

WILL OUR CHILDREN LEARN? LEARNING ENVIRONMENTS, TEACHERS AND TEACHING APPROACHES SHOULD MATTER TO THEIR LEARNING

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Abstract

The declared aspirations by the community of countries to achieve both Education for All (EFA) and Millennium Development Goals (MDGs) is a critical part of educational initiatives in Kenya. Schools are the physical places through which some of these goals can be achieved. Majority of the schools, particularly those in rural and remote places, as well as those in slums in Kenya have remained unfriendly spaces for the purposes of proper learning.

This paper shares findings from a teachers' professional development accompanied by other intervention initiatives to improve the school situation including

a school-to-school curriculum exchange partnership involving grade 5 and 6 students of a Canadian school and grade 6 students of the Kenyan school, and provision of safe water for the school community of 1200 members in rural western Kenya. The objective of the interventions was to initiate a whole school improvement process focusing on teachers' and learners classroom interaction, teachers' professional development and interaction of the learners in a Kenyan rural setting with learners in a developed setting in Canada. The data was gathered through documentation of school-to-school partnership project between the Kenyan school and a school in Alberta province of Canada, observation of teachers in classrooms in the Kenyan school and interviews with teachers. Findings reveal teachers' enthusiasm to teach despite very **difficult circumstances including**

teaching and learning resources. Students on the other hand were inspired through the initiatives to enjoy their learning through active learning approaches. The school community received water filters, revived their water source

Keywords: *Curriculum partnership, Education for All, Millennium Development Goals, Teachers' professional development.*

Introduction

Education may never have been in the limelight over the centuries as has been the case in the last two decades beginning with the World Conference on Education for All in Jomtien 1990, the Dakar Framework for Action in 2000 and United Nations Millennium Summit where the Millennium Development Goals were declared. Nations of the world realized that for advancement in human development, education was critical as a means to improve the human condition.

By signing up to address both Education for All goals (EFA) and Millennium Development Goals (MDGs), the nations of the world essentially committed to improve not only their citizens' access to learning, but also to providing the spaces and materials to enable learning. By some countries keeping schools particularly those in rural, remote and slum areas with inferior learning facilities and resources, they essentially marginalize them. In the 2010 Global Monitoring report for Education for All that focused on marginalization, it is stated that overcoming marginalization should be at the heart of Education for All agenda (UNESCO, 2011). The report further states: "Education should be a driver of equal opportunity and social mobility, not a transmission mechanism for social injustice" (p. 137). This driver of equal opportunity and social mobility may not always be the case in some of the poor countries of the world. Education may in fact be playing a role in transmitting social injustice as a result of the poor learning facilities and lack of enough areas.

Education in rich countries as experienced by the citizens of those countries tends to be of similar standard across the board regarding

the comfort in the learning spaces, learning materials used and teacher quality. It is recognized though that “ in all countries, whatever their level of development, some individuals and groups experience persistent disadvantage in education that sets them apart from the rest of the society” (UNESCO, 2011, p. 138). Ho their experiences in educational institutions are so varied because of the inequalities in resourcing, low teacher quality and uninhabitable learning environments. Indeed the EFA Global Monitoring Report of 2010 suggested that dimensions and characteristics of marginalization differ between developed and developing countries, but recognized that the rich countries are also characterized by extreme and persistent patterns of deprivation (UNESCO, 2011).

This paper presents findings from associated interventions in one school in Lugari district, rural western Kenya. The three initiatives include: curriculum partnership between the Kenyan rural primary school and a Canadian elementary (primary) school, a safe water project in the Kenyan school and a design-based research focusing on teachers’ professional development through blended learning on appropriate technologies in the same school. First, I present the Kenyan primary school features in the following section.

School location and features

The school that was the focus of the initiatives in this study was a rural primary school located in Lugari district. Lugari district is a rural district whose main economic activity is subsistence farming particularly planting of maize and beans. The district is mainly served by earth roads. Most of the school walls and floors were made of mud. The school infrastructure and learning materials such as textbooks were very minimal or non-existent. The school, like others in the Western parts of Kenya had large classes of more than 83 students with some students sitting on the floor for learning (Mwangi & Takavarasha, 2011).

