# Achieving Aid Effectiveness

## Monitoring and Evaluation Report 2009

*'..The world is a digital world. For you to cooperate and live in the world, to exist in the world according to the times, you must be computer literate'.* [1]

1. Feedback from a student at Brainsworth Secondary School, Mombasa. Collected during MSC study, 2009.

# Letter from the C.E.O.

The development of an effective Monitoring and Evaluation (M&E) system is a key component in Camara's efforts to fulfil its mission of 'using technology to deliver education more effectively to disadvantaged communities in Africa'. Our M&E function gives us powerful insights into the strengths and weaknesses of Camara's education-delivery programme and provides real-time insight into what is happening across our African Hubs.

The data collected has been enormously important in terms of demonstrating Camara's effectiveness; learning how to improve our programme; and making key management decisions. The combined elements of the M&E function represent information flows from every step in our Delivery Chain:

1.      Detailed reports from site-visits to 139 schools.
2.      Surveys from 259 trainees.
3.      Online feedback from 16 schools.
4.      Most Significant Change studies in three countries.



**Information Flows**
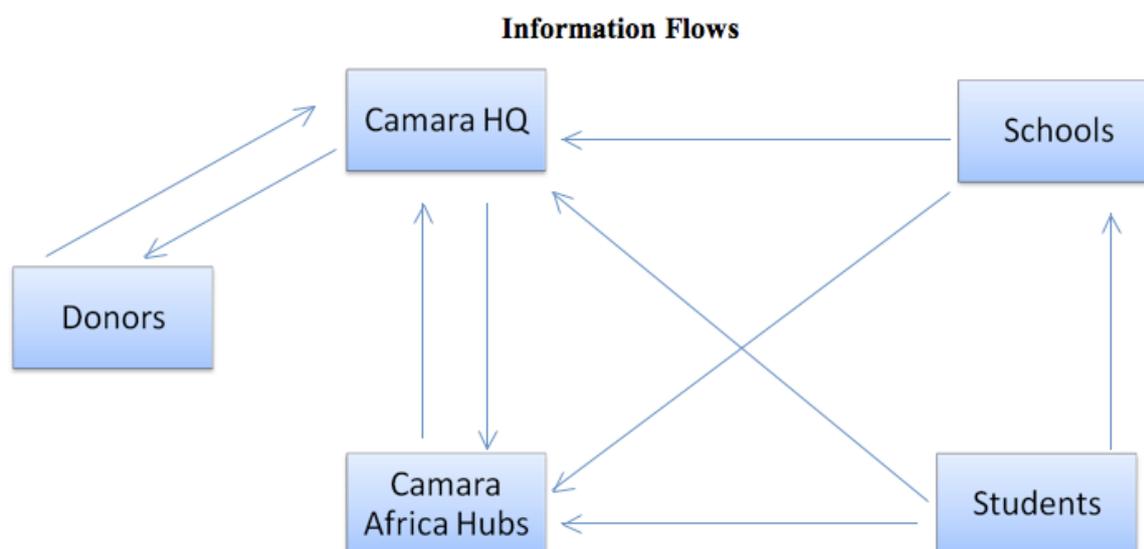
By definition, an effective M&E system should highlight the problems and operational weaknesses of an organisation. Honest self-criticism is critical for institutional learning, and is a key input for Camara in trying to genuinely improve our performance. We also strongly believe that this information should be publicly disclosed so that donors and other stakeholders have a comprehensive and accurate understanding of the impact being achieved with their resources.
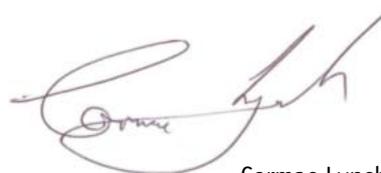
## Hub Audits

On the basis of the reports generated, each partner Hub was audited on a range of criteria, from financial sustainability to the development of localised educational material.  The 2009 audits were crucial in understanding which Hubs were demonstrating real value and were advancing the goals of Camara.  They were also important in informing our decision-making process, and caused us to seek the replacement of the Lesotho Hub CEO and to terminate our relationship with our local partner in the Ethiopia Hub.  Audit summaries and the full reports are published in this document and on the Camara website.

## Programme Outputs

Traditionally development NGOs have struggled to demonstrate tangible results.  We believe that the M&E reports published here provide some, though not yet conclusive evidence, that Camara is making a real difference.  For example, in Uganda the computers sent since the start of 2008 have been used by 21,700 students across 47 schools.  94.4% of the computers were still working perfectly in the lab 18 months on, and girls have been given at least equal access.  In Zambia 192 teachers were trained in 2009, 47% of whom were female.  However, our M&E has shown certain weaknesses in our programme, with virtually no documented maintenance or local training in place, and minimal demonstrated impact in Ethiopia and Lesotho.  These gaps highlight the areas that require significant work in 2010.

By providing a full suite of services, from teacher-training, to maintenance and expert technical support, Camara has begun to address many of the issues that have thus far hampered the meaningful use of technology in education in an African context.  As a set syllabus is introduced in 2010, the M&E function will assess the quantifiable learning benefits that accrue to teachers.  In the medium term, Camara will measure the impact that its programme has on curricular performance in beneficiary schools across the region; as well as the developmental benefits that accrue to students, such as increased employment opportunities and civic engagement.

The most exciting evidence of Camara's impact comes from the students themselves.  Contrary to the traditional perception of children as passive beneficiaries, students in African schools are making considered and informed demands based on an ambitious and global perspective.  In a Camara study conducted in late 2009, African students across the region made it clear that they envisage themselves as doctors, lawyers, engineers, bank managers, and ministers.  They energetically articulate the need for ICT education to compete and participate as agents of change in a global context.

Cormac Lynch

April 2010

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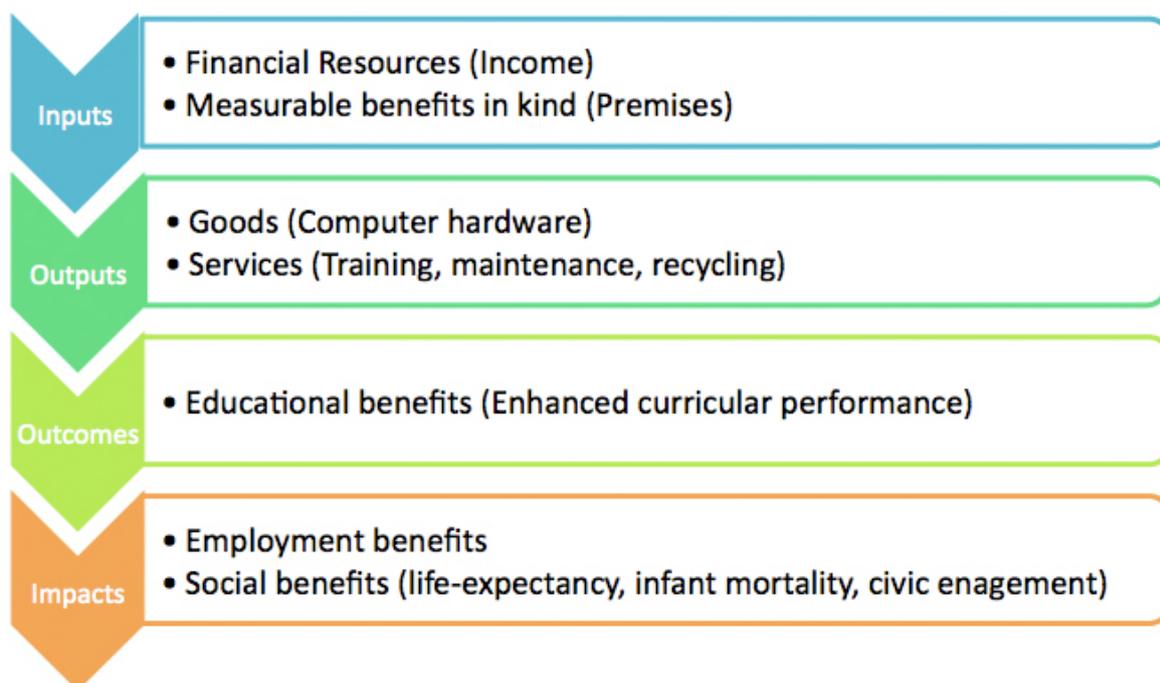
# 1. Introduction

*'Education is a social process. Education is growth. Education is, not a preparation for life; education is life itself'.*

*John Dewey*

The Camara model operates essentially as a not-for-profit franchise. The partner Hubs are separate legal entities with autonomous boards, and run along a social enterprise model.

