Kenyan Schools Online Content Project

Summary of Baseline Study Report

Project implemented by Avanti Communications, sQuid, Whizz Education and Camara Education

Baseline survey conducted by Advantech Consulting

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iMlango

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List of Acronyms

DFID	Department for International Development
FGD	Focus Group Discussion
FGM	Female Genital Mutilation
FM	Fund Manager
GEC	Girls' Education Challenge
HH	Household
ICT	Information and Communications Technology
KII	Key Informant Interview
KNBS	Kenya National Bureau of Statistics
M&E	Monitoring and Evaluation
MoEST	Ministry of Education, Science and Technology
ToC	Theory of Change
VfM	Value for Money
VSAT	Very Small Aperture Terminal

1 Introduction

1.1 Introduction to iMlango

The iMlango project ("mlango" means doorway or portal in Swahili) aims to improve the enrolment, retention and learning outcomes for 55,000, marginalised girls across 195 primary schools in Kenya through the delivery of

- High-speed satellite broadband connectivity to schools;
- Personalised maths tuition with a virtual online tutor, alongside digital learning content for maths, literacy and life skills;
- Tuition and support to teachers to use ICT in their teaching;
- Electronic attendance monitoring with conditional payments - to incentivise families to send their daughters to school – for use with local merchants;
- In-field capacity in IT, technology and support resources;
- Real-time project monitoring and measurement.

iMlango is supported by the Kenyan Ministry of Education, Science and Technology (MoEST) and delivered by a consortium of four companies working in partnership with the UK's Department for International Development (DFID). The consortium is led by global satellite operator *Avanti Communications* and its partners are *sQuid*, the smartcard and digital payments system provider*;* online maths tutoring provider, *Whizz Education*; and technology NGO, *Camara Education. Advantech* is the M&E external evaluator of the project that brings expertise and experience in conducting M&E in the Kenyan marketplace, as well as broader advisory services across both government and private sector.

1.2 Scope and structure of the document

This scope of this document is to provide a summary of the baseline survey that has been conducted for the iMlango project.

Section 2 introduces the project's Theory of Change and presents how the intervention aims to tackle the problems around marginalised girls education, as well as the intended outcomes of the project.

Section 3 details the baseline methodology developed focusing on the sampling methodology, the school selection process and the data collection tools used during the baseline. This section also presents the challenges faced during the baseline survey.

Section 4 presents the key baseline findings about the targeted regions and communities.

Section 5 discusses the implications of these findings on the intervention design.

2 Theory of Change

In creating iMlango and its intervention elements, our central hypothesis is that these technology capabilities can be harnessed in a Kenyan education context. Project iMlango has been designed to deliver improvement in education and life skills for students, assisted by high quality quantitative information about students, including school attendance and their educational progress.

Our aim for iMlango is to demonstrate an improvement in the life chances of marginalised girls, and to help contribute to their ability to complete a full cycle of education.

The four pillars that our Theory of Change (ToC) is based on are:

1. **Connectivity** – the provision of broadband internet to the schools enables their access to a wide range of resources and services.
   - Broadband connectivity enable teachers to access high quality and interesting content for tuition
   - Teachers want to improve their digital literacy and are motivated to participate
   - Teachers ensure students get access within lessons because they see a positive effect on students (so better teaching outcomes for them)
   - Students engage in interesting and stimulating content that advances their Maths and Literacy

2. **Content** – access to the online 1-to-1 tutoring Maths Whizz software, as well as whole class content for Maths and Literacy creates an opportunity for better education in these curriculum subjects. Exposure to Life Skills (non-curriculum) information and interactions through the online channel will improve the life chances of marginalised girls, through awareness of opportunities for girls/women and a greater positive aspiration and outlook.

3. **Motivation** – a tangible financial link to attendance by girls will encourage parents to ensure school attendance, and the positive impact that results and which can be demonstrated in the home will help reduce educational marginalisation (defined as less than 4 years school attendance) and the risk of educational marginalisation.
   - Financial stipend improves household income and is associated with education
   - Stipend enables family to offset the need for work activities that prevent school attendance
   - More time available for school and association of payment with attendance encourages girl to be allowed and to want to attend school

