the Nairobi slum with over 2.5 Mio inhabitants. But at a pivotal point in his life Yakub realised that the lack of a solid education has had destructive impact on his lifestyle. From then on he changed direction to become a positive Change Maker serving his Kibera community in a constructive way. With great vigour and dedication he started to build Watu Moja Lee Academy offering basic education to out of school kids. Yakub has always been a mobiliser in Kibera. This helped him to collect construction material, find a plot and build a school on top of some houses along Sheikh Mahmoud Road close to the Daranjani Junction in Nairobi. Today's school infrastructure blends into the corrugated iron shacks of the slums but stands out as a colourful beacon of hope filled with children's laughter and rehearsing lessons coming from the rooftop. The school has become the meeting point for children attending Pre-Primary at the tender age of 4 and up to Grade 6 pupils. All are from under-resourced households where parents can barely afford a school uniform. The vision has been clear – keeping Kibera's children out of harm's way and empowering them with an affordable good quality education for increased opportunities to prosper in life. Despite or because of being in the midst of need, the school Motto "Strive to Excel" underpins that focus.

1.2   wiLearn 4 Life Smart Learning

When Yakub saw the wiLearn 4 life digital learning solution demonstrated he immediately caught on to the concept and mobilised his support team to draft a project proposal. He quickly realised that digital skills early in school are a key success factor for any Kenyan student leaving school. To bring the future of learning to the slum children in Nairobi was an enticing proposition with some inherent challenges embedded. The school infrastructure was extremely limiting, electricity was irregular at best, internet too costly and storage rooms without security. WiLearn addressed critical items early on in the project and supported the school with infrastructure upgrades for a trouble free operation. The low tech mobile learning labs from wiLearn designed for under resourced communities seemed to fit the task in the harsh slum environment very well as they offered a lot of flexibility thanks to power autonomy, reliability and simplicity.

1.3   Sponsorship and partnership

Thanks to the vision and partnership of the PD Foundation the newly founded Swiss charity wiLearn 4 Life gained accreditation from Charities Aid Foundation UK in preparation to start the first wiLearn pilot project in East Africa. Without delay the one year project was sponsored, the basic learning kit was built and the introductory workshop launched by November 2018.
The short project aimed to establish regular access to a new set of quality education resources relevant to Kenyans. Teachers, pupils, street children and community members shall receive new opportunities to learn with smart digital tools that are increasingly relevant or required in a global information society. The time scale was very ambitious under perfect circumstances. It was also clear from the outset that the project would focus on the number of recorded access visits and evaluate the suitability and availability of software relevant to primary schools curriculums in Kenya.

2   Project objectives

2.1   The Smart Learning Goal

The Smart Learning concept implemented at Watu Moja Lee Academy was targeting all teachers and pupils as well as a hundreds of community learners. They were to become accustomed to freely access relevant digital learning materials to increase their knowledge, enhance their learning ability hence improve their life skills as well as their academic levels.

2.2   Objective 1 – Establish access to two digital learning environments

From the onset of the first visit to the school on the occasion of a week long workshop it was discussed that some infrastructure needed urgent upgrading due to safety hazards from the electrical system. The management team refurbished not only the electrics but also increased the number of classrooms and covered the walls with plywood. Some of the cost could be absorbed by the project budget, to allow safe electrical sockets and projector screens in all classrooms. The Smart Learning project was successfully set up with 2 comprehensive facilitator kits called wiLLi – wireless Learning Lab interactive. This case is fully portable containing:
- 1 wiFi server (wiLearnCAP) ,
- 1 wiFi Android Projector, 1 Keyboard,
- 1 Soundbox, 1 Tablet, 1 Mouse
- Various accessories as well as a full battery backup.
- One wiLLi case equipped with a solar power system and the respective potable solar panel

Tablet PC's: the full complement of 60 learner tablets and 10 teacher tablets was established around April 2019. The import of the goods from China to Kenya was delicate and turned out to be more time consuming and costlier than anticipated. The Kenya Bureau of Standards did impose a fine on the tablet import as they did not accept the European Certificate of Conformity. wiLearn fortunately had an agreement with Daniel Wanderi from El Danny ICT who volunteered to manage the ground handling facing the local import challenges and delivering all the goods to Watu Moja Lee Academy.
We finally had 7 sturdy pilot cases for storage and charging of 10 tablets and designed to service one class each. The first batch of power units was inadequate so wiLearn had to replace them.

Headsets: wiLearn also ordered 70 headsets and 36 audio splitters to enable individual classroom learning activities. Headset users can then enter their very personal learning bubble and with the audio splitters the learning experience is shared with a peer. This reduces the number of tablets in class and increases the learning effects of the peers.

Maintenance of equipment: Although the WMLA supervisor of the equipment changed 3 times during the one year project period a careful handling of the equipment could be observed. The maintenance instruction was amplified by repetition and among all workshop participants. Yakub did make it his personal mission to assure that the digital assets are kept safe and in proper condition.

2.3   Objective 2 – Teachers trained to use digital technology in class

Two official teacher training workshops at the school premises were organised and led by Roland Diethelm from wiLearn 4 Life. The second workshop was augmented with Kenyan eLearning specialists. Every chance was taken by wiLearn to mentor, fine tune and exchange with WMLA staff via WhatsApp and on Site, far beyond the workshop schedule to support the somewhat disruptive new learning regime.

The projection and presentation skills training for teachers and facilitators happen to be an integral part of an action driven workshop schedule. Each and every participant received several chances to prepare some subject related digital media content and present it to the participants or to a group of children.

2.4   Objective 3 – Pupils enjoy weekly access to server content in class

This output has not been observed and posed one of the major challenges in this pilot project. However, statistically we registered viewing of over 85'000 pages which is significant and over half of then could be attributed to children's access while at school. Since wiLearn was not part of the daily action at the school, we relied on reports from teaching staff and later on from interns who were engaged late in the process after the wiLearn visit in August 2019.

2.5   Objective 4 – Community learners enjoy weekly access to learning content

This objective translated into action – at the beginning the prime focus was on street children. Several meetings were organised on Saturdays.

Another activity arose from interested institutions who wanted a demonstration of learning environment. As the team constellation was continuously changing so was the driving force behind the volunteer community outreach.

The output target groups such as parents-teachers association were not addressed. The community impact is insignificant and not measurable. Although Watu Moja Lee Academy has been proud to be known in Kibera for their mobile learning skills and digital library capacity.

The outcome of engaging in inter-generational learning, collaboration and sharing however was a dream from Roland at wiLearn at the time of proposal writing. Unfortunately it has not transpired to the management team of WMLA.

2.6   Objective 5 – Technical Supervisor training

Although the Technical Supervisor training of 3 key staff members did take place, the setback was unavoidable due to staff changes without prior notice. The staff changes were provoked and managed by the project leadership team which in itself changed its composition twice. Yakub Jaffar as the owner and designated project team leader remained the only constant besides the school principle Maureen Agisa.

Output 5.2 Building local capacity to produce learning labs. This quickly became an unrealistic output target after all the WMLA staff changes that took place. wiLearn could not identify a reliable source with such an entrepreneurial capacity to produce a local learning lab. Logistics are not straight forward, investment funds were not available and skilled manpower could not be attached to the project to extend the wiLearn Smart Learning Program from a technical standpoint.

2.7   Objective 6 – Teachers trained to develop local educational content

Due to the nature of the teachers employment condition there was little enthusiasm nor the necessary skills to develop learning content themselves. As they struggle for their daily food only the most advanced teachers could see an incentive to dig deeper and acquire some digital management skills. The most skilled staff member s left the school midterm as they received a better paid opportunity to work at a Government held school. Private schools with lowest and irregular salary payments remain at the bottom of the pyramid. Unfortunately the lack of resources has a direct effect on the quality of teaching staff, their motivation and their perspectives. The remaining

teachers harboured by private schools are often the least educated. Mobile learning could lift them out of such a state, but with too many uncertainties in life the mind is often not receptive for an increased effort.

3 Methodology

3.1 Work Agreement

Project Management Team

Based on the approved pilot project **Watu Moja Lee Academy - Smart Learning** the Kenyan management team signed a work agreement provided and countersigned by the project coordinator from wiLearn 4 Life. The agreement intended to establish the joint vision and mission, roles and responsibilities, equipment ownership according the hardware list attached and the code of conduct relating to acceptable software content, supervision and child protection.

This agreement was introduced by the project coordinator Roland Diethelm to the WMLA management team comprising of Yakub Jaffar, Guguni Nyabade and Maxwell Musungu. The proposed agreement sparked some dissonance as the Kenyan team requested to change the budget lines of the pilot project. After some negotiation and adaptation including small budget allocation changes all parties signed the work *Agreement – ICT Digital Skills Development (Annex 1)*

As the school struggled to receive regular tuition fees from parents this had a destabilising factor on the entire school. The project management team constellation changed half way into the project and so did the school administrator and key staff members. wiLearn had to train 3 different supervisors as caretakers of the wiLearn equipment. Primary School teachers who qualified for a Government School left Watu Moja Lee in the middle of a term without notification of the project coordinator. As Watu Moja Lee struggled to pay their employees on time wiLearn emphasised not to subsidise any school operating cost with project funds with the exception of their allocated project management and admin fees to avoid financial dependencies beyond the project timeline.

3.2 Workshops and Mentoring to transform teaching and learning

The project was built upon an experimental design with two distinct workshops. This included **4 scheduled visits** by the wiLearn project coordinator from Switzerland to transfer digital media knowledge, skills and learning strategies form several experts to the key stakeholder of the private primary school.