## What to measure?

There are several stages of core indicators required to evaluate the performance of Camara comprehensively. The inputs are the financial resources required to run the programme, while the outputs are the tangibles delivered with a market value in the eyes of the target groups. At a deeper level, the outcomes are the educational benefits that accrue to the ultimate beneficiaries. Finally, the impacts are the improvements in the quality of life of beneficiaries that accrue from these educational benefits. A suggestive mapping of the Camara chain of core indicators is as follows:

**Inputs**
- Financial Resources (Income)
- Measurable benefits in kind (Premises)

**Outputs**
- Goods (Computer hardware)
- Services (Training, maintenance, recycling)

**Outcomes**
- Educational benefits (Enhanced curricular performance)

**Impacts**
- Employment benefits
- Social benefits (life-expectancy, infant mortality, civic enagement)

Each subsequent step in the chain of core indicators becomes progressively difficult to measure. For example, the inputs are available from the organisation's annual accounts. The quantity and quality of the outputs can be measured through objective testing and the collection of subjective feedback. The educational outcomes will require a comparative study across multiple schools that attempts to isolate the benefits of using technology in the classroom. Finally, objectively assessing the ultimate impact necessitates a long-term study and significant resources.

The Camara M&E strategy is to first measure the outputs and compare them to the inputs required to establish the effectiveness of the network. This process has already increased focus on organisational efficiency considerably, and led to management changes in two of the Hubs in 2009. For the time being Camara is constrained by limited resources and is unable to commission a formal study on the scale required to establish the educational outcomes and socio-economic impact of the programme. As such, it is reliant on research produced by organisations like UNESCO and The World Bank; and beneficiary evaluation through the Most Significant Change (MSC) technique, to demonstrate the educational and developmental benefits of the meaningful use of technology in the classroom. Despite these limitations it is clear that by continuing to rigorously monitor the quantity and quality of its outputs; by allocating resources where they produce the most demonstrated market value; and by using beneficiary feedback and the findings of third-party research to enhance its outcomes and impact, Camara can increase its effectiveness by several multiples of its current performance.

This report is clearly not intended to be read from beginning to end. The major points of interest are the summary data at the beginning of each chapter. The additional country reports are included to allow for further explanation or detail where required. Hopefully, the information reported here will allow for a thorough objective evaluation of the strengths and weaknesses of the programme and its efficiency.

# 2. Outputs

*'An educated person is one who has learned that information almost always turns out to be at best incomplete and very often false, misleading, fictitious, mendacious - just dead wrong'.*

*Russell Baker*

In terms of evaluating the effectiveness of the Camara network in producing marketable outputs it is important to establish what each actor in the process is doing.  Using the Supply Chain approach, the value stream from donor to end beneficiary is mapped below: [2]
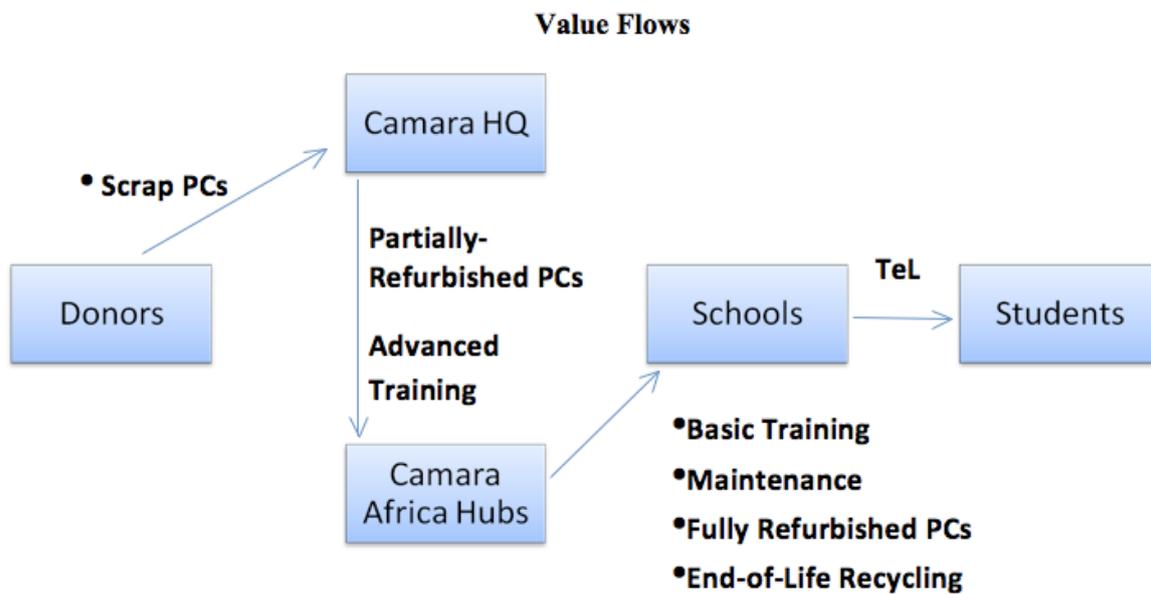


**Value Flows**

While there are additional value flows, such as mentoring and consultancy delivered from Camara Headquarters to the African Hubs, the outputs above represent the most significant and measurable goods and services produced by the network at present.  On this basis an economic analysis of Camara in Ireland is useful in evaluating its effectiveness.  While the organisation patently produces more than is measured here, the economic analysis is nonetheless important for evaluating its effectiveness in its core activities.  All values are derived from prices charged for comparable services by local providers in the private-sector. [3]

## Camara Headquarters

| Item | Units | Market Value Per Unit | Total Cost |
|---|---|---|---|
| **Inputs** | | | |
| Money | | | €1,024,023 |
| Computers | 12,000 | €0 | €0 |
| Dublin Workshop | 1 | | €100,000 [4] |
| **Total Inputs** | | | **€1,124,023** |
| | | | |
| **Outputs** | | | |
| Computers | 6,750 | €180 [5] | €1,215,000 |
| Training in Africa | 1,295 | €27 [6] | €34,965 |
| **Total Outputs** | | | **€1,249,965** |
| | | | |
| **Value Created** | | | **€125,942** |
| **Return** | | | **11.2%** |

The Camara Headquarters is clearly performing reasonably well in terms of a basic evaluation. However the reality is far more complex. There is certainly a need to revisit the short-term volunteer programme, since basic and intermediate training can be provided by the Hubs at much lower cost. If the technical, managerial, and reporting consultancy provided to the Hubs was accounted for the Headquarters would be producing much more. However, this output is still quite unsystematic and thus difficult to quantify in a meaningful way.

The value created by the Hubs is currently seriously undermined by their lack of reporting. As the communication capacities of the Hubs improve their demonstrated outputs should represent the majority of the value created by the network, as the ideal Hub below demonstrates. None of the Hubs is currently demonstrating the creation of any significant value above its inputs. While there is certainly training and maintenance taking place at a local level, the information is not being collected by Headquarters because of communications shortfalls. The main priority for 2010 should be improving these information flows and demonstrating significant value created by the supply chain above and beyond its inputs.

4. Estimated benefit in kind

5. Assuming €200 market value and allowing 10,000 distribution costs per container for the local Hub.

6. Based on prices charged by Second Life Uganda for comparable services  http://www.secondlife.co.ug/

## Perfect Hub Example

| Item | Units | Market Value Per Unit | Total Cost |
|---|---|---|---|
| **Inputs** | | | |
| Money | | | €0 |
| Computers | 1,300 | €180 | €234,000 |
| **Total Inputs** | | | **€234,000** |
| | | | |
| **Outputs** | | | |
| Computers | 1,300 | €200 | €260,000 |
| Maintenance | 200 | €825 [7] | €165,000 |
| Training | 200 | €27 | €5,400 |
| Computer Recycling | 200 | €6.60 [8] | €1,320 |
| **Total Outputs** | | | **€430,400** |
| | | | |
| **Value Created** | | | **€196,400** |
| **Return** | | | **83.9%** |

*'It is important that students bring a certain ragamuffin, barefoot, irreverence to their studies; they are not here to worship what is known, but to question it'.*

*Jacob Bronowski*

The School Visits represented the core of the M&E function for 2009. The objective was to collect as much data as possible from the schools that had received Camara computers from 2005. An M&E Officer was hired for four-months in each of the four established Hub countries, and set a target of schools to visit and report on. The reporting structure and training was developed by Camara in Dublin, while the Officers were hired by the Hubs themselves. It is important to emphasise that the Hubs in Africa are autonomous partners with their own local boards and staff.

For the most part the M&E Officers were more than capable of delivering the information required, though both the Lesotho and Ethiopia Hubs showed no real intention of achieving their targets. Largely on this basis Camara Headquarters could not verify that all of the computers that Ethiopia had received had gone to schools, and decided to change partner in the country. On the basis of the poor results in Lesotho, combined with a stockpile of 800 computers in the Hub itself, the local board decided to replace the CEO.

Despite the disappointing performance of two of the Hubs, the data collected across the 137 schools visited has been enormously useful. From the perspective of organisational learning some major themes are manifest across the schools visited. In Ethiopia congestion in the Learning Centres was an abiding problem. The country was also interesting because the officer gave a gender breakdown for each school. Despite the fact that all of the schools were mixed gender, only 36% of students were girls. On this basis, gender equitability is now being monitored across the project countries by documenting the numbers of girls and boys in each school, rather than just whether they are mixed or segregated.