4. **Capacity** – building the capacity of teachers and students to use the project components and providing the support network will ensure the successful delivery of the project.
   - First exposure to a learning platform and ICT environment can be daunting for teachers and students
   - Careful building of knowledge and confidence for teachers, together with non-monetary motivation will encourage champions of the use of ICT
   - Teachers enthusiasm for the ICT tools will encourage students to become engaged in the same
   - A positive reinforcement is achieved
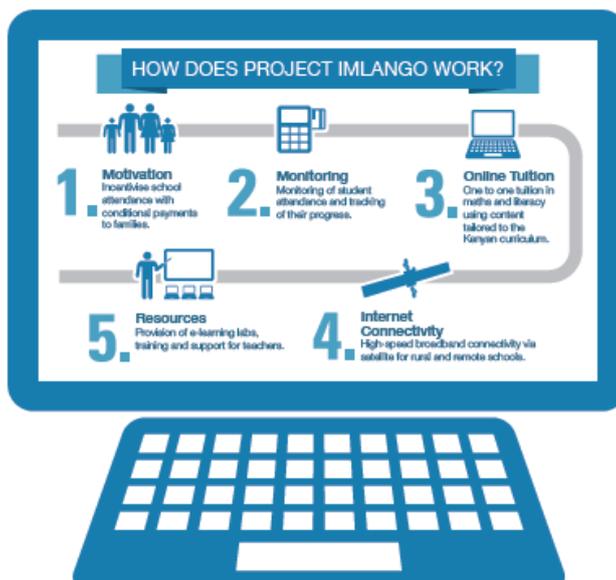
Figure 2-1: iMlango Theory of Change

Table 2-1 summarises the project outcomes and the indicators that we will be monitoring to evaluate the impact of the intervention.

Table 2-1: Project outcome and indicators

Outcome	Indicators
55,000 of marginalised girls in Kenya able to complete a full cycle of education (or an appropriate equivalent) and demonstrate learning.	1. Number of marginalised girls who have stayed in school (or equivalent) through the life cycle of the project (as defined by enrolment, spotchecks on attendance and drop out data)
	2. Number of marginalised girls supported by GEC with improved learning outcomes
	3. Additional funds secured during the life of the project alongside DFID GEC funds to support the marginalised girls
	4. Established mechanisms to enable marginalised girls to complete a full cycle of education

3   Baseline Approach and Methodology

Our baseline survey explored the marginalisation factors around education in our targeted schools, households and communities. This survey was vital for understanding local context and tailoring the intervention to the needs of the targeted regions.

3.1 Strategy Overview

The programme involves 260 schools that were randomly broken down into four groups A, B, C and D, with group D being the control group. Each of the groups A, B and C will receive different iMlango components, so that the project evaluation is split into three separate evaluations (A against D, B against D and C against D). This increases the VfM by allowing more comprehensive research on the impact of the various iMlango components.

Table 3-1: Description of intervention groups

Description	Group A Full intervention	Group B No Personalised Tutoring	Group C No Stipends	Group D Control Group
Access to iMlango learning platform	X	X	X	
Maths Whizz Personal tutoring	X		X	
Maths Whizz whole class teaching	X	X	X	
Payment of stipends and prizes	X	X		
Attendance monitoring	X	X	X	
Internet Connectivity	X	X	X	
ICT suite (15-25 computers)	X		X	
Computer & Projector (for whole class teaching)	X	X	X	

3.2 Sampling Methodology

The sampling methodology adopted is a cluster sampling approach in combination with matching school pairs to ensure homogeneity of the schools. The cluster sampling approach enabled us to perform the baseline in a subset of the schools instead of using samples from all the schools thus reducing its duration and simplifying logistics.

A sample of 50% of the schools was used for the evaluation strategy which meant that only 130 out of the 260 schools were visited for the baseline survey. In addition to the cluster sampling approach, we sought to match the selected schools through a matching process that ensured the homogeneity of the schools. This homogeneity allowed us to reduce the minimum requirement for the total girl assessments that had to be conducted because the sampled benefeciaries were representative of the whole population. The sample requirements with and without the matching school pairs are presented in Table 3-2. It should be noted that the sample requirements presented below do not include attrition.