Most teachers in schools in Kenya with features such as those mentioned above will normally have had pre-service teacher training, consisting of two years in a teacher training colleges, which are spread across the country. For the purposes of this paper schools such as the one reported

by this author are described as being in challenging educational contexts. Challenging educational contexts in this paper should be understood as those contexts with environmental, social and infrastructural constraints such as lack of universal access to formal learning, threats to such learning activities resulting from cultural or religious reasons, lack of access to electricity, lack of clean water and sanitation and other access limitations linked directly to poverty (Onguko, 2012).

The primary school, which was the focus of the interventions had a population of about 1000 students and 20 teachers. Thus in total about 1050 people were direct beneficiaries seen in Figure 1, the school learning environment had limited resources

such as the poor blackboard for teaching. Notice also the windowless classroom with uninhabitable walls in the picture. These are the learning spaces some children have to endure in their endeavour to be educated just like their counterparts in more developed contexts. In the following section I present literature review, thus grounding the interventions within a theoretical frame based on earlier scholars' work.



Figure 1: An example of a classroom in the intervention school

Literature: A theoretical framework

The initiatives in this paper were aimed at bringing about whole school improvement in a rural setting in Western Kenya. Whole school improvement is a provision propagated by among others scholars, Fullan (1985), and Joyce (2004). Fullan for example, has provided a series of publications focusing on changing the way schools are operated especially in developed countries, and which ideas can be applied to educational settings globally.

The Education for All Global Monitoring report of 2005 focused on the quality imperative for education. The report highlighted among other important aspects to provision of quality of education as: more and better trained teachers, improved textbooks being made available to all learners, pedagogical renewal and more welcoming learning environments. These are important pillars in assuring quality of educational provision (UNESCO, 2004). These quality pillars are still lacking in many schools in poor countries. This scenario is applicable across many parts of Kenya. The interventions reported in this paper focused on some of the aspects identified above including equippi strategies through a school-based teachers' professional development.

Other aspects are pedagogical renewal through a curriculum partnership between two schools and creating a more welcoming learning environments by providing safe water in school.

Fullan (1985) presented variables that identify effective schools. One of the variables he identified was pro enable them function in their role of delivering instruction to their learners.

Fullan observed that change in individual teachers is an important process through which teachers can improve thinking and the way they do their work thus their teaching. Teachers, according to Fullan have to talk to each other, plan for their teaching together and observe each other as they teach. These factors according to Fullan make the school conducive for professional development. The study presented in this paper was initiated as a result of the general lack of variables presented by Fullan and thus attempted to bring about change through the initiatives presented.

New information communications technology has become an important component for reforming teaching, learning and teachers' professional development. As suggested by Chapman, Garrett and Mahlck (2004)

technology had and still has the potential to contribute to teachers' professional development. While in 2004 it was still not so common to have teachers in rural parts of Kenya participate in technology enhanced professional development within their work environment, with proliferation of new technologies and particularly the spread of the Internet, this has become possible. These authors rightly suggested that teachers needed not leave their schools to go for professional development as technology enhanced learning was one sure way to provide professional development. The study in this paper was a tested one way in which technology enhanced learning could be utilized in a remote and rural part of Kenya. Thus learning from earlier experiences elsewhere, teachers were able to participate in professional development without leaving their school for an external training venue.

Reforming education systems is a consistent venture attempted by many countries. Kenya has not been left behind in consistently seeking to reform her education system. However, as Mukudi (2004) observed, implementation of free primary education from 2003 in Kenya was for political expediency rather than a planned educational reform. She based this argument on the fact that there was no situation analysis and evaluation of both the quality and extent of primary education before implementation. As such Mukudi suggested that problems arose including lack of adequate funding, poor infrastructure in schools, overcrowding in classrooms, lack of adequate teachers and learning materials. These problems have persisted to date, ten years since implementation of the policy. This paper reveals some of t ago are still prevalent as evident in the school in which the interventions shared in this paper were implemented.

A task force to re-align the Kenyan education system to the constitution found among many other aspects bedeviling the Kenyan primary education sub-sector were that free primary education resulted in increased number of children and thus led to overstretched and overcrowded facilities and high pupil:teacher ratios (Ministry relevant to this paper was that there was poor quality of infrastructure in terms of classrooms, sanitation, and furniture in rural areas and arid and semi-arid parts of Kenya. The task force also found that emphasis on cognitive abilities for the sake of passing examinations has resulted in rote learning. These findings wer

meetings between stakeholders and members of the task force. While recommendations were made regarding these and many other challenges, it is important to note that the children continue to learn in such conditions, although the government is aware of the sorry state of schools. One curious recommendation by the task force was that standards and quality assurance officers should ensure that standards and equipment are available in schools. Such a recommendation could be presumed to mean that the standards provided with funds to set up such infrastructure and buy the equipment.