In Uganda the response of teachers to Linux was quite nuanced, and clearly depended on whether respondents had been trained to use it. In general teachers showed a welcome criticism and inquisitiveness, and several had installed Windows on sample machines to test and compare the two operating systems. What was also clear was the paramount importance of the educational games on the Camarabuntu suite, an aspect that is often overlooked within the organisation. Both teachers and students identified the additional software they want on the computers, such as typing tutors and educational videos. On the whole, schools in Uganda clearly need more maintenance support and more basic training.

In Kenya students are enormously positive towards ICT, with many citing it as an opportunity to secure a better future. Again congestion was cited as a major problem, and again teachers clearly need better training support in maintenance and in using Linux. Like Uganda there is a clear demand for more educational software and training materials. Teachers and students were both concerned that Linux was not examinable on the Kenyan school syllabus, though the Hub has since successfully lobbied the Ministry of Education to have this changed.

Kenya is also interesting because the officer closely detailed what schools were charging students for computer classes.  Given that the state can provide so little to schools, charging a small premium for extra services is not unreasonable provided those who are unable to pay are not excluded.  The worrying aspect is that the charges vary enormously, from €1.16 per annum, to €56.  An analysis of the costs that accrue to schools suggests that annual fees should be in the region of €2. One enormously positive finding is that 70% of students in Kenya were using the Camara Learning Centre two times a week or more.  A worrying trend however, is the number of schools where students have been given no access whatsoever.  This was the case in five schools in Kenya and seven in Uganda.

In Lesotho congestion was again a recurring complaint.  A major unaddressed issue in this regard seems to be power, since many of the schools in the project countries use petrol generators where they are not connected to the electricity grid.  This is enormously expensive and leads many schools to run the Learning Centres for a fraction of the school week, which undermines their impact enormously.  In addressing this issue alone, Camara could enhance its effectiveness dramatically.  Interestingly there is little correlation between complaints of congestion and student to computer ratios in individual schools.  There is a patent need for a Learning Centre Management Module across the programme, covering topics such as budgeting for a Learning Centre and splitting classes. [9]

9. For example http://bestgrade.org/

## M&E School Visit Summary 2009

| | Ethiopia | Kenya | Uganda | Lesotho | Rwanda | Zambia | Tanzania | Aggregated |
|---|---|---|---|---|---|---|---|---|
| M&E school visit target | 80 | 80 | 50 | 50 | | | | 260 |
| M&E visits achieved | 20 | 56 | 48 | 13 | | | | 137 |
| Computers in schools visited | 417 | 938 | 693 | 420 | | | | 2,468 |
| Mean lab size | 20.9 | 16.8 | 14.4 | 32.3 | | | | 21.1 |
| Median lab size | 20 | 15 | 12 | 20 | | | | 17 |
| Computers broken | 9.6% | 20.0% | 6.4% | 7.0% | | | | 10.8% |
| Computers missing | 0.0% | 3.5% | 1.7% | 6.0% | | | | 2.8% |
| Computers functioning in the labs | 90.4% | 76.0% | 94.4% | 87.6% | | | | 87.1% |
| Approximate total number of students | 12,548 | 14,817 | 21,700 | 5,598 | | | | 54,663 |
| Mean number of students per school | 738 | 296 | 452 | 431 | | | | 479 |
| Median number of students per school | 700 | 197 | 350 | 468 | | | | 429 |
| Median number of students per computer | 35 | 13 | 29 | 23 | | | | 25 |
| Mixed schools | 100% | 71.4% | 91% | 100% | | | | 90.6% |
| Boys' schools | 0% | 16.1% | 6% | 0% | | | | 5.5% |
| Girls Schools | 0% | 12.5% | 2% | 0% | | | | 3.6% |
| Schools that charge students to use computers | 95% | | 30% | 92% | | | | 72.4% |
| Schools that do not charge students to use computers | 5% | | 70% | 8% | | | | 27.6% |
| Schools with computers in good condition | 75% | | 81% | 85% | | | | 80.3% |
| Schools with computers in fair condition | 10% | | 7% | 15% | | | | 10.7% |
| Schools with computers in poor condition | 15% | | 12% | 0% | | | | 9.0% |
| Labs in good condition | 100% | | 79% | 62% | | | | 80.3% |
| Labs in fair condition | 0% | | 9% | 23% | | | | 10.5% |
| Labs in poor condition | 0% | | 13% | 15% | | | | 9.3% |
| Schools suitable to receive more computers | 95% | | 75% | 69% | | | | 79.7% |
| Schools not suitable to receive more computers | 5% | | 25% | 31% | | | | 20.3% |

# 3.1 Ethiopia School Visits

## M&E Report 2009
Schools visited:  20 (target= 80)

## Introduction

The M&E function in Ethiopia was quite weak in 2009.  While the initial number of schools to be visited was set by the Hub itself, there was very little effort made to achieve this target.  There was a time-lag of several months before the visits began, and the proportion of schools visited is very disappointing.  There are certainly very interesting themes that emerge from the data collected, but they lack the colour and depth that more reports would have contributed.  Some of the descriptions were sparse, and at times quite unclear.  This certainly suggests both the need for a more formalised reporting system with closed fields, and a shorter time-lag between the initial training and the commencement of the reports.  On a more positive note, the reports disaggregated students by gender in each school, which proved invaluable in terms of assessing equity of access.

### 1. Student Interviews

For the most part students seem very satisfied with the Camara computers, and in 14 of the 20 schools they stressed this specifically.  A recurring theme, given the large classroom sizes, was congestion in the computer labs.  This was cited as being a problem by students in 11 schools.  In two schools the students articulated difficulties with Linux, suggesting additional training as being the solution.  In one school students stressed their satisfaction with Linux, though in another they pointed to the lack of Amharic support as being problematic.  It is important to emphasise that the students are asked open-ended questions about the computers, rather than steered in any direction.  Therefore the lack of Amharic support and congestion are likely to affect the majority of schools in Ethiopia and should be prioritised.

### 2. Teacher Interviews.

In five of the schools teachers expressed surprise at how quickly students had developed ICT skills.  Nine of the schools specifically expressed general satisfaction with the Camara computers, while two complained of congestion problems arising from a low computer-to-student ratio.   Eight teachers specifically reported liking Linux, which seems high given the lack of Amharic support and training provided.  One teacher suggested that Linux is a particularly good operating system for children.  Three schools reported that the computers were a useful tool in delivering lessons to students.  In one school teachers even reported that having a computer lab had improved their relationships with their students.

## 3. Beneficiary Profile

| | |
|---|---|
| Total Number of computers received | 1,946 |
| Computers accounted for | 417 (21.4%) [10] |
| Mean lab size | 20.85 computers |
| Median lab size | 20 computers |
| Computers broken | 40 (9.6%) |
| Computers missing | 0 (0%) |
| Computers functioning in the labs | 377 (90.4%) |
| Approximate total number of students | 12,548 [11] |
| Mean number of students per school | 738 |
| Median number of students per school | 700 |
| Median number of students per computer | 35 |
| Mixed schools | 20 (100%) |
| Number of boys | 7,631 (64%) [12] |
| Number of girls | 4,247 (36%) |

The most striking statistic is the number of computers that have not been accounted for. The initial plan as agreed with the Adama Hub management was to visit and report on 80 schools. This would have covered the vast majority of the computers received in the last four years. As it stands only 20 schools were visited and we have no data from the other 60 institutions, accounting for some 1,529 computers. This represents a cost of some €75,000 to Camara, or over €300,000 on the open market. While we believe that the majority of these computers were delivered to legitimate educational institutions, the other findings in the Adama Hub are inevitably tarnished. This lack of accountability by management is extremely disappointing, and was reflected in a poor audit performance. Of the twenty schools visited, at least four are owned by the former CEO, all of which showed appropriate use of the computers. The remaining schools are located in Assela, Havassa, Adama, Shashamene, and North Shewa, all of which are easily accessible from the Hub. Whether this reflects a concentrated geographical focus by the Hub, or a bias in the M&E visits, is difficult to discern.

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10. All subsequent calculations are based on this figure
11. In 17 schools. In 3 cases the number was not specified
12. Gender breakdown given for 16 schools. Calculations are based on this number

The median lab size suggests that the Camara recommendation of a lab of 25 computers has been implemented reasonably closely. However, the mean and median class sizes in Ethiopia are particularly large, making the target of 25 computers per school inappropriate in some cases. For example, two schools had 2,000 students each, and were still only given 20 computers. While Camara is patently limited insofar as its schools have limited means, there should be a systematic effort to give computers in numbers appropriate to the needs of each school. The median number of students per computer is slightly higher than desirable, assuming a 35 hour school week.

The reporting of no missing computers from schools is difficult to explain. Possibly the small number of schools visited represented those with a close relationship with the Hub. Alternatively, the Hub could have misinterpreted the M&E policy and reported computers as being broken even if they were missing from the lab. The number of broken computers certainly represents some cause for concern. The fact that 10% of the computers are broken suggests limited maintenance services available to schools. However, the proportion of computers still functioning in the labs (at 90.4%) is certainly positive.