Workshop 1 – Smart Learning Introduction

This 5 day workshop was aimed at primary school teachers knowledge, understanding and handling of the mobile learning labs with wiFi server technology, mobile access through Smart Phones and tablet PC's as well as handling presentation equipment for classroom facilitation of educational media. The workshop was primarily held by Roland from wiLearn. The learning curve of the attendees was very steep for some as they lacked previous smart phone or computer experience. The great disparity of digital skills among participants was challenging during the interactive training. An additional day was added to the program to wrap up loose ends and get everyone at par. However, the school staff did leave for the long Christmas break right after the workshop. This prevented them to practice and deepen the newly learnt practices with eLearning hardware and software. Unfortunately the equipment remained idle for the most part of December 18 and January 2019 when school picked up again.

Mentoring Visit 1

Towards the end of January 2019 the wiLearn project coordinator visited the Kibera school to support the restart and introduction of the smart learning strategy in a classroom setup. Noticing the need for a regular teachers support wiLearn proposed to organise a local eLearning support specialist for regular onsite mentoring visits. The management team declined the proposal giving re-assurance that they will organize their own teachers eLearning support.

However, a local collaboration or exchange with eLearning schools was not observed nor reported to wiLearn. This key element to translate the teachers newly acquired mobile learning knowledge into applicable classroom lessons and organising children's participation in the exercise was missing until August 2019 after the Smart Teaching Workshop was completed.

Workshop 2 - Smart Teaching - Advanced

Competency Based Curriculum - in the focus of the advanced training week stood the question, how to apply digital media skills and teach with technical education material and tools aligning them with the new national curriculum. wiLearn addressed the incumbent need to comply with the Competency Based Curriculum introduced by the Kenya Government and announce in January 2019. wilearn took reference material related to CBC and integrated sample Learning modules in Kolibri, a learning management installed on the offline server.

Curriculum alignment of eLearning content - the advanced workshop emphasised local and national content creation with mobile devices. It is intended for advanced users who will develop lesson plans and integrate new content in the existing content libraries.

The question we asked was what kind of Government approved (KICD - Kenya Institute of Curriculum Development) eLearning content is already available on the Kenyan market and is it adaptable for offline use? wiLearn organised two **samples modules of MsingiPACK (Kenya)** und **Ubongo Kids (Tanzania)** which were installed on the server as a proof of concept. The companies offering a special package deals that come with a perpetual licence per tablet PC. This works against the wiLearn principle of free and unrestricted access to open source education software. However, if a school or

institution is able to buy such licences at a rebate price they will get the wiLearn technical support to integrate the content on the wiFi server. WMLA has used the sample lessons successfully but have not taken the decision to buy the full suite for the Primary school.

Additional funds would be needed to introduce KICD approved learning modules like MsingiPAck which is a commercial software with a licence.

Local mentoring with Kenya Youth Empowerment ICT - Interns

In August 2019 WMLA agreed to external support from Virtual Learning Solutions (VLS) With the additional mentoring support teachers experienced the real potential of the content and learnt how to run the digital lessons more frequently. The goal was a full integration of technology into their normal teaching schedule.

VLS organised the teacher support through assignment of 3 interns from the VLS implementation of the Kenya Youth and empowerment project. Interns were trained by wiLearn in a "crash course" for proper handling, servicing and securing of the ICT equipment in and out of classrooms. The interns proactive engagement together with monitoring of the classroom applications has yielded very positive results in terms of frequency and consistent application of digital learning access to children. Interns' teacher support had made digital classes more organised and profitable for the children during the month of September and clearly visible on the statistical data charts. Pupils enjoyed the learning with the tablets and quickly adapted to operate the tablets with minimum help.

Evaluation and Handover visit

The last visit of the pilot project was dedicated to evidence of learning and project handover. wiLearn together with VLS collected as much evidence from pupils and stakeholders as was available. Through an evaluation exercise we observed the learning progress and digital skills development compared to the time before the project start.

3.3 Monitoring

Access Data

Our prime objective was to track user access to the server. The built in analysis tool is called AWstats. Its an open source website monitoring tool that does not incur any cost and runs in the background. The following evidence can be observed from the sample datalogfile below.

1) Annual overview / individual months access performance. This keeps us informed about the peak usage and Nr. of individual page access. Below sample shows overall year 2019 of one server unit. The full overview over 3 calendar years and 2 servers is given in the Annex 4- Access Statistics AWstats.

2) From Jan till Jul 2019 the server access was only used by a few teachers just a few days per month. The frequency increased in April when the pupils tablets where delivered to the project. Around August and September the peak was registered. This coincided with the wiLearn Advanced Workshop and the beginning of Interns from VLS gave giving technical support during class.

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2019	0	0	0	0	0
Feb 2019	0	0	0	0	0
Mar 2019	1	1	42	1,308	72.50 MB
Apr 2019	4	11	436	22,036	3.82 GB
May 2019	29	67	2,248	30,660	4.82 GB
Jun 2019	33	67	1,224	19,008	3.71 GB
Jul 2019	150	718	9,688	26,652	6.87 GB
Aug 2019	1	1	38	530	41.99 MB
Sep 2019	42	278	9,736	40,968	16.81 GB
Oct 2019	35	129	3,842	15,514	6.02 GB
Nov 2019	0	0	0	0	0
Dec 2019	0	0	0	0	0
Total	295	1,272	27,254	156,676	42.17 GB

3) In September 2019 we reached the target level of education with integrated ICT tools. Another good sign is that the peak is registered on both servers as depicted in Annex 4. This is where the full potential of the offline digital libraries is becoming evident. With ample support and well designed learning software a new level of interactive learning could take place in schools with very basic teaching capacity.

4) Also noticeable is that when the school closed for Christmas break by November - December 2019 the server was not used at all. It was the period when Watu Moja Lee Academy experienced a bit of a melt down as teachers were leaving.

5) We then took a closer look at the high number of unique visitors in July. We noted the highest data use of 6.87 GB and looked at the daily distribution of unique visitors. The highest numbers occurred during school days suggesting the first trial with all 80 tablets and iPad's available at the school. Interesting are the regular server operation during weekends. This is clear evidence confirming the reported street children and community outreach wiLearn received via Whatsapp. We could ascertain that the education library was used at school as well as by the wider learning community.
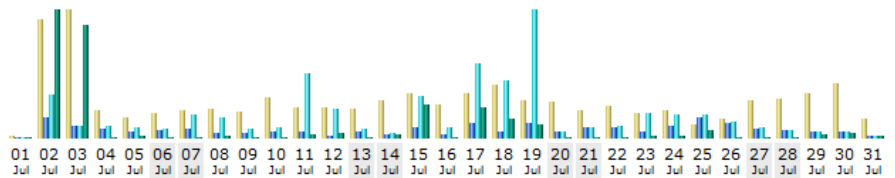
Day	Number of visits	Pages	Hits	Bandwidth
01 Jul 2019	1	2	4	37.16 KB
02 Jul 2019	73	778	1,578	2.29 GB
03 Jul 2019	79	446	456	2.03 GB
04 Jul 2019	17	318	432	23.24 MB
05 Jul 2019	13	224	396	28.20 MB
06 Jul 2019	15	288	360	4.22 MB
07 Jul 2019	17	364	870	18.61 MB
08 Jul 2019	18	192	784	41.75 MB
09 Jul 2019	16	180	320	3.83 MB
10 Jul 2019	25	262	402	21.96 MB
11 Jul 2019	19	212	2,402	68.95 MB
12 Jul 2019	19	82	1,086	94.55 MB
13 Jul 2019	18	252	360	25.07 MB
14 Jul 2019	23	156	192	54.57 MB
15 Jul 2019	28	386	1,542	624.08 MB
16 Jul 2019	21	106	392	11.23 MB
17 Jul 2019	28	550	2,742	565.78 MB
18 Jul 2019	33	228	2,124	355.53 MB
19 Jul 2019	23	534	4,720	242.57 MB
20 Jul 2019	22	224	226	2.03 MB
21 Jul 2019	17	368	382	3.68 MB
22 Jul 2019	20	384	424	3.53 MB
23 Jul 2019	15	230	906	38.76 MB
24 Jul 2019	17	452	854	27.35 MB
25 Jul 2019	8	774	860	151.33 MB
26 Jul 2019	12	536	618	8.74 MB
27 Jul 2019	23	338	374	2.83 MB
28 Jul 2019	24	264	280	6.69 MB
29 Jul 2019	28	238	238	53.63 MB
30 Jul 2019	34	222	226	89.15 MB
31 Jul 2019	12	98	102	38.80 MB
Average	23	312	859	226.90 MB
Total	718	9,688	26,652	6.87 GB

6) Overall the server statistics on both servers did reveal several access challenges. Especially spring 2019 was a low usage because tablet import was delaying the deployment of 60 pupils tablets. Only teachers had gadgets which reduced the use of the server dramatically. Nevertheless, we have received fotos where the wiFi projector was used during class. With a single unique user on can therefore teach up to 45 pupils in a classroom using digital media from their laptops or directly from the wiLearnCAP. During the first few months only a few teachers seemed fit enough to use the server access. As supervisors and most skilled teachers who were trained at the workshop left their job at WMLA it made a continuous progress in digital tools integration extremely difficult.

Remote monitoring was challenging as regular data transmission was not taking place. Two reasons for the distorted evidence of digital learning.

Firstly during the initial phase of the pilot project teachers and pupils were familiarizing themselves using just the tablets with the installed Apps. Access and learning behaviour can not be tracked, when pupils use the tablet content without connecting to the wiLEarnCAP.
Secondly individual tracking of pupils learning behaviour at school and for extracurricular digital learning can only be tracked if individual logins have been established by the supervisors. Because teachers at WMLA did not use the individual registration and sign in procedures for each of their learners as instructed by wiLearn neither Khan Academy nor Kolibri learning modules had learning outcome data stored.