Table 3-2: Cluster sampling requirements with and without matching school pairs (without attrition)

Description	Group A	Group B	Group C	Group D	Grand Total
Girls assessments without matching school pairs	32 schools 518 girls	33 schools 518 girls	32 schools 518 girls	33 schools 518 girls	130 schools 2,072 girls
Girls assessments with matching school pairs	32 schools 310 girls	33 schools 310 girls	32 schools 310 girls	33 schools 310 girls	130 schools 1,240 girls

The matching exercise was embedded as an integral part of our school selection methodology. Through the data captured in the initial school surveys we were able to identify 260 schools that fulfilled the requirements of the project and match them in pairs. The next step was to randomly assign half of the schools in the evaluation group and consequently their respective pairs formed the non-evaluation group. This random assignment of schools in the evaluation group was performed in such a way that ensured equal representation of evaluation schools in every intervention group within the counties. The distribution of schools in the evaluation and non-evaluation groups by county and intervention group is presented in Table 3-3.

Table 3-3: Distribution of schools in evaluation and non-evaluation by county and intervention group

Intervention Group	Kajiado	Kilifi	Makueni	Uasin Gishu	Grand Total
Group A	9	23	16	17	65
Evaluation	7	11	7	7	32
Non-evaluation	2	12	9	10	33
Group B	10	28	11	16	65
Evaluation	3	14	6	10	33
Non-evaluation	7	14	5	6	32
Group C	7	28	10	20	65
Evaluation	3	14	5	10	32
Non-evaluation	4	14	5	10	33
Group D	4	17	29	15	65
Evaluation	2	9	15	7	33
Non-evaluation	2	8	14	8	32
Grand Total	30	96	66	68	260

3.3 School Selection Methodology

The iMlango project is implemented in the four counties shown in Figure 3-1; Kilifi, Kajiado, Makueni and Uasin Gishu. These regions were chosen based on marginalisation factors (poverty rates, attendance statistics and learning achievements for girls) statistics from Kenyan National Bureau of Statistics and Kenya Open Data as well as other factors such as:

- Availability of electricity to the school;
- Safety of regions to minimise risk of project disruption;
- Accessibility and location of regions to simplify logistics and ongoing support.
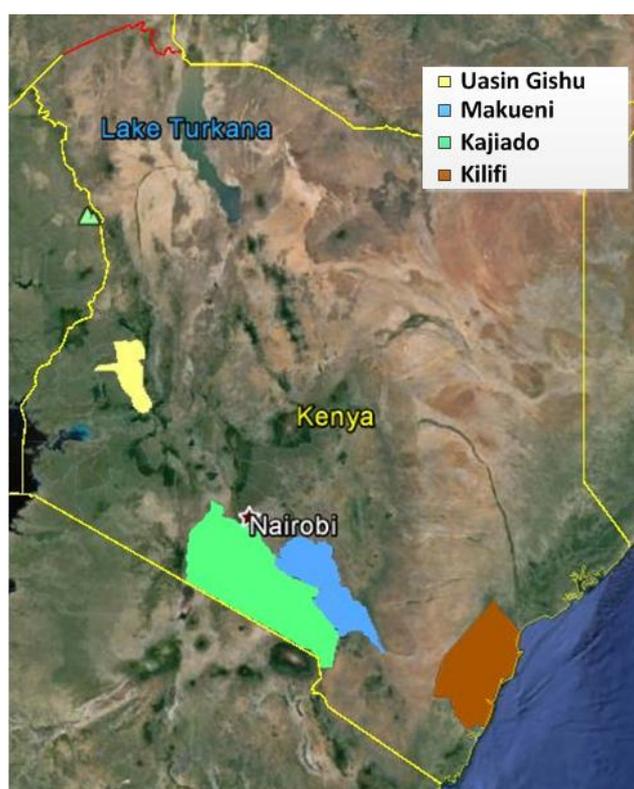
Figure 3-1: Map of targeted counties

Guided by the Ministry of Education, Science and Technology and the local governments, we created a school pool of approximately 400 schools, based on school size, access to electricity and participation in the government's national sanitary towel programme to ensure high level of marginalisation in the project schools.

A total of 260 schools were selected from the initial school pool based on the results of a school survey which aimed to capture school level information to determine suitability for the programme and enable us to match pair the schools. The data collected include:

- Suitability for the programme information – electricity access, willingness to participate in the programme, availability of room for conversion to ICT lab; enrolment, attendance and absence data (using the schools manual records); number of boys and girls attending by class/year; number of teachers and an assessment of current digital literacy amongst teachers.

- Information for matching of the schools – school size, boys-to-girl enrolment ratio, existence and duration of poverty support programmes, number of marginalisation issues identified by the school. Matching the schools ensures that the sampled beneficiaries are representative of the whole population of beneficiaries when using the cluster sampling approach.