The proportion of female beneficiaries is quite low, at only 36%. To a large extent this may be considered a natural consequence of inequitable access to education more widely; since Ethiopia has one of the poorest enrolment rates for girls in the region. [13] However, Camara needs to consciously challenge gender disparities rather than imbed them. The Hub should actively approach girls' schools and work towards a more equal gender balance.

## The Labs

| | |
|---|---|
| Schools that charge students to use computers | 19 (95%) [14] |
| Schools that do not charge students to use computers | 1 (5%) |
| Schools with computers in good condition | 15 (75%) |
| Schools with computers in fair condition | 2 (10%) |
| Schools with computers in poor condition | 3 (15%) |
| Labs in good condition | 20 (100%) |
| Labs in fair condition | 0 (0%) |
| Labs in poor condition | 0 (0%) |
| Schools suitable to receive more computers | 19 (95%) |
| Schools not suitable to receive more computers | 1 (5%) |

13. http://www.unicef.org/infobycountry/ethiopia_34471.html. Accessed 15th September 2009
14. Include some sort of charge- the M&E Officer did not specify if the charges were existing or new fees.

The impact of the project is somewhat undermined by the fact that all but one of the schools charge students to use the computers. Unfortunately the Hub did not report the prices charged, but the records in other countries suggest that the fees vary dramatically. While the reports did not specify whether the charges were all additional, or whether in some cases they were incorporated into existing school fees, they will inevitably preclude poorer students from accessing the computers. While there may be no means by which Camara can address this directly while retaining its core efficiency, there is certainly an argument for incorporating budgeting and charges into a lab management training module for teachers.

No dates of reception are recorded whatsoever, but the M&E Officer was quite fastidious about documenting Afritrack numbers. [15] On this basis it is reasonable to assume that the computers concerned were dispatched to Adama between March 2008 and March 2009. Consequentially, the proportion of broken computers (9.6%) seems quite high. This is explicable by the fact that there were virtually no discernible reports of maintenance services being provided to schools. While there may be some maintenance activity, it is undocumented, unsystematic, and haphazard. Likewise, there is no report of any recycling system or policy at the school level.

All of the labs were reported as being good, very good, or excellent in terms of safety and overall condition. Likewise the students in each school were described as being proficient or very proficient with computers. Inevitably, this raises questions regarding the training given to the Hub personnel, and the value of wholly subjective opinions. For 2010 the M&E Officers will be given a checklist covering aspects such as surge protection, ventilation, and grilled windows. A subjective evaluation of student proficiency is naturally a very flawed method of assessment, which highlights the need to use direct-testing among sample groups. This will be a priority once the Technology-Enhanced Learning (TEL) strategy has been developed and operationalised.

The M&E Officer's own comments are quite useful, and depict the labs and schools in generally positive terms. In the case of nine schools he stressed that the teachers needed more training, particularly in Linux. This is a recurring theme, and Camara's decision to implement training systematically through the local hubs is commendable. There is a strong argument to go even further, and insist on basic training as a prerequisite to receiving any Camara computers. While this would represent some inconvenience to schools, there is no evidence to suggest that computers generate any positive educational outcome unless there is at least one trained and driven teacher involved.

In the case of six schools the M&E Officer noted a high student-to-computer ratio. This is probably representative of a large proportion of the schools in Ethiopia, and there is a definite need to ameliorate against large class sizes. This could easily be incorporated into the school vetting procedure undertaken by the Hub, and should be actively promoted by Camara Headquarters.

15. Fifteen of the schools had full or partial lists of Afritrack numbers given. For many computers the stickers had been peeled off by students.

# 3.2 Kenya School Visits

## M&E Report 2009
Schools visited:  56 (target= 80)

## Introduction

Kenya was the quickest of the Hubs to engage with the M&E process in a meaningful way.  Athman, the M&E Officer, was important in helping to shape the reporting format, and raised the bar for the entire system from the start.  The M&E volunteer team in Kenya was very hard-working, and the reporting structure in Kenya was quite robust as a result.  Unfortunately the reports slowed down significantly in the summer, and tapered off completely after the middle of the year.  While further school visits were undertaken, no reports were filed and the additional schools have not been included.  All visits were conducted between February and August 2009.

### 1. Student Interviews

The responses in this field are particularly interesting since the questions were open-ended and thus capture primary attitudes.  The student interviews were generally very positive, with students in 32 schools emphasising that they liked using technology in the classroom and particularly focusing on how it will help them secure better futures.  Students in eight schools responded positively to Linux, while citing a preference for Windows in only one.  However, the Kenya Hub is very active in promoting Linux, and given the high number of schools opting for Windows these reports are unlikely to be wholly representative.  In one school students reported that they had no computer teacher.  However, the primary difficulty in Kenya from a student perspective seems to be congestion in the Learning Centres.  In 11 schools students cited too few computers as being a major obstacle.  In five schools students had been given no access to computers whatsoever which is extremely disappointing and needs to be addressed.

### 2. Teacher Interviews

Teacher responses were very interesting in that 23 schools stressed the need for better training support, particularly in maintenance and using Linux.  Teachers in nine schools requested more computers, while four highlighted the need for more educational software and training materials.  One very important request was for additional facilities and software to enable equal access in a school for mentally disabled children.  Teachers in two schools had issues with Camara's fulfilment in delivering support.  Two teachers reported liking Linux, whereas four stressed their dislike for the operating system, emphasising that it was not examinable on the syllabus in Kenya.  Five schools requested more regular visits and support, while two schools cited power problems as being a major cause for concern.  It is important to stress that these issues are probably representative of a large proportion of schools, and reliance on petrol generators tends to undermine the educational impact of Camara's work.

## 3. Computers

All computers were received between 2005 and 2009.

| | |
|---|---|
| Total Number of computers received | 3,682 |
| Computers accounted for | 938 (25%) |
| Mean lab size | 16.75 computers |
| Median lab size | 15 computers |
| Computers broken | 184 (20%) |
| Computers missing | 32 (3.5%) |
| Computers working | 695 (76%) [16] |
| Approximate total number of students | 14,817 |
| Mean number of students per school | 296.34 |
| Median number of students per school | 197 |
| Median number of students per computer | 13 [17] |

Camara Kenya split from its local partner in late 2008 because the partner wanted to draw a profit from selling computers to schools. As a result, records of where the computers went prior to 2009 are quite intermittent. Furthermore, many of the 2009 schools had received computers too recently to justify a meaningful monitoring visit. While the vast majority of computers probably went to schools throughout the period, there was a major shortfall in terms of recording this information centrally. The percentage of computers accounted for is far too low and needs to be a major priority for the Hub. The number of computers broken is relatively high, given that most of the schools visited received their computers since the start of 2007. By contrast, the proportion of computers missing from schools is very low and the Hub is to be commended in this respect.

The average lab size is considerably lower than the 25 recommended by Camara. Given that this is the case in most of the countries, there is a strong case for revisiting this guideline. In Kenya the Camara schools have low student numbers, which probably makes purchasing 25 computers prohibitive. There is possibly some cause for investigating the potential for capping the minimum number of computers at 15, and providing training to teachers in splitting classes to ensure one computer per student. While the number of computers shown in schools is disappointing, the longevity of the machines is certainly positive.

16. Of 911 computers. There is an anomaly of 27 computers (2.9%).
17. Calculated by dividing the median number of computers per school by the median number of students.

## 4. Reception dates of schools visited

| Year | Number of Schools |
|------|-------------------|
| 2009 | 9 (18.8%) [18] |
| 2008 | 7 (14.6%) |
| 2007 | 22 (45.8%) |
| 2006 | 9 (18.8%) |
| 2005 | 1 (2%) |

## 5. Year-on-year computer functionality

|        | PCs received | PCs working | PCs broken | PCs missing |
|--------|--------------|-------------|------------|-------------|
| 2009   | 179 | 176 (98.3%) | 3 (1.7%) | 0 |
| 2008   | 109 | 91 (83.4%) | 14 (12.8%) | 2 (1.8%) |
| 2007   | 292 | 203 (69.5%) | 76 (26%) | 13 (4.5%) |
| 2006   | 198 | 129 (65.2%) | 57 (28.8%) | 12 (6.1%) |
| 2005   | 35 | 22 (62.9%) | 10 (28.6%) | 3 (8.6%) |
| Totals | 813 | 621 (76.4%) | 160 (19.7%) | 30 (4.8%) |

## 6. The Learning Centres

| | |
|---|---|
| Schools in towns | 29 (54.7%) [19] |
| Schools in town outskirts | 17 (32.1%) |
| Rural or remote schools | 7 (13.2%) |
| Muslim-only schools | 4 (7.1%) |
| Christian-only schools | 3 (5.4%) |
| Mixed religion schools | 49 (87.5%) |
| Boys' schools | 9 (16.1%) |
| Girls' schools | 7 (12.5%) |
| Mixed gender schools | 40 (71.4%) |

18. Of 48 schools.  Teachers in 8 schools could not remember the reception date.

19. Of 53 schools (The geographical location was not clear in the case of three schools.)

Profiling the schools and Learning Centres is complicated because of the subjectivity of many of the evaluations.  However, the M&E Officer in Kenya proved to be highly competent and reliable, and his assessments probably provide a very good indication of the reality of the project.  The bias towards urban and suburban schools is marked.  Accessible schools are much easier to deliver computers to, and the Learning Centres are easier to maintain once established.  Teachers are more likely to attend training, and crucially urban schools are more likely to have electricity, rather than having to rely on costly petrol generators.