It seems according to the task force members that poor infrastructure in schools is a problem arising from poor performance by standards and quality assurance officers, yet at lower investment inputs in education.

A research reported by Kisirkoi (2012) focused in Teachers Advisory Centre (TAC) tutors and teachers in Nairobi County of Kenya. In the study 5 TAC tutors and 5 teachers were interviewed and observed on their effectiveness in their roles as teachers' advisors and teachers respectively. Kisirkoi found that "TAC tutors, in their effort to conduct teacher professional development, had faced challenges as follows: unclear terms of service, too many assignments, lack of capacity, unclear reporting systems and lack of facilitation" (found that teaching approaches used by teachers were predominantly lecture method at 80% of the time, question and answer sessions at 12%, group work at 4% of the time, individual work 2% and other approaches such as role play 2%. Thus, these teaching situation and the teachers' professional development scenario in which the Kenyan primary school teacher has to operate. Whole school improvement is not a major concern though as educators and other stakeholders tend to focus on limit as construction of buildings or professional development or co-curricular activities in isolation of other aspects.

The Uwezo Report (2012) identified children at grade 3 are able to read grade 2 work. The series of studies done across the East African region paint a picture of the grim situation regarding learning in Kenya. Uwezo further revealed that a grade 3 child in Nairobi (the Kenyan capital) is twice as likely to read a grade 2 level paragraph than a child in the same grade level in Western region of Kenya,

where the interventions in this paper by Uwezo point to the disadvantages children in rural settings face, a major concern of this author as well.

Education in Kenya has been reviewed many times through Commissions of Inquiry and Presidential Working Parties. However, right from the first Commission of Inquiry after have been provided most of which have not radically changed the way education is structured. For example, Bunyi (2013) argued that in 1963, the Ominde Commission drew attention to the overly teacher-centred methods of teaching in primary schools and recommended use of activity methods. On the other hand, Bunyi asserts that the Gachathi Commission recommended use of problem solving methods. Surprisingly while these two recommendations are so basic and necessary for reforming the way teaching is conducted, the scenario in schools is so different. As Bunyi concluded, “teaching and learning in primary schools remains heavily teacher centred” (2013, 688). The re this paper were conducted in part to reform the way teachers engaged with students by incorporating activity based learning and cooperative learning coupled with problem solving and inspiring learners to develop interest in Science, Technology, Engineering and Mathematics (STEM) careers. The teaching and learning a incorporated in the interventions in this paper have been recommended since independence but never quite implemented across the country. The literature reviewed in this section elucidates the need for whole school improvement for the benefit of the l methodology and interventions are highlighted.

Methodology and interventions

As mentioned in previous sections a number of initiatives were included in the intervention in the school. These included a curriculum partnership project involving a Canadian elementary school and the Kenyan primary school where grade 5 and 6 students of a Canadian school interacted through asynchronous communication modes on a common science curriculum project with the Kenyan school children of grade six. Email communication between the teachers at both sites enabled the students send to each site questions as raised by the them. The students at both sites answered a common question: if you were to drink water in class/school,

where will the water come from? The students took tours around the school and the neighbourhood to understand the water sources within the school environs. Understanding of water sources at both school sites enabled the students to respond to questions posed by their peers from the opposite school. Thus, this was a curriculum exchange partnership between the students from the two schools without them having to physically travel across 14,000kms between the two locations. In this partnership 24 class six students in the Kenyan school and 3 teachers were the participants.

The second intervention initiative focused on providing ten biosand water filters to the school to enable the water. This initiative was a further extension of the curriculum partnership project as the school in Kenya lacked water sources, leave alone safe water for drinking. Through the water filter who were part of the curriculum partnership were able to play a leading role in managing the safe water project. The type of filters provided were provided by an engineering professor who later started the Centre for Affordable

Water and Sanitation Technology (CAWST). However, since CAWST is now wide spread around the world, the total cost of Canadian dollars 800 that included purchase, transportation and installation.