The 260 selected schools were randomly assigned to one of the four intervention groups.

3.4 Baseline Tools

Both quantitative and qualitative tools were used for the baseline survey including 700 household surveys (HHs), 1,787 learning assessments, 1,772 questionnaires and 137 perception scorecards for girls, 266 teacher questionnaires as well as 12 key informant interviews, 24 focus groups discussions (FGDs) and classroom observations.

3.5 Challenges in Conducting the Baseline Survey

Table 3-4 summarises the challenges encountered during the baseline survey data collection.

Table 3-4: Summary of baseline survey challenges and the counter measures used

Baseline Survey Challenge	Counter Measure
Research fatigue among the in school girls	The researchers had to sometimes stop the interview process due to fatigue among the girls selected to participate in the surveys, especially the younger ones. This had a time implication and was one of the reasons for mobilising three additional research teams to speed up the baseline survey. An additional counter measure taken was the use of different girls for the learning assessment, girl questionnaire and girl perception scorecard.
School timetable and limited time availability of girls for interviews	The school timetable restricted the available time for surveying girls; students were sometimes dismissed when their teacher was absent, younger students only spend half day in the school. The younger girls were interviewed/assessed first so they would be able to leave on time at midday. Additionally, cultural traditions affected the available time(e.g. praying in the Muslim schools on Fridays), weekends could not be used for surveying as the students live far away or have to wash their uniforms and we would have to provide food in case they came to the school. For this reason, the teams had to go to the schools very early if they had to go on a Friday or avoid visiting schools on Friday altogether.
Remote location of schools	A big challenge were the distances between the schools; the research teams had to spent many hours on the road with some of them having to start their journey as early as 7am especially in Kilifi and Makueni counties. Due to the poor terrain the research teams had to use four wheel vehicles and cluster the schools so that they visited the next cluster of schools only when they had finished with the previous one. Data was collected using mobile phones and in areas where there was no network connectivity this posed a challenge resulting in team members using paper questionnaires. The issue was however resolved by having the research assistants conduct interviews and then upload them once they got to an area with connectivity. Lastly, in some of the areas there were wild animals, so the research teams had to be careful not to use certain routes too early in the morning or late in the evenings.
Language difficulties with girls	Younger girls were not very confident in the use of English and the researchers had to help them understand and in some cases deliver the assessments or surveys in another language (Swahili or local language). When selecting the researchers and enumerators high importance had been given in them being from the county that they had to work in, as this helped overcome communication and cultural barriers and gain the trust of local people more easily.

4 Key findings emerging from the baseline

In this section we present 10 key baseline findings around girls, the targeted communities and the marginalisation factors that exist.

4.1 Poverty

- Our cohort is very poor. All the assessments from the HH data indicate that the group is overall below or only just above the $1.25 per day household income as Figure 4-1 illustrates.
- Amongst the parents, the lack of education is high, although there is verbal commitment to wanting to see their children better educated.
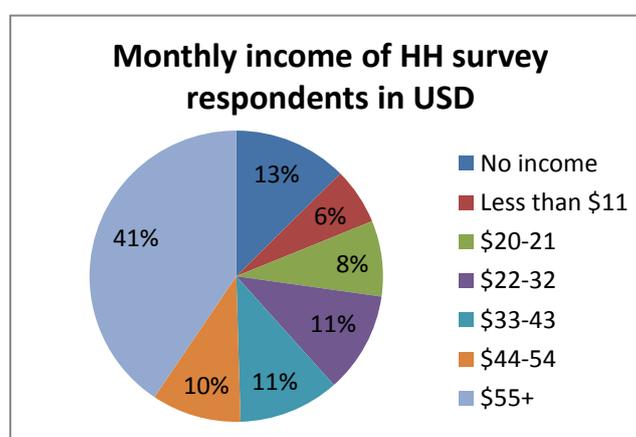- In the FGDs incidents of children stopping schools because of lack of food were mentioned.

Figure 4-1: Monthly income of HH respondents in USD

4.2 Early Marriage

- Early marriage still occurs, and parents are often themselves early married.
- Early marriage has both an economic and a cultural dimension in the communities; girls might get married early either because of poverty in the family or because of cultural beliefs.
- Girls aspire more to education completion and to career than to early marriage
- Parental support for the girl in education completion and career versus marriage is not as great as the girls' aspirations.
- Girls are often in danger of getting married early in their teens when they should normally be at the end of primary school. However, it is very usual for children to enroll late in school, therefore early marriage is a reason that girls are not able to complete primary school.