The high proportion of schools that are non-discriminatory in terms of religion and gender is extremely positive.  Furthermore, there is a very equitable balance between those small numbers of schools that do discriminate, and the Hub is to be commended in this respect.  Interestingly 25 of the schools had changed the operating system (OS) of at least some of their computers to Windows.  In several cases this was only to evaluate which system they preferred, and this criticism should be welcomed.  Given the primacy of Windows and the fact that it is what most teachers are familiar with, it is clear that Camara needs to be either actively pro-choice in terms of its OS, or be far more systematic in providing basic Linux training to teachers as a prerequisite to receiving computers.

The M&E Officer described all of the schools as being either average or below average in terms of resources.  While the measure is entirely subjective, his assessments were cross-checked in a number of instances and proved to be reasonably accurate.  This is positive insofar as Camara's services are not just being solicited by the best-positioned schools.  Virtually all of the schools charge students to use the computers, either directly or by incorporating charges into existing school fees.  By and large the charges are reasonably affordable, though it is vital to include a clause in the school contract that prohibits individual children being precluded from accessing the Learning Centre because their parents have not paid.  Another major concern is the massive discrepancies that schools are charging students for what is presumably the same service.  Fees vary from €1.16 per annum to €56 per annum.  There is a patent need to set a threshold, and include a budgeting component in the Learning Centre Management Module.

## 7. Usage

| Frequency of access | Number of schools |
|---|---|
| Daily | 6 (11.8%) [20] |
| 4 times a week | 4 (7.8%) |
| 3 times a week | 11 (21.6%) |
| Twice a week | 15 (29.4%) |
| Once a week | 10 (19.6%) |
| Never | 5 (9.8%) |

The reported frequency of student access to the Learning Centres is very high.  Unfortunately there is very little evidence against which to cross-check teacher responses, so the reports are currently unverified.  For 2010 it will be a priority to further examine the level of student access.  In terms of prolonging the longevity of Learning Centres there are definite issues around ensuring and documenting the continued usage of surge protectors and dust covers for computers.

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20. Of 51 schools.  There was no data for five of the schools.

## Introduction

Overall the M&E function of the Ugandan Hub has been positive for 2009.  A large proportion (78%) of the computers received in the last eighteen months has been delivered to schools.  They have all been very meticulously tracked by Afritrack number, manufacturer's serial number, make, model, colour, and monitor serial number.  The first 34 schools were visited by the original M&E Officer, who was hired and trained in March. The reports are in broken English, but very detailed and comprehensive.  Unfortunately, management discovered that the officer was charging schools to change their operating systems and he was dismissed.  There was naturally some concern about the accuracy of his reports, so as well as hiring new M&E Officers to visit the remaining schools, the CEO sent them to cross-check nine schools that the original officer had visited without giving them the existing reports.  A cause for concern was that in one school he had failed to properly clarify that the computers were still in storage five months after receipt.  From an M&E perspective this is certainly significant.  Other than that, the reports correlated very closely and thus the information collected can be accepted as accurate.

### 1. Student Interviews

The most notable aspect of the student interviews is the number of no responses.  A sizeable number of students were either on holidays or doing exams at the time of the visits, and there is an evident need to better anticipate when students will be free for interviews.  Another issue was that it took the M&E Officer several visits to get accustomed to documenting the reports properly, highlighting the need for long-term M&E Officers.  The major cause for concern, however, is the number of schools where students have been denied any access to the computers whatsoever.  While this was reported in seven of the 48 schools, the high number of no responses suggests that in reality this figure is likely to be higher again.  The recurring theme is that schools just leave computers in the store upon receipt, despite having a fully functioning laboratory.  In part this could be addressed through additional training, but it also highlights the importance of explaining and enforcing the school contract.  In one case the lab was fully functional, but the teachers were using the computers and the students denied access completely.

For the most part the reports were very quite positive.  Most students respond well to Linux, even those who articulated the need for additional training in it.  The main benefits cited were that the computers work faster, and that the games and educational material were useful.  Students in seven schools specifically reported liking it as an operating system, with only one school reporting negatively. There were several requests for additional software, notably music and video programmes.  Perhaps less easy to accommodate were a small number of requests for sound, FrontPage, and the internet.  One group of students expressed enthusiasm at receiving the best possible training at the cheapest available cost.  Another group stressed that what they were learning was incompatible with what they had learnt previously with computers.  This can more than likely be attributed to the prevalence of Windows as an operating system.  On a very positive note, only one group of students reported that they were given too few computers.

## 2. Teacher Interviews

The teachers' responses were quite different to those from the students.  Again they were largely positive, though as could be expected there was more focus on maintenance and costs of ownership.  Five schools expressly asked for more maintenance support, with two requesting on-site visits every two months.  Two also expressed concern at the costs of bringing computers long distances to the Hubs for repair.  The answer, as teachers see it, is regular visits from Camara maintenance technicians.  While this may be part of the solution, the level of support requested is cost-prohibitive from the Hub's perspective.  This highlights the importance of training at least one teacher in every school the basics of computer maintenance as a pre-requisite to receiving computers.  Teachers in two schools expressly asked for teaching materials, such as teachers' manuals.

For the most part teachers in Uganda are very positive towards Linux, and seven requested more training in it.  The general rule seems to be that teachers who are trained in Linux become receptive to it, whereas those who are not will always resist it.  Two teachers changed all of their computers two Windows and one requested that Camara change the operating system on one so he could compare them.  This suggests a critical openness which should be welcomed.   One teacher described Linux as being very fast and reliable, though another articulated problems saving material.  One interesting side-effect of using Linux is that it is harder to find repair services locally.

One school also asked for typing tutorial software, and surprisingly accounting software.  This is suggestive of the fact that schools are using at least some of the computers for administration.  Six schools specifically reported this, and several reported using the computers to produce exams.  This strongly correlates with the online feedback, which suggests that the practice is quite widespread.  Considering Camara's vision to strengthen the education system in Africa, this should be welcomed and in fact systematically supported with training.

One teacher described the computers as good quality and cheap to buy.  Another reported increased enrolment directly resulting from having a functional computer lab.  One of the major misconceptions is that Windows is required to play music and video, which is a big priority for both teachers and students.  While Camara has a strictly educational focus, perhaps the answer is to install some educational open-source videos[21], as well the mainstreaming material currently under development.

21. The videos on http://www.ted.com/ would be particularly useful.

## 3. Beneficiary Profile

All computers were received between June 2008 and July 2009.  There is a slight anomaly in terms of the computer tallies but it is very minor (2.5%).

| | |
|---|---|
| Total Number of computers received | 1,967 |
| Number of computers received in the period | 889 [22] |
| Computers accounted for | 693 (78% of those sent from January 2008) |
| Mean lab size | 14.4 computers |
| Median lab size | 12 computers |
| Computers broken | 45 (6.4%) |
| Computers missing | 12 (1.7%) |
| Computers functioning in the labs | 654 (94.4%) |
| Approximate total number of students | 21,700 |
| Mean number of students per school | 452 |
| Median number of students per school | 350 |
| Median number of students per computer | 29 |
| Mixed schools | 43 (91%) [23] |
| Boys' schools | 3 (6%) |
| Girls Schools | 1 (2%) |

The geographical spread of the beneficiary schools is quite wide, ranging from Fort Portal to the Congolese border.  While the vast majority of the schools are near main roads, this is probably to be expected.  Mapping the schools later in the year will give a better insight into the geographical coverage.  Ethnically the mix is very good, and none of the schools immediately appear to exclude minorities (though in all likelihood this is probably inevitable).  The mix includes Batooro, Bamba, Baganda, Bakonjo, Banyoro, Whites and Indians.  Only one of the schools discriminates on the basis of religion (Catholic), and there are large numbers of Catholics, Protestants, Muslims, and Presbyterians.  One school has Seventh-Day Adventists, and another two have Bisaka students. [24]

In terms of gender Camara's schools are surprisingly balanced.  Of 48 schools all but four are mixed gender.  Three are exclusively male and one is exclusively female.  One school is not reported on.  Within those mixed schools where the gender balance is given girls actually constitute a considerable majority.  This is probably somewhat misrepresentative, and will be evaluated more rigorously in 2010.  However, even approaching this level of gender balance is remarkably rare in development interventions and represents a significant achievement.