General Observations - Learning behaviour

In August 2020 in agreement with the project management team wiLearn and VLS introduced the Support and Monitoring team with the 3 interns Abbas, Grace and Ebby. Their regular input made a significant contribution to get better organised with technical equipment at the school. Scheduled lesson plans for practicing and learning with tablets yielded better results in class. This is supported by statistical evidence looked at before.

Interns Observations (Annex 3 VLS Reports)

- an increase in teachers confidence to apply digital information in class
- a lot of room for teachers to adopt and improve in class
- their personal opportunity to engage and observe at WMLA for a short 2 months was seen as a very beneficial experience for their professional future
- highly motivated children showed high level of concentration and focus on the learning subject. We noted that the two learning modules created MsingiPACK and Ubongo kids were both compiled and integrated by wiLearn were among the most used platforms.

wiLearn Monitoring (Annex 4, Access Statistics AWstats)

- Whatsapp – remote monitoring. This proofed to be functioning but was limited to the select information freely shared by the Kenyan team. Fotos came frequently, no text. Having VLS connected to the school management we gained an additional source of information in terms of observations from an outside perspective which made the project progress more transparent.
- AWstats - the collection of statistical evidence via foto-protocol proofed ineffective as data was received fragmented. Data depicted on fotos can not be processed for analysis without manually copying all datasets. By the End of 2019 wiLearn had developed a tool to retrieve the data files and transfer them to a database file on a PC for proper analysis.
- wilearnCAP statistics – a technical problem with one server which was intermittently shutting off needed a fresh software setup and a new hard disk. This unfortunately also affected the statistical files on that server but we are still not sure to what degree.
- The pilot project design did not include an empirical study on learning outcomes because the exposure time would be too short and the funds would be significantly out of proportion. Wilearn recommends a minimum of 3 year project with more than one school to collect empirical data on learning outcome.

Statistical Evidence (see Annex 4, Access Statistics AWstats)

Software Programs most frequently used

- Prep-Primary School – Ubongo Kids - Alphabet and Numbers in Swahili and English
- English language – Fantastic Phonics
- Literacy – reading lessons - African Story Books, Learning Toolkit,
- Numeracy – Khan Academy videos on Mathematics
- Science – Khan Academy (KAlite)

4 Results – Challenges - Learnings

4.1 Technical Equipment

2 Server Based Digital Learning Environments

The wiLLi mobile case concept as an airline approved carry on hand luggage has proven to be very suitable for low resourced areas because it can adapt to the minimalistic infrastructures. Keeping the battery powered wiLearnCAP in a secure place it can run all day long making the wireless learning labs very versatile. For daily school operations the server can be mounted somewhere high up for best coverage and to get them out of reach for children. Positioning the wiFi at a strategic location, the school can establish connectivity for about 4 classrooms with one wiFi unit. A second unit was installed about 50m apart to cover all 9 classrooms at the school with enough signal strength. Alternatively a LAN cable and a router would also suffice to extend the wiFi signal with the advantage of storing local data just on one server database. Teachers and users will note that local data uploaded and stored on one server library is not automatically available on the second unit.

To use two wiLearnCAP's requires more coordination by the school but gives more redundancy and flexibility.

The wiLearnCAP servers are unmounted daily by the last staff member leaving the school premises, stored back in the wiLLi case and secured at a place where charging the case is possible. This warrants that the backup battery inside the case is also available upon loss of grid power ensuring up to 5hrs of operations. Watu Moja Lee Academy has now installed metal doors and burglar-bars for improved security so that the equipment can stay remain overnight at the school.

CHALLENGES

- the staff experienced some wiFi access and upload problems with one wiLearnCAP as reported by VLS. wiLearn did perform a fresh setup with the server. A hard disk change could not be avoided which resulted in some data losses.
- **Software** – **Passwords** The Kolibri learning management software on one server could not be accessed due to loss of admin password. Ultimately the admin password was not retrievable which led to a complete change of hard disk with a fresh software setup.
- **wiView Smart Projector** The charging 15VDC charging unit inside wiLLi case supplying power for the projector has failed on more than one occasion across the wiLearn production line. wiLearn therefore has changed the model and will replace failed charger as a warranty item. It seems like the first model installed does not take the heat in hot climate over a longer period thus develops failures under hot conditions. The projector itself has proven very reliable despite a hot surface during prolonged operations.
- **Tablet Charging Case - Power Units** power units with 90W turned out to be too weak. WiLearn replaced them with 180W units and had no reported problems with tablet charging since.
- **Learner Tablets** The Alldocube Power M3 is a 10in Android tablet with 4G LTE SIM slot. It is a very good learner tablet, sturdy, with a responsive screen and excellent battery life – under normal use the tablet works all day. Unfortunately the product is no longer available in the market. We are looking for comparable modules in the future projects.

- **Teacher Tablets** The experience with teacher tablets was rather negative. The modern USB-C charging plug did create problem with the charging as teachers tried to use USB Mini cables that did not fit the tablet provided. 5 units were returned with broken charging plugs and were not bootable anymore – they were replaced with units from wiLearn stock even though they did work fine upon delivery. This was counted a loss for wiLearn. There was no specific instruction given to teachers upon delivery of their tablet PC because wiLearn delegated the task to a local ICT partner (Daniel Wanderi) during a time when wiLearn was not in the country (May 2019) In general teachers preferred to take the learner tablets because these gadgets are lighter and contain a SIM card slot so teachers could use it as a phone, internet and for social media as well.

LEARNINGS

- Headsets for learners and audio splitters must be planned and budgeted for. They can double the learning effect while offering reduced numbers of equipment and cost
- wiLearn needs at least one spare HDD and a RACHEL reboot USB available at all workshops.
- Super users need 2 hour training and a screwdriver PH1 for field replacement of a hard disk
- Administration - all logins must have at least one standard admin password from wiLearn
- for multiple classroom coverage assure wiFi servers are properly mounted or wLAN routers are installed
- change wiLearn production for projector power to the 12V-15V 3A DC converter model
- Pupils tablet criteria – avoid SIM card slots if possible to reduce private mobile use outside school. The resale value of a tablet is considerably higher with SIM capability thus theft and fraud is more likely to happen. Security is always a concern in this slum neighbourhood.
- Use only one type of tablets –
- Consider two teachers laptops for the superuser for the management and production of new school library documents. Not all teacher will have the skill and the desire to produce data for the library
- Use 180W 19V Laptop power units in combination with the 120W Solar panel for tablet case charging

4.2   Teaching and Learning software

Teachers prefer a systems with a clear outline of the lesson. Ideally the receive a fully prepared learning module for their grade with Lesson Plans included that mirror the national curriculum requirements. This is a major task and would need to be a separate project with adequate funding for 3 years.

For a remote operation like wiLearn the full development of locally relevant content is not feasible due to language and cultural barriers. Therefore wiLearn is partnering with iLab Africa, an incubator for ICT start-ups at the Strathmore University in Nairobi. That is where wiLearn has been granted office space and keeps stock items. We can have network meetings at the University compound which helps us to connect with the major software developers in East Africa.

Education material produced by commercial companies (i.e. MsingiPACK) are mostly for online customers, come with a licence fee and are less suitable for the open source market. A better chance to open source and KICD approved learning content we see in collaboration with Universities and public offices. There is a chance to gain access to the production of free of charge education content developed by student programs.

CHALLENGES

- The tablet content differed on the tablets. This is not suitable for classroom use. All tablets must be set with standard apps.
- The learning management suite seem to be to complicated to get everyone registered. In addition the familiar Kenyan lesson objectives are not readily available inside these learning suites. Kolibri however is developing content modules with Kenya Institute of Curriculum Development (KICD) approval.
- Teaching in class has been an additional burden at the beginning and until the teacher support organised the handling of the technical equipment. Through the interns support some teachers have discovered the benefits of using multimedia learning in class and enjoy the sessions.
- Some teachers mentioned frustration when they experienced frequent server crashes. For fault analysis it is critical that timely reporting is done. Only when parameter of such occurrences are known can repair or improvement measures be undertaken.
- In the pilot project we had some serious communication issues to deal with as the person of the technical supervisor changed 3 times during the 14 months period. Needless to say that not all 3 persons were properly trained or motivated to do the job as initially agreed.

LEARNINGS

- The supervisor of the tablets should be trained to take care of the software cleanup on a weekly basis. Apps that are missing can be re-installed from the wiLearnCAP.
- Some teacher felt that more training exercises with the equipment would be needed. VLS and wiLearn could not identify which teacher raised the issue, since we had several new teachers that participated only in one workshop or were not on staff until after both workshops passed. A regular teacher training session twice a month was suggested by wiLearn in the de-briefing of the workshops. A Scheduled access time for learners with support from workshop leader present will enhance exposure
- One teacher feedback considered the use of technology a waste of time, as learning has not increased
- Establish a fault report register

4.3   Final Evaluation – Handover

In January 2020 the pilot project came to an end with the official handover of equipment and responsibilities to further develop the smart learning program. Before that a final evaluation was prepared. Pupils and teachers had to fulfil a similar task to a different standard.

We tested basic digital skills according SDG indicator standards.

Goal: The learner demonstrates his competency to read, understand, write, calculate and produce digital media related to his immediate needs for traveling.