4.3 Stopping school

- We see expected reasons for stopping school amongst girls: poverty, pregnancy and early marriage.
- Although the importance of girl as well as boy education seems to be understood by communities and parents, there is a sense from the teacher questionnaires and the FGDs that the relative emphasis still leans towards boys.

- The picture of drop out is very complex, as the FGDs and the KIIs indicate various reasons such as mzungu marriage, distance to school, school hours, pregnancy and others.

4.4 School attendance

- We have not identified missing girls (or boys) who do not attend school at all
- We have found parents to be supportive of education and wanting their children to go on to higher education.
- Parents however openly acknowledge attendance rates of 70%, a figure broadly supported by the surveyd teachers and the qualitative data collected (and to be determined better when the historic registers of attendance are examined).
- Parents presented inability to contribute to the school expenses and uniforms and sickness as reasons for the girls' poor attendance records. Although primary education in Kenya is free of tuition fees, schools usually ask the parents to contribute to the various expenses of the school.
- Teachers on the other hand did not raise student sickness as a reason for non attendance and are mentioning household chores instead.
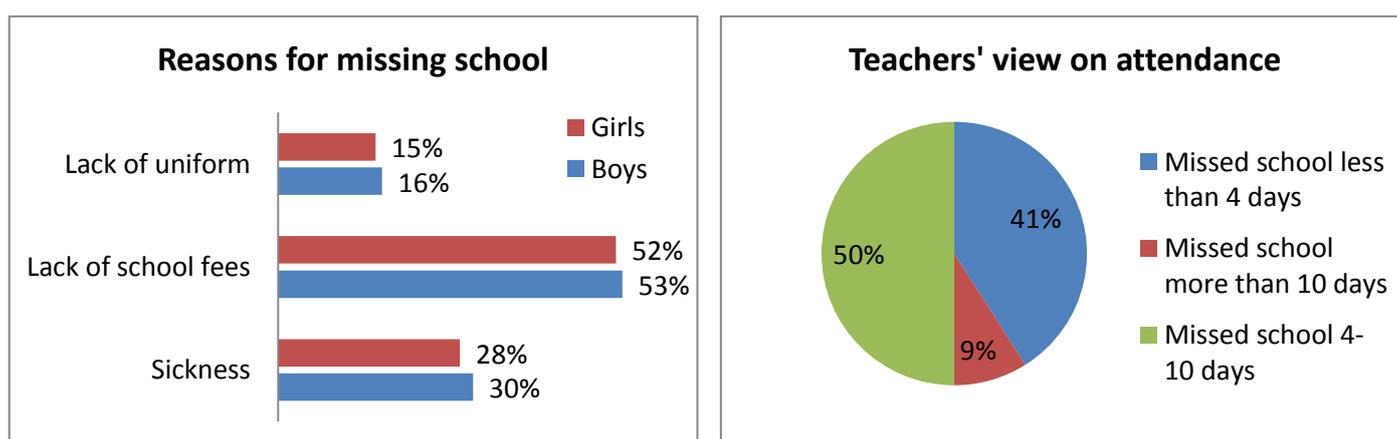

Figure 4-2: Parents' view on reasons for missing school and teachers' view on attendance

4.5 Education standards of girls

- We have established good baseline data on the learning assessments with normal distribution curves and in line with expectations.
- Overall we found that the performance of girls in the learning assessments ranged from average to poor as was expected. The data indicates major learning gaps that need to be addressed by the project.
- We have noted in Maths that the performance of the girls deteriorates (in the distribution curve) for higher Standards.
- In English literacy assessments for Standards 2 and 3 (where a reading test is conducted) we have very low performance in reading skills. Whilst this might be a function of too hard a test, we think that reading has emerged as a big problem.

4.6 Aspirations and confidence

- The girls demonstrate aspirations for future careers.

- We see aspiration in younger ages towards being a teacher which could be attributed to them being role models, and in older girls a range of aspirations/job types are apparent.
- The girls express their confidence in the interviews, and there is no string evidence of significant differences between boys and girls in the classroom.