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Perhaps the most interesting statistic is the median number of computers per school. The typical Camara school in Uganda has only 12 computers, less than half of the target. This level of coverage is actually quite reasonable, given that the median school size is 350 students. This means that each student should receive an hour using the computers within a thirty-hour week. The difficulty however, is in terms of splitting classes. While we do not have data on the typical class-size in Uganda, it is certainly over 25. The common practice seems to be putting three to four students at each computer, which is clearly undesirable. The ideal solution would be to train teachers in computer laboratory management. For example, within an afternoon the class could be divided into groups, alternating between general study, computer theory, and computer practice.

## 4. The Labs

| | |
|---|---|
| Schools that charge students to use computers | 13 (30.2%) [25] |
| Schools that do not charge students to use computers | 30 (69.7%) |
| Schools with computers in good condition | 39 (81%) |
| Schools with computers in fair condition | 3 (7%) |
| Schools with computers in poor condition | 6 (12%) |
| Labs in good condition | 37 (79%) [26] |
| Labs in fair condition | 4 (8.5%) |
| Labs in poor condition | 6 (12.8%) |
| Schools suitable to receive more computers | 36 (75%) |
| Schools not suitable to receive more computers | 12 (25%) |

Camara's Ugandan schools are reasonably good in terms of not charging students for using the computers. None of the M&E Officers actually noted how much was charged in those cases where schools are imposing a fee. It is certainly an issue that needs additional monitoring, to ensure that equal access is maintained. During a visit by the Principal Development Officer in March one principal reported that they only let children use the computers if their parents pay, which is obviously damaging. There is certainly a strong argument for including universal student access as a prerequisite in the school contracts. By and large the computers are reported to be in good condition. Those computers that are broken generally have broken hard drives or faulty RAM. In several cases schools have changed the operating system of some or all of the computers to Windows. However, in the case of most schools this is not specified so it is difficult to gauge the numbers involved.

---

25. Of 43 schools (for five schools it was not specified whether they were charged)
26. Of 47 schools (for one school the lab condition was not specified)

The condition of the Labs seems good, though it is difficult to gauge how rigorous the M&E Officers were in evaluating them. For next year there will be a list of criteria against which schools are matched. The issues that are stressed in the poor labs are over-congestion and not having enough tables. Patently the fact that six of the computer labs had no computers in them is a major cause for concern and needs to be addressed. In terms of safety none of the labs were found to be dangerous, though again the M&E Officers were unqualified to make a proper assessment. Unfortunately the student proficiency in the majority of schools was rated as quite poor, which is indicative of the quality of teaching provided. Without a certified standard against which to quantitatively measure students it is difficult to make an objective assessment. Camara's decision to systematically focus on training teachers to a high level seems crucial in this respect.

In terms of the M&E Officers' own comments there are recurring themes that emerge. Many of the schools are using the full suite of Linux-based computers in an organised lab. Lack of space within the laboratories in some schools is a definite issue, as is the condition in which some of the labs are kept. The condition of the labs and the quality of ICT education delivered to students is often the responsibility of one teacher. This makes the schools vulnerable when that teacher changes post. Without proper scrutiny and management teachers can perform poorly and neglect their responsibilities regarding the maintenance of labs and teaching students. Perhaps it is worth considering meeting with the Board of Management in a school prior to delivering computers, and enforcing a more robust school contract.

The M&E Officers seem to have been quite productive in a maintenance capacity. They fixed computers in eighteen schools, some of which were a considerable distance from the Hub. In terms of maintaining the labs, this dual role is imperative. It also ensures that the M&E Officers employed are technologically adept, and in a position to properly assess condition of the computers and labs. Recycling is a definite problem, and many schools reported their intention to give ultimately give the computers to teachers. Another common response is that schools have not considered how they will dispose of the computers when they reach end-of-life. Only two schools of the forty-eight specifically articulated their intention to return the computers to Camara for recycling.

The M&E Officers reported that 36 of the schools were suitably placed to receive more computers in the future, and that 12 were not. A number of schools are currently developing new laboratories, and there seems ample potential to develop long-term relationships with schools. This is a highly-desirable outcome because it enhances the sustainability of the overall project in Uganda, and allows Camara to build upon existing teacher expertise. For the most part the schools were described as being run by hard-working managers and well organised.

# 3.4 Lesotho School Visits

## Introduction

The demonstrated performance of the Lesotho Hub was disappointing for 2009, which was reflected quite strongly across the M&E system.  The quality of the reports was relatively high, but with only 13 schools visited it is difficult to verify impact.  Largely on this basis the Hub management has been replaced, which represents a very positive correlation between M&E findings and decisions taken by the board in-country.  The data collected in Lesotho is still very useful, and has been significant in enhancing Camara's organisational expertise and approach.

### 1. Student Interviews

In eight of the thirteen schools students reported not being given enough time with the computers.  This is somewhat surprising, given that in two of these schools students reported accessing the lab twice a week, and in one school reported using it up to four times a week.  Added to this is the fact that the median number of students per computer at 23.4 is probably as low an average as Camara can realistically expect to achieve.  There certainly seems to be an issue in terms of managing expectations in this respect.  Many students express frustration with even two computer classes a week, which is more than in many Irish schools.

In two schools students emphasised the importance of the computers in terms of competing in their local science fairs, which is surprising but clearly welcome.  In two schools teachers had divided their students into groups of five, because of power and congestion issues.  In one of the schools with supposed congestion issues there were 20 computers for 600 students, which should easily have allowed for a computer class a week.  In this context the notion of putting five students to a computer seems absurd, and the need for teacher training in computer laboratory management is patent.

The student interviews generally convey a sense of optimism.  Students are clearly excited to be using computers, and grateful to have access to them.  In one school students were particularly appreciative of the fact that their school was given computers despite being in a relatively inaccessible mountainous area.

### 2. Teacher Interviews.

Teachers were also very satisfied with the Camara computers.  Congestion was again a recurring theme, and there is no suggestion that teachers in any school have considered splitting classes.  In one school teachers noted that when their students go to university they will not panic with ICT like they themselves did.  One teacher expressed concern that Linux is not popular in Lesotho, and thus students will face difficulties when they leave school.  In another school, teachers requested a local-area network.

## 3. Beneficiary Profile

| | |
|---|---|
| Total Number of computers received | 2,274 |
| Computers accounted for | 420 [27] (18.5%) |
| Mean lab size | 32.3 computers |
| Median lab size | 20 computers |
| Computers broken | 28 (7%) |
| Computers missing | 26 (6%) |
| Computers functioning in the labs | 368 (87.6%) |
| Approximate total number of students | 5,598 |
| Mean number of students per school | 430.6 |
| Median number of students per school | 468 |
| Median number of students per computer | 23.4 |
| Mixed schools | 13 (100%) |
| Boys' schools | 0 (0%) |
| Girls Schools | 0 (0%) |
| Schools using Windows XP 7 | (54%) |
| Schools using Linux | 6 (46 %) |

The low number of computers accounted for is very disappointing. The target agreed with the Hub management at the start of 2009 was 50 schools, but there was no effort made to achieve it. All of the schools were visited within a two-week period, despite salary and expenses allocations for an M&E Officer for four months. Another worrying aspect is that one school that received 60 computers in August 2008 was found to have 13 broken and 20 missing in March of the following year. There is a decided need for more robust systems, with rigorous monitoring of schools.

The fact that such a large proportion of the Camara computers are still functioning in the Learning Centres is certainly positive. In view of the fact that there is so little evidence of maintenance support this high level of functionality suggests that the machines as delivered are quite robust, and subject to relatively low levels of theft. Once Camara becomes more dynamic in its monitoring, maintenance and recycling functions these performances should improve further.

That all of the schools are mixed gender is certainly positive, and it will be interesting next year to ascertain as to what overall proportion are girls. There seems to be a very high proportion of rural schools, and the religious profile includes a mix of Catholics, Protestants and Muslims in virtually every school. The M&E Officer reported that most of the schools are relatively poor, and in this context it is interesting to consider the prices charged by schools:

27. All subsequent figures are derived from this number.

| | |
|---|---|
| Schools that charge students to use computers | 12 |
| Schools that do not charge students to use computers | 1 |
| Mean charge per quarter | 79.6 Maloti (€7.32) |
| Median charge per quarter | 90 Maloti (€8.27) |
| Lowest charge per quarter (excluding zero charge) | 50 Maloti (€4.64) |
| Highest charge per quarter | 125 Maloti (€11.61) |

## 4. The Labs

| | |
|---|---|
| Schools with computers in good condition | 11 (85%) |
| Schools with computers in fair condition | 2 (15%) |
| Schools with computers in poor condition | 0 (0%) |
| Labs in good condition | 8 (62%) |
| Labs in fair condition | 3 (23%) |
| Labs in poor condition | 2 (15%) |
| Schools suitable to receive more computers | 9 (69%) |
| Schools not suitable to receive more computers | 4 (31%) |

The recurring problem in terms of analysing the computers and labs is that there is no uniform standard. The M&E Officers will require further training in this respect so as to ensure that the assessments are robust and credible. Nonetheless, the officer in Lesotho was quite technically proficient. As such, his assessment that the vast majority of computers are in good condition is certainly positive. He also stressed that in one school student proficiency was undermined by the fact that the computers were shared. Another school has large numbers of orphans and vulnerable students, who are at the core of Camara's mission. An issue in one school was that the lab was not waterproof, which reduced the life-span of the computers.