- Can the learner navigate to find the Sample document on a tablet PC?
- Can he read instructions and understand what to do?
- Can he make a foto with the tablet and find it again?
- Can he produce his own document on a tablet with his foto, name, age, address, city and write some notes.
- Can a teacher store the document?
- Can a teacher load the document to the server library?
- Each learner assessed needs a functional tablet.

Completion standard and grading: The digital skills level reaches 100% when the total number of learners have a fully completed the personal profile document published in the Featured Content section of the server.

We tested 3 groups – namely Grade 3 / Grade 6 and the teachers groups

Assessment Group	Total #	Local Cont Hub	Read and act	Foto 1)	Doc 2)	Name 3)	Insert 4)	City 5)	DOB 6)	Age 6)	Txt 7)	Doc Save 8)	Upload 9)	Publ 10)
Grade 3 f	8	0	8	8	0	6	8	3	0	4	3	0	0	0
Grade 3 m	5	0	5	5	0	4	5	2	1	2	1	0	0	0
Grade 6 f	4	0	3	3	2	3	2	3	3	3	3	0	0	0
Grade 6 m	9	0	9	9	8	9	6	9	9	8	7	0	0	0
Teacher f	5	1	5	5	4	5	4	5	5	5	4	2	1	1
Teacher m	4	2	4	4	3	4	3	4	4	4	3	3	2	1
Pupils Total	26	0	25	25	10	22	21	17	13	17	14	0	0	0
Teachers	9	3	9	9	7	9	7	9	9	9	7	5	3	2
School Total	35	3	34	34	17	31	28	26	22	26	21	5	3	2
%		9%	97%	97%	49%	89%	80%	74%	63%	74%	60%	14%	9%	6%

When observing the pupils we could find one girl Grade 6 that needed special care – she was not able to follow in Grade 6 and unable to learn without special assistance. Among teachers we had 2 to 3 struggling with the task while most could handle the document production. The uploading to the server was a task that only a few were mastering. Overall the digital skills and handling progress has been good because learners came to the first training workshop without any skills.

Teachers statements: In a written de-briefing with the teachers and management, the primary school teachers expressed their views of the smart learning project in form of an adjusted SWOT Analysis (Strength, Weaknesses, Opportunities, Threats). They concluded on the wiLearn project:

- It's a great opportunity for teachers and pupils to work with tablets in school
- the system promotes more reading with interesting stories form the library
- well illustrated diagrams helped to greatly improve pupils understanding
- pupils learning has improved, especially the language development, also for pre-schoolers
- pupils learnt a lot of new things such as playing educational games
- pupils are able to learn with tablets on their own
- learning has been made interesting
- time management to access the content while in class has been problematic
- employ a digital teacher during holidays to continue working with pupils using tablets
- the large education library broadens the pupils mind making them creative and innovative
- Increase the server use for the neighbourhood community and provide funds for community learning
- the project has made the children more active in class
- increase the digital lessons in class to at least twice a day per pupil to give enough time and exposure

Finally on the 29. Jan 2020 the first primary school in Kibera was certified in the presence of the school founder and project manager Yakub Jaffar, his wife and his long term supporter Susi Gubler from Switzerland together with all the teachers. Watu Moja Lee Academy has been certified by wiLearn 4 Life as a Smart Learning Community. As we were looking at the access data I was very pleased to see that the school did improve the use of equipment in February and March 2020, surely a good sign that the program continues to grow. Watu Moja Lee Academy will continue to be a role model for digital learning for schools in their neighbourhood and beyond.

4.4   Scaling Smart Learning in Kenya

The project team was invited to attend the January 2019 Co-Willing Development Conference in Mombasa. Together with the WMLA team wiLearn presented the innovative smart learning approach to key decision makers from Governments, private sector and NGO's at the Conference. The intention was to increase interest for scaling the smart learning approach in East Africa.

Officials and Decision makers expressed great interest in the wiLearn offline solutions. One interesting contact arose from this conference in Mombasa. Mary Ekay, a County Executive Committee Member of Samburu expressed great interest to start a project in her county. She extended an open invitation to wiLearn to plan a project for the Baragoi and Suguta Valley communities. (see Annex 5 Foto Story - Suguta Valley assessment field trip)

This was a very timely attempt to raise the voice for vulnerable learning communities who are asked to actively transition to the new Competency Based Curriculum (CBC) officially launched by the Kenya Government in 2019. The new curriculum requires a strong emphasis on digital media competence as one of the three main pillars of change in the education sector. While Government schools receive the required ICT resources and infrastructure the private schools most often can not afford to engage. This Government initiated education transformation is well intended but causes an even greater inequality for under resourced schools.

A further highlight expressed by Anne Gatende, Associate Director of VLS was the school visit by the a team from the Ministry of Education to observe digital lessons. The Department for Nomadic Education NACONEK members really enjoyed the classes with African Story Book and MsingiPACK. This sparked off new ideas and plans with the Internet Society to bring more wiLLi kits to schools among their constituencies. Educators are enticed by the comprehensive concept wiLearn offers but the lack of funding most often seems the major hurdle to high to overcome.

Flexible and affordable solution made in Kenya are required to achieve a more equal access to quality education. The more open source curricular software is made accessible to the over 3000 private schools in the country the better chances are that children learn for life beyond the school.

CHALLENGES

- The 12 month duration of the pilot project was certainly the most limiting factor for a well prepared follow up project. Some correcting measure took effect at a late stage in the project while short school terms are also limiting the work done on the ground
- The team behind a scaling project needs different skills set from the small pilot project. More organisational structure and local accountability need to be in place to succeed on a larger scale.
- Scientific evidence data to support a large scale approach could not be produced in the short period as it would be disproportionate cost factor in the budget.
- A single school pilot project does not have a comparison nor can it profit from a peer support

LEARNINGS

- The project participation at the development conference did generate alternatives for project scaling and development. The exposure to decision makers increased the opportunities for a scaling project. Key decision makers with funding authority however were not at the Co-Willing conference – so another network and event is to be considered
- Strategic participation in network meetings must be planned and budgeted for
- Pilot projects should include at least two separate learning communities to create comparison data and initiate a collaborative learning process
- Include a research institution with separate funding in the pilot project for independent observations and evidence data creation. It may require to extend the project duration.

- To monitor individual learning progress it is important that the school management registers and administrates enrolment of all classes on the learning management systems of Khan Academy, Moodle or Kolibri.
- Mentoring: Schools planning to transition to Smart Learning need regular mentoring and teachers support for at least one term to gain confidence with technology and experience the added value of child cantered learning methods
- wiLearn shall link project management fees directly to the field data reporting schedule to ensure timely data for project steering and decision making
- Tablet import need to be handled by a local partner in Kenya where the project can buy from. The quality of tablets is essential for a smooth transition
- Establish a weekly schedule in the project outline for guided learning sessions
- Mobile learning with free multimedia library content is the most cost effective way to overcome resource and infrastructure problems in impoverished private schools. Open Education Resources (OER) will increase and be of high value to children from under resourced schools.
- To increase regional impact, we need to continue to increase the simple mobile apps and software on the wiLearnCAP. Offline modules need to be aligned with the competency based curriculum. If more education content is pre-organised by Grades and curricular subjects, the modules will be used with greater ease. It will more likely be integrated into the lesson plans as it reduces the teacher's workload.
- The project duration should be planned for at least 24 months to gather learning progress data. wiLearn Workshop programs shall focus on introduction of individual learning registration to gather learning progress data for future content adjustments

5 Conclusions/recommendations

5.1 No digital skills, no qualified job

Quality education that links youth to jobs at the end of formal education can only be achieved with a sincere investment in digital skills training for teachers and learners. Inequalities are on the rise if under resourced communities in urban and rural environments remain digitally illiterate in a connected world. As the Kenya Government has mandated the education transformation towards Competency Based Curricula's, the disadvantaged private schools in the country are struggling to translate it into action because there is too little support for disadvantaged schools.

The Smart Learning platform offered by wiLearn can fill this great void in education as demonstrated at Watu Moja Lee Academy. The pilot project demonstrated the significant data access for Language training, basic Literacy and Numeracy as well science subjects for upper primary education. A single starter kit with the minimal amount of gadgets and the maximum amount of learning content at an affordable price can be the key for hundreds of low resource communities.

5.2 Recommendations

The wiLearn pilot project experience with offline libraries lends itself especially well to serve a larger population in underserved communities. We propose to take the next step towards a larger scale project. See Annex 4 - Smart Learning for 100 communities in East Africa.

5.3   Maximise Smart Learning impact and sustainability

wiLearn further recommends to make a short extension to the pilot project to enhance the self-oriented learning concepts while maximising the teachers support. The access data analysis has revealed that the trial self-study lessons of the MsingiPACK Apps were among the most productive learning tools. Because these interactive tools are aligned with the new national curriculum and approved by the Government (KICD) this will be a major support for teachers who have little capacity.

In the light of the COVID lockdown affecting schools globally the true value for remote and mobile learning has been recognised. To increase self-oriented learning skills among marginalized communities like in Kibera it is vital that suitable and relevant learning content is readily available to them, not just online but also for the offline schools like Watu Moja Lee Academy. wiLearn has taken the initiative to integrate a sample online version of MsingiPACK produced by a Kenyan education software company Virtual Essence. The licencing structure and cost of the software initially prevented the full installation within the pilot project. But wiLearn has negotiated a so called perpetual licence – pay once a lifetime to own the software thus avoid any further dependencies. Therefore to strengthen Smart Learning processes we strongly recommend the extension plans upgrading the software in direct support of Kenyan teachers and pupils at primary school level.