4.7 Study at home

- Girls indicate that they do study at home, and parents indicate that they provide adequate time for home study, although the parental support for girls home study is weaker compared to boys.
- However, given the lack of education observed in parents, the definition of what is adequate time for home study may be inadequate.
- From the FGD's a stronger picture emerges that parents might be more of a barrier to home study.
- The data from the girl questionnaires reveal that household chores are assigned to them when at home which may have an impact on their available study time. The relevant data are presented in Figure 4-3.
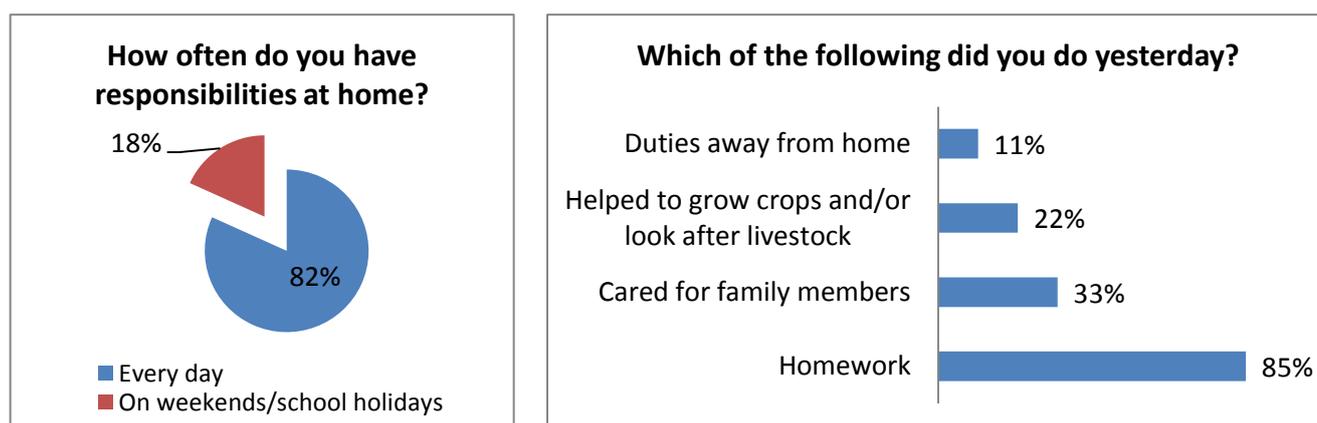

Figure 4-3: Frequency and type of girls' responsibilities at home

4.8 Teachers and schools

- A picture of enormous pressure within schools emerges, for example in respect of
    a. Limited resources for teaching
    b. High ratio of pupils to teachers
    c. Inadequacy of teachers
    d. Lack of sanitation
    e. Poor quality of classrooms
- At the same time, it is clear that at school, girls respect their teachers and they become role models.

4.9 Environment for girls

- The FGDs reveal many issues that impact especially on girls, including home chores, travel, extreme poverty forcing decisions not to educate, lack of sanitary towels, bullying at school, and regarding girls as assets.
- Menstruation, teasing and even rape at school was mentioned in FGDs.

- There was little mention of disabled children, but where these are present there appears to be a tendency to keep these children at home.
- FGM did not emerge as a particularly strong issue, although it is acknowledged in the FGDs as a reasons for stopping or missing school.

4.10 Views on ICT

- We have found general acceptance and enthusiasm for ICT amongst both teachers and the communities.
- Among the teachers interviewed we have varying level of ICT skills; half of the teachers surveyd said that they have ICT skills such as typing skills and sending emails.
- Almost all the teachers interviewed stated that they are willing to learn how to use the internet and the ICT infrastructure in the school environment or build on their existing skills.
- Based on the FGDs and the KIIs we can see the communities recognise that the use of internet and ICT in schools can be beneficial to the students and the teachers.

5   Impact of Baseline Findings on Intervention Design

In this section we are presenting how the key findings influence the intervention design and our ToC.

As a general comment, the baseline survey didn't indicate that a change in our ToC is required. The results of the baseline analysis will be used to drive the decisions around some project activities and will help us focus on the marginalisation factors that relate to our targeted communities.

5.1 Defining educational marginalisation

The targeted communities are **extremely marginalized through poverty**. Poverty emerges as a reason for not going to school, in terms of school fees and uniform.

All children appear to be going to school, but the **school attendance** may be as low as 70%.

We had previously assumed that educational marginalisation had more to do with the absolute number of school years attended before dropping out of school. In fact there appears to be a great risk of educational marginalisation in our cohort just through irregular attendance.