The third intervention initiative was a doctoral research on provision of teachers' professional development through blended learning by availing contextually relevant and locally developed content on appropriate technology that included multi-media content on tablets, powered by solar energy. This intervention was the research component that utilized design-based research and involved 10 teachers in the school and two instructors called professional development tutors (PDTs). Apart from self-study of the multimedia content in the form of PDF readings, video, and audio role-plays, there were also fortnightly face-to-face sessions over a period of four weeks. The data for this segment of the intervention was gathered through interviews held at entry and at exit. Thus interviews were held with teachers in February 2011 just as the intervention began, to establish their professional development needs, and in June 2011 when the Professional development was over. Teachers were also observed while implementing the teaching strategies gained in the professional development as well. Data was also gathered during face-to-face meetings held on Saturdays

where teachers shared views on their experiences teaching through the teaching strategies gained in the pr of the intervention are presented next.

Findings

The outcomes of the three interventions are presented under subheadings of each of the initiatives. First, I focus on the curriculum exchange partnership between the students of grade 5 and 6 in a Canadian school and grade 6 students of the Kenyan school.

Curriculum Exchange Partnership Initiative

The two schools were located a distance of about 14,000 kilometres apart in time zones of 10 hours separating them (East African Time versus Mountain Standard Time). While it was envisaged that there would be some real time interaction (synchronous) between the students of the two schools, this proved difficult becau time zones of the two sites. The students at both sites were therefore able to communicate by asking questions for their peers to respond through email messages delivered by the two teachers leading the initiative at both sites.

The interventions in the curriculum partnership aimed at inspiring students towards careers in STEM. The students were responding to questions regarding the water sources and their school and home environments with regard to access to water. The findi school site reveal a number of unique aspects. Of the 24 students who were part of the curriculum partnership intervention, only one had ever seen water on a tap. This child who was privileged enough to have seen tap water had just relocated from Nairobi, the Kenyan capital to live in her rural home. This revelation shows how disadvantaged students in rural and remote parts of a developing country can be. Such students for sure do have a longer way to catch up with the rest of the world if they have never seen water on a tap. This find by Uwezo, for example, regarding reading abilities of learners in Nairobi and rural settings. Children in rural settings are highly disadvantaged in terms of lack of basic learning resources and exposure to the modern world.

Secondly, the curriculum partnership question for students required them to identify the source of water for the school. As such the students together with their three teachers who participated in the project went on a tour around the school, the neighbourhood borehole in one homestead and the local stream. Surprisingly, this short tour that should have been a regular part of the learning process in the school raised a lot of concern not only to the villagers, but also to the head teacher of the school. It took the effort of this author who was the link person between the two schools to seek permission from the head teacher for the students to be allowed to visit the stream for learning purposes. The head teacher was not convinced by the teachers' view that the students can learn from outside the school compound. On the other hand, the local people, were so interested to know how come on that day the students were walking out of school towards the river. This outcome of surprise by the neighbourhood and resistance by the headteacher can be explained by the limited understanding in the community that learning should happen only in classrooms in school and not in the surrounding community and environment. However, for a headteacher of a school to limit students' learning in classrooms explains the limited or deficit model of learning exposed to.

Thirdly, the students' interaction through the email messages from Canada inspired the Kenyan school children who got to know a little bit about Canada as a country and the majority of the students consistently mentioned how they would want to visit and study in Canada and specifically the students to venture further afield students that may require follow-up students would achieve the aspiration.

Questions asked during the asynchronous discussions via email for example, required the students at both sites to enlighten their friends on how water is available in school. Kenyan students indicated that they always carry at least 3 liters of water each to school every morning. Asked what makes their water dirty, they indicated insects and bad smell. The students further suggested that dead rats and frogs, coupled with the waste from cows, caused the bad smell they frequently encountered in their water. In other words cows and people share the same drinking water such that the cows drink and urinate in the water that is also used by human beings.

For the Canadian students, the water was readily available in school and classroom, accessed through strategically placed taps within the school buildings. The scenario in the Canadian school was a great contrast to the Kenyan situation where only one student of the 24 involved in the initiative had ever seen tap water having lived in Nairobi, the Kenyan capital. Thus expecting the students at both sites to live with a world view that is similar would be a tall order since they operate in very contrasting environments.