Project extension parameters:

a) Goal – full offline browser based access to MsingiPACK for primary schools Grade 1-6
b) Implementing Partner - Virtual Learning Solution, Anne Gatende will liaise and supervise the project extension until completion in coordination with wiLearn Switzerland. They report full installation and operation of MsingiPACK on all tablets of the project.
c) Virtual Essence – prepare and install the software on both wiLearnCAP mobile wiFi servers from WMLA
d) Issue the perpetual licence for 70 tablets
e) Introduction Lecture for teachers and interns at the Watu Moja Lee Academy
f) Introduction Lecture for pupils at the Watu Moja Lee Academy
g) Commitment by WMLA management to a 3 year collaboration with wiLearn Switzerland for data access to the server.
h) Deliverables- wiLearn reports access data analysis, impact and sustainability of the WMLA Smart Learning program including the extension
i) Cost extension estimate: 6000 USD

- 1800 USD for MsingiPACK software licences and introduction
- 1800 USD - VLS project supervision, WMLA school introduction
- 600 USD – wiLearn server module preparation
- 800 USD - wiLearn project coordination, data analysis
- 1000 USD – wiLearn travel and accommodation

6 Annex

6.1 Annex 1 – Finance Report

The overall project expenditure accross a three year accounting period was managed by wiLearn 4 Life, the recipient of the grant. Excess expenses were minor and compensated by wiLearn.
Under KE1811 a detailed account statement is attached in the Annex 2

Output Nr.	Allocation - Activity	Total Budget USD	Expense 2018	Expense 2019	Expense 2020	Expense Total
1.1	wiLearn - Technical Infrastructure & ICT Training	2'400		4'413		4'413
1.2	wiLearn - wiLLi Learning lab server infrastructure complete -adapted to local content	7'800	8'100			8'100
1.3	wiLearn - TABEA tablet charging cases (10 Tablets)	20'300		28'685		28'685
2.1	wiLearn - Teacher Training Basic Workshop – Blended Learning – Equipement, Digital Learning Intro, Lesson Planning, Multimedia Library, Classroom Management,	7'200	7'433			7'433
3.1	Watu Moja Lee project monitor, reporting, finance	1'200	300	291		591
4.1	Watu Moja Lee Academy eLearning Project Management	3'600	961	1'773	200	2'934
4.2	Watu Moja Lee training session – Training of Trainers	1'200	300	1'291		1'591
5.1	Co-Willing Network - ICT Conference 2019, Nairobi – MWLA & wiLearn participation and contribution	5'000	5'000			5'000
6.1	wiLearn – Teacher Training advanced workshop – learning content creation, content development, computer skills, Office Tools	4'800		4'800		4'800
7.1	wiLearn - Project Coordination, Support, Monitoring, Reporting, Finance	4'800		2'400		2'400
7.2	wiLearn 4 Life Switzerland – Tech Support, Quality Assurance, Organisation, Admin	1'700		1'740		1'740
7.3	Watu Moja Lee Sharing Admin Cost	1'700	1'700			1'700
7.4	wiLearn – international travel expense	6'800	1'938	1'831	1'163	4'932
8.0	Watu Moja Lee Contribution	-1'200				0
	Project Expenses	67'300	25'732	47'224	1'363	74'319
1.3	Credit note for tablets to wiLearn Kenya			-6'774		-6'774
	Total Project Cost	**67'300**	**25'732**	**40'450**	**1'363**	**67'545**

1.0	PDF / CAF Grant contribution	67'300
1.3	Credit Note for wiLearn tablet and headset	6'774
	Total Credit	**74'074**

The following remarks shall explain the variances occurred against the budgeted amounts.

- Output 1.1 – the school infrastructure was in a poor state so that electrical installations could pose a serious health risk to staff and children. wiLearn insisted to have a professional installation done in all classrooms to allow for ICT learning throughout the day. The school

also extended their number of classrooms and began cladding the rooms to improve the learning environment.

- Output 1.2 - Import cost, memory cards and SIM cards were added to update with internet
- Output 1.3 - Importing tablets to Kenya turned out to be costly and time consuming. We also purchased headsets that were not budgeted for. This overall expense over 28'685 USD includes a project credit note over 6674 USD for tablets and headsets that wiLearn purchased for other projects in Kenya under the same shipment. Output 2.1 - Workshop teacher lunches and sundries were added
- Output 3.1 – as virtually no monitoring and reporting was done by WMLA this budget line covered for over expenses 1.1 technical infrastructure
- Output 4.1 – this underspending was to compensate for overspending 1.1 technical infrastructure
- Output 4.2 – overspending was due to hiring of VLS bringing teachers support to the classrooms and improve mentoring and monitoring support
- Output 7.1 – wiLearn covered all monitoring and reporting expenses thus contributed to overspending 1.1 and 4.2
- Output 7.4 – wiLearn Travel expense were kept low thanks to low ticket prices, Uber and AirB&B accommodation
- Output 8.0 – WMLA did not have the extra capacity to account for their contributions

Smart Learning Expense by Segments
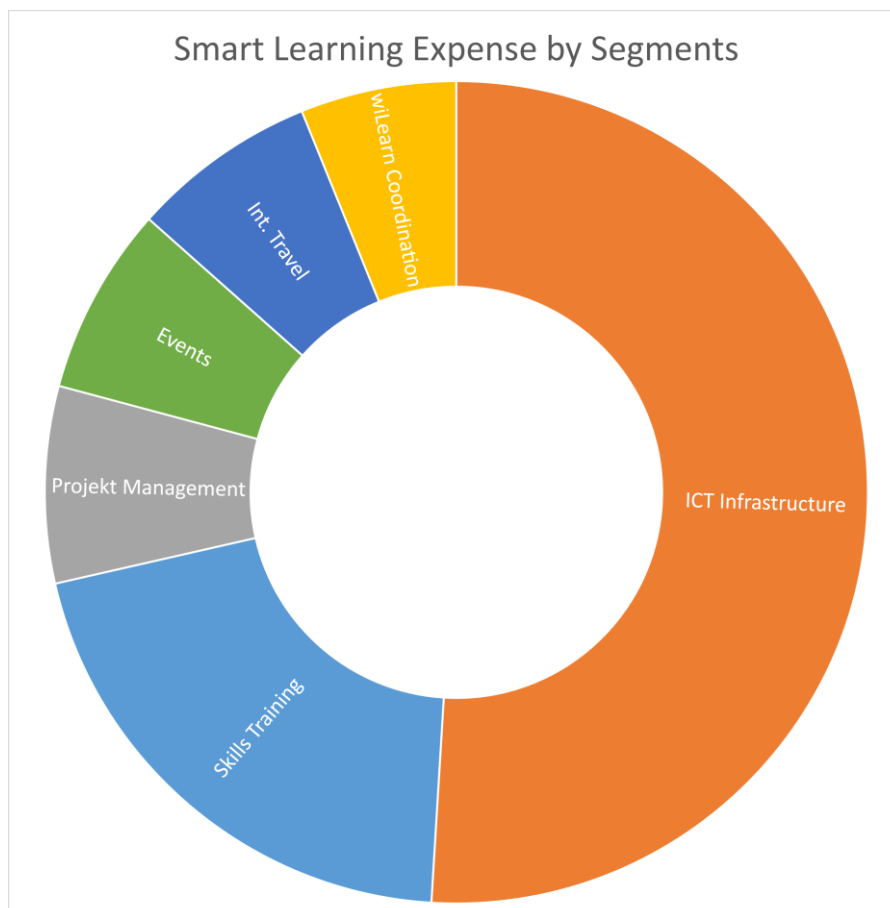
6.2   Annex 2 – KE1811 Accounts Statement 2018 – 2020 (separate)

6.3   Annex 3 – VLS Monitoring Reports (separate)

6.4   Annex 4 – Smart Learning Communities

The COVID19 global health crisis raised public awareness on the importance of distance learning and remote business solutions worldwide. WiLearn calls for urgent action to scale digital skills training programs as a critical element of the Sustainable Development Goal Nr. 4 Education agenda. Self-oriented learning skills must be part of the quality criteria in all education services policies. To achieve a universal access to open education resources the mobile communication technology is the most obvious and economic resource for teachers and learners to acquire interactive, timely and subject relevant information. Smartphones are offering communities left behind the first window of digital opportunity! We call to build on that premise to unlock the potential of rural and pastoralist communities.

wiLearn remains committed together with our partners to spearhead the most sustainable and cost effective method to better prepare children in education crisis for the next lockdown scenario. The Kibera project has given us important learnings to further fine-tune the low tech, solar powered wireless libraries and enrich the locally approved education content.

We are looking for likeminded partners who share up to 40% of the project cost to resource learning labs in Zimbabwe, Tanzania, Uganda, Kenia and South Sudan. We also seek partners for research in learning outcome and resources to create more OER software development. The importance of curriculum aligned interactive eLearning modules suitable for self-oriented learning should not be underestimated. Building a robust is the most sustainable development With dedicated funds to software licencing and local content development the libraries will steadily grow with exciting content that learner enjoy and devour with a hunger for more.

In the light of over 3000 marginalized schools in Kenya alone we recommend to focus on the selection of the first **100 most vulnerable communities**.

The scaling effect is expected to reduce the cost for a single school significantly. In a cascading model the knowledge transfer for teacher training, mentoring and monitoring is passed on within the larger smart learning community. At a scale of 100 communities we intend to have permanent mentors and teachers support being part of the program.

Based on known factors from the pilot we estimate an average of 30'000 USD direct project cost per school for a 2 year induction. It will include 2 complete molli kits per school that can be shared between classes. Cost distribution by segments as seen from the Smart Learning pilot project Annex1 Finance Report will be similar in the scaling model.
Research as well as software Development resources have not been part of the pilot project. They will require additional funding in scaling program. R&D requirements may vary greatly according stakeholder demand and must be negotiated with the donor community who defines the extent of the studies and development goals.