Attendance seems to be linked to the poverty issues, and is further increased by child **sickness** and the girls' **household responsibilities**.

Implication for the intervention:
1. *We should try to increase the focus within schools and communities on attendance.*
2. *We should consider the targeting of stipends towards uniform, given our small resources. This might be one way to ensure the girl is the direct beneficiary.*
3. *We should try to improve knowledge and encourage good practice of hygiene amongst the children to help reduce the impact of sickness.*
4. *We should try to build up a better picture of these factors through the students' online profiles and our interactions with the communities and the schools.*

5.2 Aspirations

It is clear that aspirations of both parents and girls for education and career achievement of girls exists. This is a very positive finding, given that parental education levels are generally low. Yet parents may in the end be a key inhibitor for girls, since daily life is hard and is forcing choices to be made.

The data indicates that despite the girls' aspirations, the reality of poor attendance, grinding poverty in the home environment, and the expected early marriage and pregnancy factors all impact negatively on these aspirations.

Implication for the intervention:
1. *We should try to encourage the aspirations amongst girls by using the portal to share information about different careers. This should include information targeted at different age groups, about diferrent careers and also role models for girls.*
2. *We should try to make available relevant information about the importance of education over early marriage.*
3. *We should consider ways for the community of parents to access education and information available in the iMlango portal.*

5.3 Learning outcomes

The girls' performance in the maths and literacy assessments indicates major learning gaps that need to be addressed. Combined with the poor resources that the schools and the teachers are equipped with we realise how important our project can be for improving girls' learning outcomes.

The personalised tutoring in Maths will address the specific needs of the girls and help them improve their performance. The class and school reporting tool can be used by the teachers to identify the weaknesses of the students in their class and focus on addressing them through the whole class tutoring sessions.

Reading skills could be a problem area for the girls, affecting their literacy attainment as well as their progress in other school subjects. FGDs indicate the paucity of books and in some cases poor teacher instruction with regard to ensuring children take notes.There seems to be a real opportunity to assist with a drive toward reading skills, and supporting the teachers to encourage this.

Implications for the intervention:
1. *The portal provides an opportunity to create a 'Reading dialogue' with the children. Project iMlango should consider expanding the personal profile section, and set up interactive questions for teachers to use to encourage children to write – these questions should be frequently changed to maintain dynamic appeal, and enable different age groups to respond appropriately. Source material might be useful within the portal.*
2. *We should focus on encouraging the teachers to use the learning resources provided.*

In the Table that follows we present a number of assumptions that were used during the designing of the project and the impact of the baseline findings on these assumptions.

Table 5-1: Summary of findings around the assumptions made prior to the baseline survey

Assumption before Baseline Survey	Finding after Baseline Survey	Impact on Intervention Design
The number of impacted marginalised girls before the baseline was estimated to be 25,675 girls.	During the baseline we collected data on enrolment from the schools in groups A, B and C and we found out that the schools were larger than originally anticipated. This finding in combination with the high marginalisation that was encountered resulted in the marginalised girls population impacted by the project to increase to 55,000 girls.	In cooperation with the Fund Manager we decided to scale up the reach of the project so that we would be able to impact all the marginalised girls identified in our schools.
Educational marginalisation is related to the number of years girls are attending school before dropping out.	From the baseline data collected we can see that the attendance records of in-school girls can be as low as 70%. Therefore marginalisation can occur in school as well through irregular attendance.	We should focus on improving the attendance record of girls by liaising with the schools and the communities.
Girls miss or drop out of school due to poverty in the family.	This assumption was verified through the baseline surveys.	No impact on the intervention design as it was already integral part of out ToC. Stipends could be targeted to provide uniforms for girls.
Girls school	Although this assumption will be further	This finding doesn't impact

attendance record is worse than boys.	tested during the intervention through the use of the attendance monitoring system, the baseline survey seems to indicate that there is no substantial difference between boys and girls as far as attendance is concerned.	the intervention design, however we are considering to redirect a small proportion of the stipends to boys in order to avoid their marginalisation.
Parents value their sons' education more than their daughters'.	The HH surveys conducted refuted this assumption. Almost all HH survey respondents stated that they are willing to pay for their children to reach the highest education level and that they value boys' and girls' education the same. However, the teacher questionnaires, the FGDs and KIIs present a different perspective.	This will have to be explored further during the project through engagement with the school and the communities.