The students recognized that while there were two water tanks in school, they were not operational because the gutters were not working. The students were also cognizant of the fact that while there was a water borehole in school, they did not use the water because the water was dirty. The borehole had been contaminated because the school pit latrines were constructed only a few meters from the borehole.

Students indicated that apart from suffering from diarrhoea due to dirty water, they also frequently suffered from stomachaches and headaches. They explained that when they got sick they got treated at Lugari Forest hospital, Lumakanda district hospital as well as Munyuki hospital.

Students were aware that there are use of water guard and chlorine solutions. Having engaged in the curriculum partnership initiative, the next step was to avail safe water in school as evident in the initiative discussed in the following section.

Safe water project

The safe water intervention entailed each one having the capacity to provide 60 litres of safe water per day.

Thus, in one day when all the filters litres of safe water in school.

Important to note is that there was no source of water in the school at the beginning of the interventions. Thus all the 1050 people in the school mainly depended on water sourced from students' homes and one homestead in the neighbourhood. Students brought to school a three-litre container of water, a piece of fire from Monday to Friday. The three-litres of water brought by each child was put together and used for cooking food for teachers, nursery school children and the grade eight student

each student was for cooking while the cow dung was used for smearing the floors of the classrooms every

On receiving the ten biosand water school that they needed a water source from which they would get water to filter for their use. Initially that assisted to put up two 10,000 litre concrete water tanks. However,

these water tanks had been spoilt and were non-functional. The need for water was now clear and so the school leadership repaired one of the two water tanks to be used for collecting rainwater. On the other hand, the secondary school, which had been established three years earlier, set up a water borehole as a second source shared between the primary and secondary school hence an additional

200 consumers to the original 1050 primary school community members.

As illustrated in Figure 2 the prim filters with water as part of their partnership initiative.



Figure 2: Students of intervention

During the training of the school community on safe water provided by two CAWST trainers from Canada, the head teacher of the primary school said:

We are very much privileged and we know of its kind in this part of the region. The primary school community is very much happy to have this project brought to us. The primary school wing comprising of pupils, teachers and parents welcome this project and will ensure that they live a healthy life with the safe water (Head teacher, 7/5/2011).

The principal of the secondary school echoed similar sentiments stating:

In our area water is an issue [problem] in the entire community. In the two schools: both primary and secondary, as you will realize when you have time to walk around, you will see that we do not have a water source. So even for you to have accepted to come to help us learn on how we can manage the water we have for domestic use, it is something we appreciate. To begin with water is so important because water is life (Principal, 7/5/2011).

These were views of the two of the leaders of the other members who participated in the two-day training on how to manage safe water including use and maintenance of the biosand reflection of the realities in the members concerns as participants from the school community. However,

the major reason why the Kenyan school shared in this paper was because I had selected it as my doctoral research site. Therefore in the following section from the research participants which were collected through interviews one year after the intervention.

Teachers' professional development

The 10 teachers participated in professional development by accessing self-study content on tablets and planning for lessons based on the teaching strategies namely activity based learning and cooperative learning. The tablets on which they accessed the content were operated on solar energy while the teachers met in face-to-face session to discuss their experiences in their teaching (see Figure 3).



Figure 3: Teachers participating in discussions during face-to-face meeting

Teachers during a follow-up interview one year after their intervention shared what was happening in their classrooms. Nita when asked what successes they had in using cooperative learning and activity based learning strategies stated:

The impact is that when you give them (students) an assignment to work as individuals, they do not score as high as when you allow them to discuss freely, they express themselves, then they come to a conclusion together. When they work as a group the scores are high because many heads are put together and they are sharing ideas before they come to a conclusion (Interview).

On lack of resources for teaching, the teachers were clear that since parents have been informed that there is free primary education, they do not want to provide any learning resources including basic commodities like sugar.

Nita spoke about the support from parents indicating: “The other day teacher Ludia was lamenting that parents cannot give even a spoon of sugar for experiments. We get surprised that parents cannot support by

providing one spoon of sugar". Foll shared further that:

The parents think that if a teacher requests for a spoon of sugar from each child, the teacher will get so much sugar to use in school. They understand it is free primary education. We ask the parents to contribute one shilling so that we can buy the sugar. They [parents] tell us you buy we shall pay later (Interview).