To start with the Smart Learning scaling program wiLearn proposes a project in Samburu county, where we have completed the initial assessment in January 2020. The invitation to start an elearning progam in marginalized schools around Baragoi came from the Samburu County Executive Committee Member, Mary Ekai, who organized the initial assessment visit to the communities. The 4 Lower Primary Schools Naling'ang'or, Baragoi, Nachola and Marti situated in the Semi-Arid Samburu North have been selected as beneficiary communities.

2'334 children half of them girls and 20 teachers from the Samburu and Turkana ethnicity will benefit from this Smart Learning project. If resources and the security allow we hope to extend the Baragoi project to the pastoralist communities of the remote Suguta Valley.

Join us to connect pastoralist communities to quality edcuation!
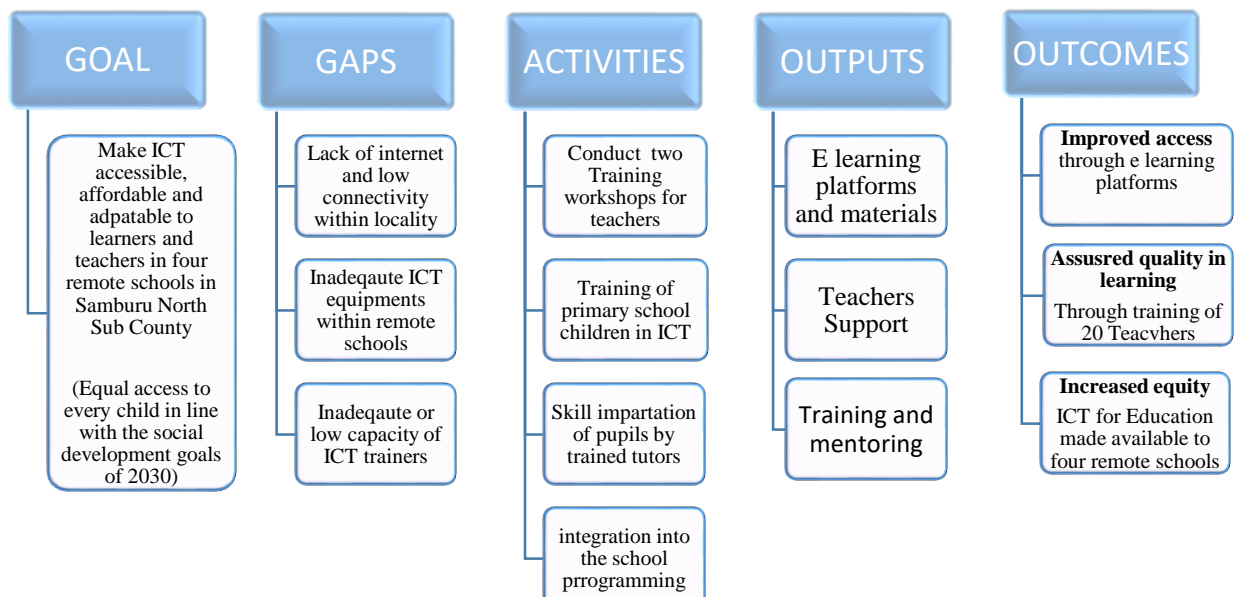**Mobile learning changes lifes!**

SAMBURU SMART LEARNING

PROPOSAL

Project Overview	
Project Name	**Samburu Smart Learning**
Project Location	Baragoi, Samburu County, Kenya
Geo Reference	N 1.47.04 E 36.47.11
Project Partners	VLS Virtual Learning Solutions - Training / iLab Africa - Research
Primary Sector	Primary Education
Duration	24 months
# direct beneficiaries	**2,334 teachers and pupils**
# indirect beneficiaries	9,336 Samburu and Turkana
Local Contacts	Triza Eyanae, Baragoi / Mary Ekai, CEC Member Samburu County
Project Budget	**120,000 USD**
Development Budget	50'000 USD – national open education resource software development
Research Budget	40'000 USD – learning outcome data collection and evaluation
Contact wiLearn 4 Life	Roland Diethelm, Mobile +41 76 215 09 63 Email:roland@wiLearn.org

GOAL	GAPS	ACTIVITIES	OUTPUTS	OUTCOMES
Make ICT accessible, affordable and adpatable to learners and teachers in four remote schools in Samburu North Sub County	Lack of internet and low connectivity within locality	Conduct two Training workshops for teachers	E learning platforms and materials	**Improved access** through e learning platforms
	Inadeqaute ICT equipments within remote schools	Training of primary school children in ICT	Teachers Support	**Assured quality in learning** Through training of 20 Teacvhers
(Equal access to every child in line with the social development goals of 2030)	Inadeqaute or low capacity of ICT trainers	Skill impartation of pupils by trained tutors	Training and mentoring	**Increased equity** ICT for Education made available to four remote schools
		integration into the school prrogramming		

6.5 Annex 5 - Access Statistics wilearnCAP 1 & 2

wilearnCAP 1 – 2018 - 2020	wilearnCAP 2 – 2018 - 2020

wilearnCAP 1 – 2018 - 2020

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2018	0	0	0	0	0
Feb 2018	0	0	0	0	0
Mar 2018	0	0	0	0	0
Apr 2018	0	0	0	0	0
May 2018	0	0	0	0	0
Jun 2018	0	0	0	0	0
Jul 2018	0	0	0	0	0
Aug 2018	0	0	0	0	0
Sep 2018	0	0	0	0	0
Oct 2018	0	0	0	0	0
Nov 2018	6	9	144	7,138	563.05 MB
Dec 2018	0	0	0	0	0
Total	6	9	144	7,138	563.05 MB

wilearnCAP 2 – 2018 - 2020

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2018	0	0	0	0	0
Feb 2018	0	0	0	0	0
Mar 2018	0	0	0	0	0
Apr 2018	0	0	0	0	0
May 2018	0	0	0	0	0
Jun 2018	0	0	0	0	0
Jul 2018	0	0	0	0	0
Aug 2018	0	0	0	0	0
Sep 2018	0	0	0	132	9.11 MB
Oct 2018	0	0	0	0	0
Nov 2018	0	0	0	0	0
Dec 2018	0	0	0	0	0
Total	0	0	0	132	9.11 MB

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2019	6	8	56	2,136	127.56 MB
Feb 2019	6	10	666	5,358	264.65 MB
Mar 2019	7	7	1,218	5,632	403.85 MB
Apr 2019	4	6	1,334	3,086	145.70 MB
May 2019	16	17	496	4,924	1.80 GB
Jun 2019	14	17	586	6,446	847.75 MB
Jul 2019	2	2	12	168	8.77 MB
Aug 2019	25	56	3,118	32,288	5.55 GB
Sep 2019	64	373	38,700	192,558	32.67 GB
Oct 2019	23	46	1,194	8,788	1.76 GB
Nov 2019	0	0	0	0	0
Dec 2019	0	0	0	0	0
Total	167	542	47,380	261,384	43.53 GB

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2019	0	0	0	0	0
Feb 2019	0	0	0	0	0
Mar 2019	1	1	42	1,308	72.50 MB
Apr 2019	4	11	436	22,036	3.82 GB
May 2019	29	67	2,248	30,660	4.82 GB
Jun 2019	33	67	1,224	19,008	3.71 GB
Jul 2019	150	718	9,688	26,652	6.87 GB
Aug 2019	1	1	38	530	41.99 MB
Sep 2019	42	278	9,736	40,968	16.81 GB
Oct 2019	35	129	3,842	15,514	6.02 GB
Nov 2019	0	0	0	0	0
Dec 2019	0	0	0	0	0
Total	295	1,272	27,254	156,676	42.17 GB

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2020	41	148	4,178	31,008	3.16 GB
Feb 2020	20	32	804	5,480	807.02 MB
Mar 2020	22	69	3,980	37,250	3.71 GB
Apr 2020	0	0	0	124	6.98 MB
May 2020	0	0	0	0	0
Jun 2020	0	0	0	0	0
Jul 2020	0	0	0	0	0
Aug 2020	0	0	0	0	0
Sep 2020	0	0	0	0	0
Oct 2020	0	0	0	0	0
Nov 2020	0	0	0	0	0
Dec 2020	0	0	0	0	0
Total	83	249	8,962	73,862	7.67 GB

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2020	0	0	0	0	0
Feb 2020	0	0	0	0	0
Mar 2020	15	30	1,160	7,620	1.54 GB
Apr 2020	0	0	0	16	349.46 KB
May 2020	0	0	0	0	0
Jun 2020	0	0	0	0	0
Jul 2020	0	0	0	0	0
Aug 2020	0	0	0	0	0
Sep 2020	0	0	0	0	0
Oct 2020	0	0	0	0	0
Nov 2020	0	0	0	0	0
Dec 2020	0	0	0	0	0
Total	15	30	1,160	7,636	1.54 GB