The Officer reported that one school, which was owned by the Catholic Church, was missing a computer which had been taken by the local priest. In another school teachers had taken 20 computers for personal use, which were missing from the lab. In the same school 13 computers were broken. The most recurring assessment is that there is too much congestion in the computer labs, with a relatively low correlation with the computer to student ratios.

# 4. Training

*'Formal education will make you a living; self-education will make you a fortune'.*

*Jim Rohn*

The Camara training programme is still quite limited.  The main documented input is currently the short-term volunteer programme, which involved 82 volunteers travelling to Africa for one month in July 2009. An estimated 1,295 people were trained, and surveys were completed by 20% of trainees.  A higher proportion of responses is certainly a priority for 2010.  Nonetheless, the sample is certainly sufficient to provide a valuable insight into the programme.  There is also significant training being conducted by the Hubs, but the documentation is so poor that it is impossible to quantify meaningfully.

The quality of the training itself seems very high, and the demand for more of it was overwhelming. This is clearly a very positive base from which to progress, and with some systematic adjustments the programme should produce very significant results.  In order to improve the training function of the organisation, the following advances are currently being implemented.

1.      A shift towards the local Hubs conducting the vast majority of the training, primarily with a view to maximising cost-effectiveness.

2.      The accreditation of the training and testing of the basic Camara course by University College Dublin. This will represent a considerable achievement, representing credible validation of the training and meaningful quantification of its effectiveness.

3.      A structured Technology-Enhanced Learning Programme that will train teachers in advanced technology and pedagogical skills.

4.       A network-wide reporting structure whereby the Hubs document what schools receive training. There is a definite need to better calibrate the schools that receive computers and the people who get trained.

# M&E Training Summary 2009

| | Ethiopia | Kenya | Uganda | Lesotho | Rwanda | Zambia | Tanzania | Aggregated |
|---|---|---|---|---|---|---|---|---|
| Total number of respondents | | | | 126 | 22 | 59 | 52 | 259 |
| Male | | | | 48% | 59% | 53% | 62% | 56% |
| Female | | | | 52% | 41% | 47% | 38% | 45% |
| Mean Age | | | | | | | 30 | 30 |
| Median Age | | | | | | | 28 | 28 |
| Number of teacher respondents | | | | 54% | 86% | 86% | 49% | 69% |
| Number of school student respondents | | | | 14% | 0% | 0% | 18% | 8% |
| Number of school administrator respondents | | | | 7% | 14% | 14% | 8% | 11% |
| Number of respondents with no school function | | | | 23% | 0% | 0% | 25% | 12% |
| Teachers who were male | | | | 55% | | 56% | 84% | 65% |
| Teachers who were female | | | | 45% | | 44% | 16% | 35% |
| School respondents from recipient schools | | | | 41% | | 37% | 69% | 49% |
| Respondents from schools that were not recipients | | | | 20% | | 63% | 8% | 30% |
| School respondents who were unsure | | | | 39% | | 0% | 23% | 21% |
| Total number of courses attended by respondents | | | | 126 | | 96 | 66 | 288 |
| Intermediate Skill-builder | | | | 37% | 68% | | 15% | 40% |
| Networking | | | | 5% | 0% | | 3% | 3% |
| Basic Skill-builder | | | | 40% | 0% | | 58% | 33% |
| PC Repair and Maintenance | | | | 4% | 0% | | 9% | 4% |
| Pedagogy of ICT/ Training of Trainers | | | | 0% | 32% | | 0% | 11% |
| Moodle | | | | 13% | 0% | | 15% | 9% |
| Respondents who attended one course | | | | | | 46% | 72% | 59% |
| Respondents who attended two courses | | | | | | 35% | 24% | 30% |
| Respondents who attended three courses | | | | | | 5% | 4% | 5% |
| Respondents who attended four courses | | | | | | 7% | 0% | 4% |

**Distances Travelled**

| | Ethiopia | Kenya | Uganda | Lesotho | Rwanda | Zambia | Tanzania | Aggregated |
|---|---|---|---|---|---|---|---|---|
| Less than 5km | | | | 41% | 77% | 19% | 69% | 52% |
| 5-10km | | | | 21% | 9% | 24% | 8% | 16% |
| 10-40km | | | | 25% | 14% | 41% | 0% | 20% |
| 40-100km | | | | 9% | 0% | 16% | 10% | 9% |

| | Ethiopia | Kenya | Uganda | Lesotho | Rwanda | Zambia | Tanzania | Aggregated |
|---|---|---|---|---|---|---|---|---|
| 100-200km | | | | 3% | 0% | 0% | 10% | 3% |
| Over 200km | | | | 2% | 0% | 0% | 4% | 2% |
| Mean distance travelled | | | | | | 21 | | 21 |
| Median distance travelled | | | | | | 12 | | 12 |

**Respondents who want future training**

| | Ethiopia | Kenya | Uganda | Lesotho | Rwanda | Zambia | Tanzania | Aggregated |
|---|---|---|---|---|---|---|---|---|
| to be full-time | | | | 63% | 64% | 75% | 88% | 73% |
| Respondents who want future training to be part-time | | | | 37% | 18% | 25% | 12% | 23% |
| Respondents with no preference | | | | 0% | 18% | 0% | 0% | 5% |
| Respondents who want future training to last 1 week | | | | 13% | 32% | 2% | 2% | 12% |
| Respondents who want future training to last 2 week | | | | 16% | 23% | 58% | 8% | 26% |
| Respondents who want future training to last 1 month | | | | 24% | 18% | 37% | 22% | 25% |
| Respondents who want future training to last 3 months | | | | 16% | 18% | 3% | 31% | 17% |
| Respondents who want future training to last 6 months | | | | 16% | 0% | 0% | 20% | 9% |
| Respondents who want future training to last over 6 months | | | | 15% | 9% | 0% | 16% | 10% |

**Citations of difficulties encountered**

| | Ethiopia | Kenya | Uganda | Lesotho | Rwanda | Zambia | Tanzania | Aggregated |
|---|---|---|---|---|---|---|---|---|
| Cost of the training | | | | 0 | 3 | | 0 | 3 |
| Distance travelled to attend | | | | 5 | 0 | | 5 | 10 |
| Getting time off work | | | | 3 | 2 | | 3 | 8 |
| Cost of accommodation and food | | | | 0 | 2 | | 0 | 2 |
| Leaving family for the duration of the training | | | | 2 | 3 | | 2 | 7 |
| Other difficulties not listed | | | | 0 | 2 | | 0 | 2 |
| No real difficulties attending | | | | 16 | 7 | | 16 | 39 |
| No answer | | | | | 3 | | 0 | 3 |
| Definitely worth the time and cost | | | | 59% | 64% | | 15% | 46% |
| Probably worth the time and cost | | | | 22% | 14% | | 4% | 13% |
| Probably not worth the time and cost | | | | 7% | 5% | | 8% | 7% |
| Definitely not worth the time and cost | | | | 15% | 0% | | 42% | 19% |
| No Answer | | | | 0% | 18% | | 0% | 6% |

# 4.1 Lesotho Training

## M&E Report 2009

## Introduction

The surveys were administered in paper format to trainees directly after the Africa '09 training. 126 surveys were collected, which is far higher than in any other country, and thus the information is the best available for the Africa '09 programme. It is certainly likely that some of the responses were people who did several courses and thus submitted multiple surveys, though this does not greatly confound the data.

## Section One- All respondents

### 1. Trainee Profiles

| | |
|---|---|
| Total number of responses | 126 |
| Male | 60 (48%) [28] |
| Female | 65 (52%) |
| Respondents under 18 | 3 (2%) |
| 18-30 | 67 (53%) |
| 30-40 | 37 (29%) |
| 40-50 | 12 (9%) |
| 50-60 | 5 (3%) |
| Over 60 | 2 (1%) |
| Number of teacher respondents | 69 (54%) |
| Number of student respondents | 18 (14%) |
| Number of school administrator respondents | 9 (7%) |
| Number of respondents with no school function | 30 (23%) |
| Male teachers | 38 (55%) [29] |
| Female teachers | 30 (45%) |

The performance indicators for the training are considerably higher than the average performance of the Camara Hubs. Demonstrating 69 teachers trained is a considerable achievement, especially given the operational difficulties within the Hub and the limited marketing to schools. The gender balance of the teachers is also highly positive, with only a small bias towards males. Bizarrely six of the trainees were police officers, which presumably has an interesting explanation. Two of the teachers were lecturers from the university. A serious problem was that only 28 of the teachers were from schools that had received or were due to receive Camara computers. An enormous 59% of teachers were either from non-Camara schools or were unsure. In many ways the teachers who were unsure are of little value to the programme given that even if they are from Camara schools they have very little involvement with the Learning Centres.

| | |
|---|---|
| Number of teachers from recipient schools | 28 (41%) [30] |
| Number of teachers from schools that were not recipients | 14 (20%) |
| Number of teachers respondents who were unsure | 27 (39%) |

---

28. Of 125 responses. On teacher did not specify their gender.
29. Of the 68 teachers who specified their gender.
30. Of the 69 teachers.