Ema said in responding to a question on challenges encountered when using the teaching and learning strategies they gained through the research:

"On use of materials, sometimes they are not very reliable. We are supposed to improvise everything and yet the improvised materials are not very strong. We need to purchase some further expressed her concerns regarding the insecurity of the materials teachers make for us in classrooms. "Regarding the classrooms, some of the classes up there do not have shutters [lockable doors and windows]. When teachers make materials, the members of the community come in and steal the materials" (Interview) worst classrooms as depicted in Figur and challenging conditions teachers have to work in to make students

successful as learners and later on as responsible members of the society.

The findings shared in the foregoing food for thought if education in challenging contexts has to be of a higher quality. Such initiatives like those in this paper may be one way of ensuring some changes in the way our children learn. In the following section, I discuss the findings in g

Discussion

Based on the three separate yet related interventions in the rural school in Lugari district, it is clear that there are many challenges in the school and which are not necessarily unique to this one school. Teachers gained through the interventions by learning about new ways of engaging their learners through activity based and cooperative teaching and learning strategies. The students gained through getting opportunities to talk in class and also lead in cooperative learning activities. The fact that the teachers who participated in the intervention on professional development

were teaching across all the grades from nursery to grade 8 was a great gain to the school in terms of injecting more student-centred learning approaches. The students gained in more authentic learning by teachers using learning materials in classes, which had not been the case previously.

Regarding the curriculum partnership between the two schools with a focus on inspiring students to STEM careers, the students from the rural school in Lugari district were able to learn new things. They for example, were able for the first time to ven interaction with the local environment - the stream and water well they visited as sources of water for the neighbourhood home which were the two main sources of water was new

learning that surprised villagers who wanted to know why the students were not in school. On the other hand, the students learning about a Canadian city and Canada as a country resonated easily as the students indicated that while they had never traveled out of Kenya, they really would like to travel to Canada. The students were able to view themselves in the videos taken on the laptop and this was also new learning for them through some new technology. They were so keen to view themselves on video on the laptop small real estate screen as depicted in Figure 4.



Figure 4: Students view videos of themselves on a laptop

The safe water intervention in school brought about a renewal to the school in Lugari. The water filters water was placed in strategic places around the school compound for

easy access for drinking. The intervention also provided the school with opportunity to construct a new borehole and also to repair one of the two 10,000 liter tanks that was not operational. This was indeed renewal as the rain water that had hitherto gone without being harvested was now easily harvested and used in school. The neighbourhood home that always provided water for over 1000 people was spared the strain on a small borehole built for one home's use.

While one cannot really attribute a performance of the students in the school to the interventions attempted in

the paper, it is suggested that the living conditions, the learning processes and the motivation of the students were in some ways enhanced. Students were able to gain their voice and speak in class during their learning, safe water was readily available in school, thus alleviating the heavy burden of children having to carry water to school every morning, and the 24 students in the curriculum partnership project were able to interact with their peers from Canada through the questions they raised and answered by the students at both sites.

During the research component of the interventions in the school, I observed teachers implementing activity based learning and cooperative learning. In a grade 8 classroom, it was a great surprise to observe students who were preparing for their terminal examinations at the primary school level not able to name an axe in English. Whenever the teacher asked the name of the tool in the picture (which was an axe), the students mentioned '*shoka*' the Kiswahili name for axe. He tried to push them to name the axe in English and they were totally at a loss. This not only proves what Uwezo reports mentioned in the literature review section over the last three years have been about, but also is an indictment of the way children are introduced to learning. In nursery schools across Kenya, young children at ages 3 – 5 are taught through letters and pictures. When learning letter 'A', they recite 'A' for Apple and not 'A' for Axe, a

tool which is definitely more availa

This study therefore advocates for a paradigm shift in the way education should be provided for by the Kenyan authorities and experienced by the Kenyan learners as I conclude in the following section.

Conclusion

While the interventions in this study highlight the scenario albeit in one school in Kenya that could easily country, it is clear that the complete story across Kenya has not been told

yet. Lugari district is clearly not the most marginalized part of Kenya.

As such there are places in Kenya such as the Arid and Semi Arid Lands

(ASAL) of Northern Kenya, which ar question for Uwezo has been: are o the present. I pose the question through this paper that projects into the

future thus: will our children learn? This is an important question, as the prevailing circumstances are not getting any better soon. However, we need to begin answering this question and the interventions in this paper were one step towards enabling answers to the question for the intervention school and the community around the school.

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