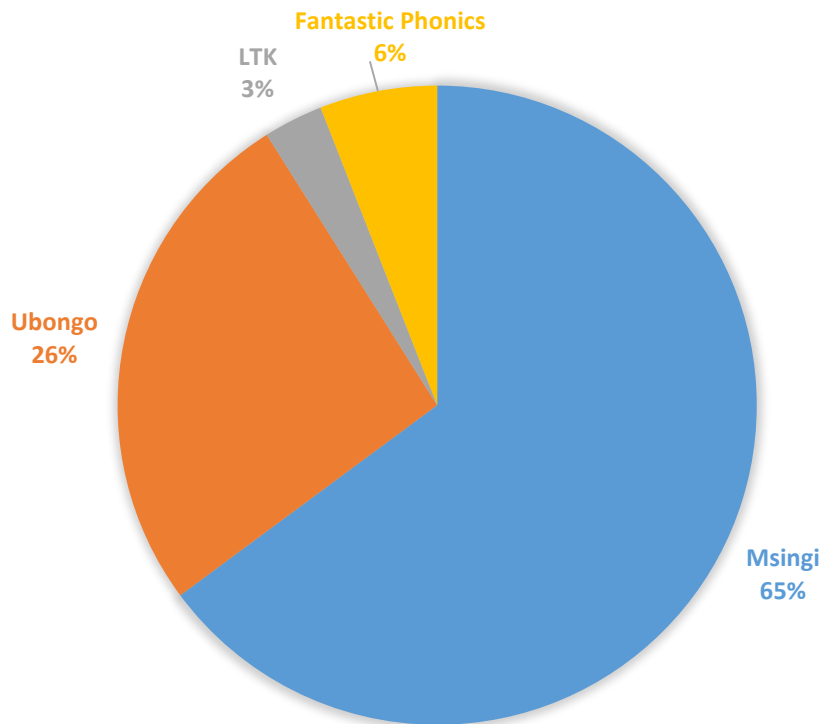| wilearnCAP 1 – Weekly Access Sep 2019	wilearnCAP 2 – Weekly Access Sep 2019
The content was used regularly throughout the week. The school was instructed to integrate the digital library use in the weekly lesson planning	The second server was used more regularly once the installation was completed.
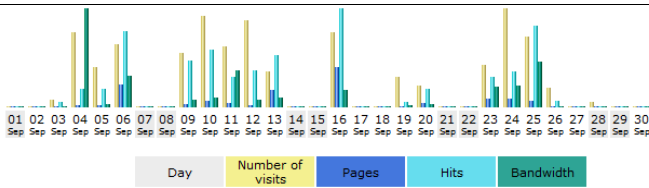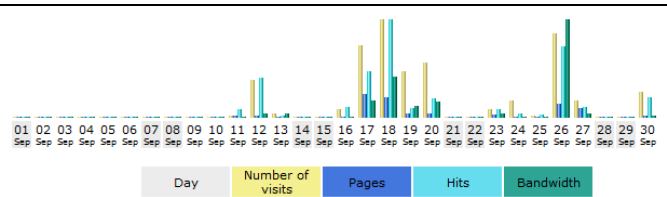
WMLA LEARNING TOOL PREFERENCE
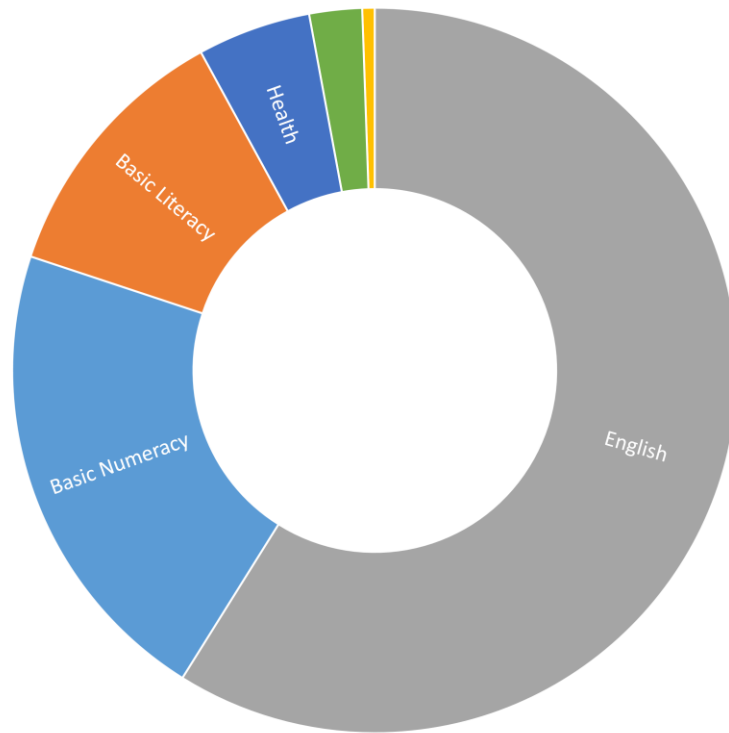

Downloads	User Access	File Access	Access Freq
Msingi	3492	0	270
Ubongo	1410	8952	152
LTK	162	29888	529
Fantastic Phonics	320	9576	1330
Life Science	68	32	20
wiLearn Modules	5270	9274	586
Lessons Total	**6004**	**50286**	**2632**

WMLA COMPETENCY TARGETS USING ICT

■ Basic Numeracy ■ Basic Literacy ■ English ■ Geometry ■ Health ■ Games

6.6   Annex 6 – Foto Story of Change

Goal is set – wiLearn Project Start in November 2018

Preparing the ground for ...

..... the latest classroom extension

Kickoff - with management team

... with Safe sockets and new electrics

surrounded by poor families

Kibera – home of Millions and Watu Moja Lee Academy

Grade 1 to 7 – 316 kids – enjoy the break

Yakub - Introduction to Smart Learning Workshop 1

Familiarizing with ICT equipment, wiFi projector

Teachers learn to observe – pupils discover for themselves – the first digital lessons without frontal teaching

Streetkids Outreach – mobile learning 4 All – WMLA takes the Smart Learning to the youth on Saturdays

Co-Willing conference

Solar Power charging

Practical exercise – video interview

April 2019 –Hurray - finally the 70 tablets arrived at Wat Moja Lee Academy after a long import delay

Tablet handover - Daniel Wanderi

Celebrating the new opportunity

Darren (6) quickly finds his way …

Child focussed of teaching methods

First ICT integration experience in class

Selforiented learning excercise

Grade 6 – digital skills test

New approach –solution finding

Workshop II Advanced – Sam Mbogo, librarian Marist Uni
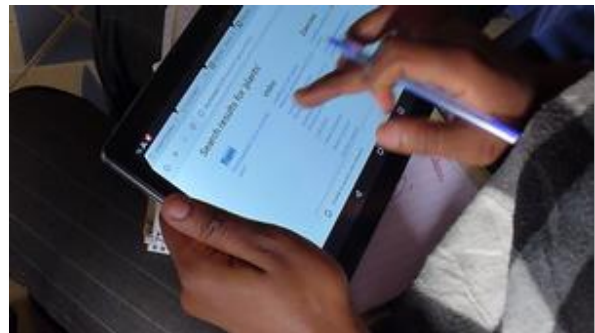
Lesson – find media on the web relevant to the lesson

Ronald, VLS is teaching LMS - Learning Management Systems to track learning outcomes

Crash Course on wiLearn equipment for VLS Youth Intern Program

Interns in action, a chance to learn for a lifetime
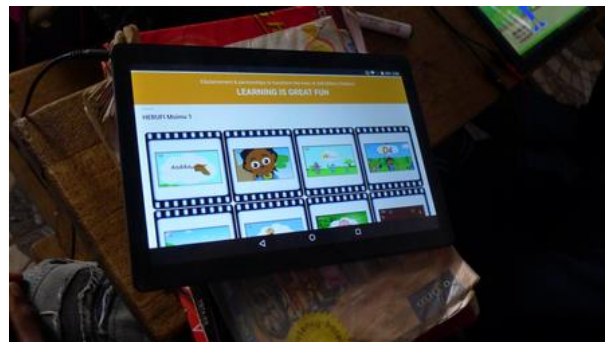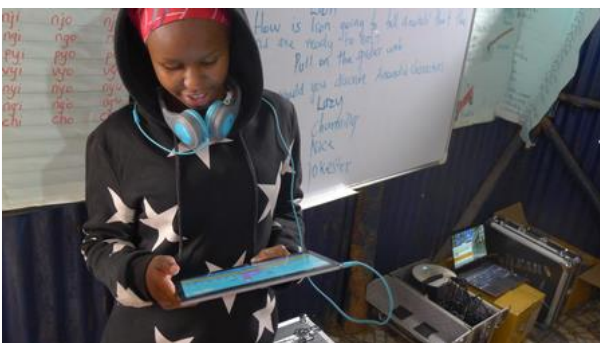

Favorite – Ubongo kids animated preschool lessons

6 TABEA charging cases for each class
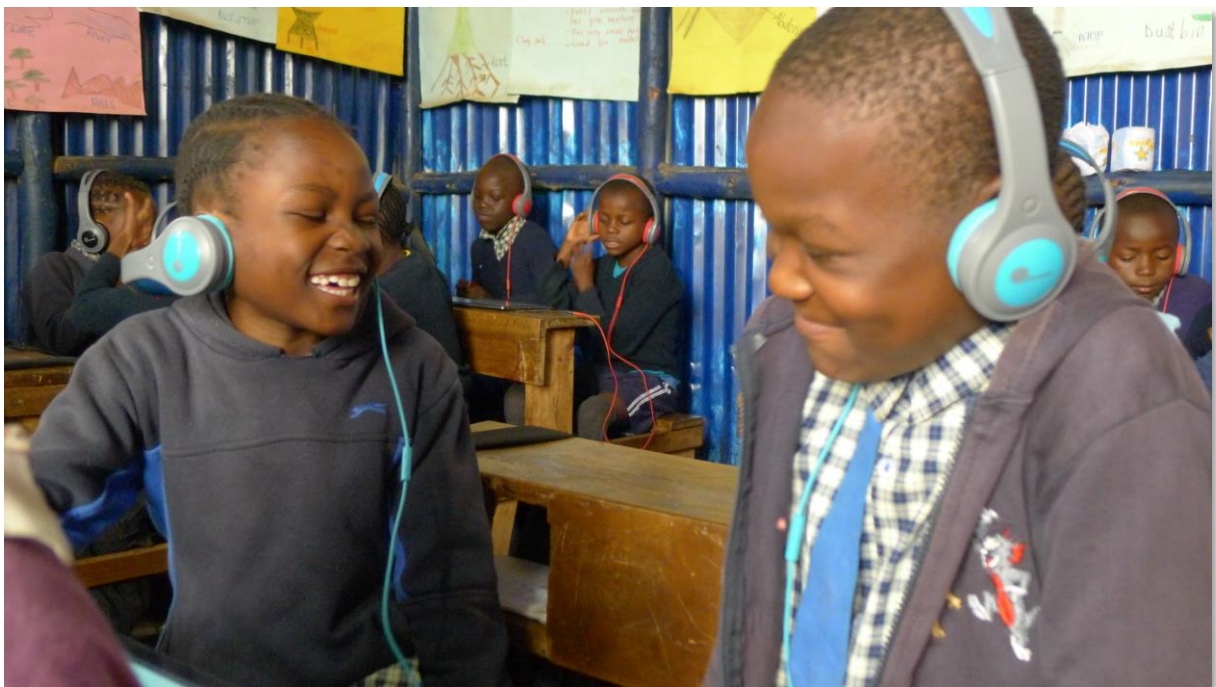

Roland's mentoring visit in Grade 6

Teacher support makes the project fly

Grace – Intern - preparing the content

Abbas – Intern – mentoring kids

Report on Digital Learning activities at Watu Moja Lee Academy

Reporting period: 1st -30 September 2019

Background

In August 2019 VLS entered into an MOU with Wi Learn to support in the monitoring of digital learning giving support the teachers to enable them to run the lessons more frequently by incorporating them into their normal teaching schedule.

VLS gave the teacher support through supplying 3 intern teacher support assistants from the VLS implementation of the Kenya Youth and empowerment project. This together with monitoring the teaching has yielded better results than before.
 It has been much easier for the digital classes than the month of August because pupils enjoy and can easily operate the tablets with minimum help.

The digital lessons have gone on well and the usage of the devices has been optimized by having the teacher support assistants Abbas, Grace and Ebby giving support and helping the teacher to set up the classes.

The school and the teachers have been supportive and the teacher attitudes have improved with teachers having a digital lesson and incorporating these lessons into the time table

Participating teachers
The teachers who have consistently had digital lessons have been as follows: Teacher Festus class 6, Teacher Cecilia in class 3, Teacher Dan in class 2, Teacher Moraa class in 4, Teacher Maureen in PP2, and Teacher Fatima in class 5. The digital lessons have been incorporated into daily teaching and distributed in the teaching time table as follow:

Timetable

Monday
PP2 with teacher Maureen in the morning
Activities: mostly reading from Ubongo kids after break
 Grade 1 after second break
Class 6 and the after lunch class 6

Tuesday and Wednesday
Morning Grade 3 activities mostly reading with LTK reading from the screen and from tablets and project write questions from the story from African story book and KaLite math and depending on the teacher
After break grade 5
After Long the break grade 2
Afternoon grade 4
Wednesday the same

Thursday

Morning Grade 3 Morning lesson reading and Kalite math and reading from LTK (but the teacher did not practice the Ltk activities)

 After break pp2 after break free lesson

 After lunch grade 2

 After break pp1

After long break grade 4

After lunch grade 5

Friday

 Morning Play group with pre- installed learning activities on the tablets

After break PP1

After lunch class 6 with activities like Kalite science African story book Wikipedia and LTK ABRACADABRA and READS a

The higher classes have the digital lessons on Monday and it was noted that they concentrate more.

Outreach

The two school we have worked together which is (UTU ACADEMY AND SMART BRAIN ACADEMY) conducted a workshop demonstrating the kid really liked the idea of WI Learning and would like to buy the idea from us and work together as from January 2020

Observations

The incorporation of digital learning into the time table and the teacher support help has been useful for higher uptake of use

Third term is a very short term and teachers immediately get into the examination mode and stop teaching early so the month of September is the one that can be monitored and observed the most

Teacher confidence though higher is still low on use and teacher are still passive in the use of digital content and still need more capacity building and support. Their enthusiasm and positive attitude has been notable

The teacher support assistant is an invaluable support as the teachers continue to gain confidence in conducting digital lesson. The interns themselves have found the internship very useful to them and they feel they have gained a lot by being in the school setting helping the learners and teachers

Challenges

1. Insecurity when moving from us to another school with tablets when conducting outreach when schools close there will be classes
2. Most of the schools liked the idea but they want our service offered for free
3. Rachel Wi-Fi stops working during class time and no module available in the tablets It hangs a lot we tried trouble shoot with re booting all the time
4. Time wasting while trying to restart Rachel Wi-Fi when it stops working

Report on Digital Learning activities at Watu Moja Lee Academy

Reporting period: 1st October -1st December 2019

Background

In August 2019 VLS entered into an MOU with Wi Learn to support in the monitoring of digital learning giving support the teachers to enable them to run the lessons more frequently by incorporating them into their normal teaching schedule.

VLS gave the teacher support through supplying 3 intern teacher support assistants from the VLS implementation of the Kenya Youth and empowerment project. This together with monitoring the teaching has yielded better results than before.

The digital lessons continued as reported in September but became sporadic as the term got busy with exam preparation. This notwithstanding, we were however able to bring a team from the ministry of education (department of Nomadic education (NACONEK)to observe a digital lesson which was conducted by teacher Cecilia of class 3. In the class observation we were able to see that the teacher uses the African story book to teach English. A member of the team from

NACONEK gave a very nice lesson teaching the children the song in a story from one of the local languages.

We were also able to observe a mathematics lesson from Msingipack and observed the students collaborating on mathematics tasks. This team was enriched by the digital lesson and were very impressed with how the digital devices were used and they also got to engage with the learners and have just in time learning happen in that class. That was a highlight of the term.

This activity also had observers from the internet society which is seeking a partnership with NCONEK to bring the Wi Learn kits to the schools they map for a pilot. We are following up on that and hope it will yield good results.

In the Kenyan context national exams have dictated the end of the school year to a point that the whole system shuts down to prepare various classes towards the end of the year and the preparation to transition to the next academic year.

The evidence is particularly felt in digital learning which is still not completely taken into consideration when preparing students for exams. The school term came to an end on 26th October after which the teachers were too busy marking exams and no more teaching happened after that.

There was a circular from the ministry of education to include digital learning in grade 4 and the teachers are well aware of this as we have been belaboring this to the them and have shared the circular from the ministry about the requirement from the government to teach digital literacy and science and technology together with coding in grade 4.

We are sure that the use of devices will not stall at WMLA even as the project comes to an end as the preparation for 3rd term and the inputs this term have been significant but hampered by the shortness of the school term.

We have been trying to get the teachers to attend a debrief session and training but this has not yielded any results as the teachers are very reluctant to come back to school for any activities citing travel out of town and back to their rural areas

We are still hopeful that we will be able to conduct one training activity at WMLA and an outreach maybe to the mechanics working with Jakub and members of the

community. The challenge is to get the kits as the school has closed and to coordinate for that to happen effectively.

The interns also finished their internship at the end of October but they still show great interest in doing more work to support the school and the community. They are willing to stay engaged so we will keep the interest in the school going.

Other activities

The WiLearn Kit available at Strathmore University for showcasing have been very well utilized and have yielded other activities that could expand the work beyond WMLA. We have worked well with the Strathmore team and have a good synergy.

Strathmore

The Strathmore team and Anne Gatende wrote an abstract for a paper to be presented early 2020 for a research conference in Spain

There is also an interest from another group that would like to be enjoined in the proposed use of the WiLearn kit in 100 schools. They are working in secondary schools in marginalized regions of Laikipia North and are considering buying one test MoLLi kit in January. The budget is yet to be approved but it looks hopeful and will be reporting after the meeting set for 18th of December.

We were also able to show this kit to the CEO of CEMASTEA Mrs. Jacinta Akatsa who is happy to recommend it to schools and wished she had one in her teaching days.

Digital Lesson

With team from NACONEK and ISOC

1) At the scratch conference with the CEO of Scratch foundation and Madam Jacinta Akatsa CEO
2) Ms. Jane head of the team from the Ministry of education enjoys a lesson

Of The Center of Mathematics Science and Technology in East Africa CEMASTEA

Conclusion

Like we had noted in the last report

Third term is a very short term and teachers immediately get into the examination mode and stop teaching early so the month of September is the one that can be monitored and observed the most

Teacher confidence though higher is still low on use and teacher are still passive in the use of digital content and still need more capacity building and support. Their enthusiasm and positive attitude has been notable but they are still not willing to go beyond the call of duty to learn more and do more. Teacher training and support must continue at the same level as the devices if we want to see digital learning take off well in the selected schools.

The teacher support assistant is an invaluable support as the teachers continue to gain confidence in conducting digital lessons and schools must consider having them. As reported earlier, the interns themselves have found the internship very useful to them and they feel they have gained a lot by being in the school setting helping the learners and teachers

With reduced activities in the school we made an effort to created more relationships with partners to try and get the kits seen by relevant stakeholders. With a concerted effort we are sure that we will be able to extend this service to other schools and will pick up these conversations in January when the schools open.