## 2. Training Modules

| | |
|---|---|
| Total number of courses attended by respondents | 126 |
| Intermediate Skill-builder | 47 (37%) |
| Networking | 6 (5%) |
| Basic Skill-builder | 47 (37%) |
| PC Repair and Maintenance | 5 (4%) |
| Moodle | 17 (13%) |
| Linux | 4 (3%) |

## 3. Distances travelled for training

| | |
|---|---|
| Less than 5km | 48 (41%) [31] |
| 5-10km | 24 (21%) |
| 10-40km | 29 (25%) |
| 40-100km | 11 (9%) |
| 100-200km | 3 (3%) |
| Over 200km | 2 (2%) |

## 4. Trainee Course Timing Preferences

| | |
|---|---|
| Respondents who want future training to be full-time | 76 (63%) [32] |
| Respondents who want future training to be part-time | 45 (37%) |
| Respondents who want future training to last 1 day | 0 |
| Respondents who want future training to last 1 week | 15 (13%) [33] |
| Respondents who want future training to last 2 weeks | 19 (16%) |
| Respondents who want future training to last 1 month | 28 (24%) |
| Respondents who want future training to last 3 months | 19 (16%) |
| Respondents who want future training to last 6 months | 19 (16%) |
| Respondents who want future training to last over 6 months | 18 (15%) |

31. Of 117 respondents.  Nine respondents did not specify.
32. Of 121 respondents.  Five did not specify.
33. Of 118 respondents.  Eight did not specify.

# Section Two- All respondents
## Self-Efficacy

Perceived self-efficacy can be described as self-belief in one's abilities to succeed in specific situations. It has been shown to have ramifications in terms of how people approach problems, perseverance, and resilience to adversity. [34] The self-efficacy section of the survey was introduced in view of the fact that without direct testing objective measures were unachievable for 2009. Unfortunately, the survey is limited by the fact that a baseline was not established prior to the training. Nonetheless, there are valuable insights apparent in terms of apparent gender differentials. The respondents were asked to rate how true each of ten statements were for them. To quantify the data, a score was then allocated to each answer as the statement became increasingly true. The questions are standardised and extremely robust, though volunteers reported some linguistic issues. The findings are tabled below. The scores were allocated as follows:

| | |
|---|---|
| Exactly true | **100 points** |
| Moderately true | **75 points** |
| Hardly true | **50 points** |
| Not at all true | **25 points** |

| | Questions | Mean |
|---|---|---|
| 1. | I can always manage to solve difficult problems if I try hard enough. | 79.4 |
| 2. | If someone opposes me, I can find the means and ways to get what I want. | 73.5 |
| 3. | It is easy for me to stick to my aims and accomplish my goals. | 88.2 |
| 4. | I am confident that I could deal efficiently with unexpected events. | 89.7 |
| 5. | Thanks to my resourcefulness, I know how to handle unforeseen situations. | 79.4 |
| 6. | I can solve most problems if I invest the necessary effort. | 76.5 |
| 7. | I can remain calm when facing difficulties because of my coping abilities. | 97.1 |
| 8. | When I am confronted with a problem, I can usually find several solutions. | 85.4 |
| 9. | If I am in trouble, I can usually think of a solution. | 89.7 |
| 10. | I can usually handle whatever comes my way. | 75 |

The self-efficacy results were disaggregated by gender, age, and occupation for the Tanzania report. With only 17 self-efficacy responses from Lesotho a rigorous disaggregation would be less useful. However, there are very interesting trends that emerge from the data, especially given that all respondents were teachers. The most striking findings were firstly that the mean reported self-efficacy was so high; and secondly that again women reported higher perceived self-efficacy than men on all but three of the ten criteria. The respondents were most confident with their abilities to cope when faced with difficulties, findings solutions to problems, and dealing with unexpected events. They were least comfortable with facing opposition from others.

34. For more on self-efficacy read http://www.des.emory.edu/mfp/BanEncy.html  Accessed 22nd September 2009.

In terms of gender disaggregation, men were markedly more confident in their coping abilities. Women, by contrast, deemed themselves more capable in terms of dealing with unexpected events and findings solutions to problems. The pattern is very similar to that seen in Tanzania, and offers quite a radical new perspective on gender among teachers in Africa.
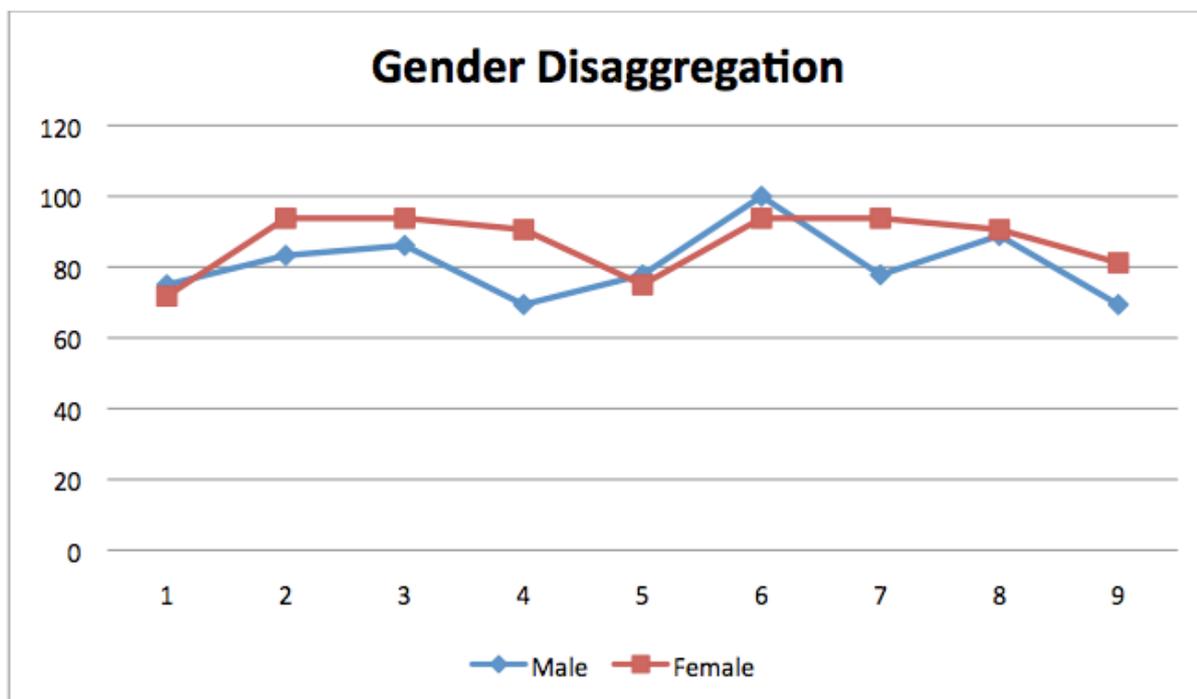


## Section Three- Teachers Only

### 1. Relevance and Delivery

The purpose of section three was to ascertain how useful the training was for the 69 teachers specifically. They were asked to rate the training content, its delivery, and its relevance to their teaching requirements. Points were allocated to each rating:

| Score | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Content relevancy | Very relevant | Quite relevant | Not very relevant | Not at all relevant |
| Content rating | Very useful | Quite useful | Not very useful | Not at all useful |
| Delivery rating | Very good | Quite good | Not very good | Very poor |

Consequentially, an average rating approaching one is optimal whereas an average rating of four is the least desirable possible score. On this basis the average course content, delivery, and relevancy ratings are all very positive:

| | |
|---|---|
| Content rating | 1.14 |
| Delivery rating | 1.16 |
| Relevance of content to teaching requirements | 1.28 |

## 2. Confidence in using computers

Teachers were also required to rate their confidence in using computers both before and after the training. Again scores were allocated to each answer and an average rating was determined. The possible answers and their scores are detailed below, followed by the disaggregated results:

| Score | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Confidence | Very confident | Quite confident | Not very confident | Not at all confident |

| Group | Confidence before training | Confidence after training | Points change |
|---|---|---|---|
| Teacher average | 2.38 | 1.34 | 1.04 |
| Male teachers | 2.26 | 1.26 | 1 |
| Female teachers | 2.48 | 1.4 | 1.2 |

Interestingly male teachers reported marginally higher confidence in using computers both before and after training. Given that males reported lower overall self-efficacy it is interesting that they reported higher levels of confidence specifically in this respect.

## 3. Planned frequency of use in the classroom

| Frequency | Number of citations |
|---|---|
| Several times a week | 31 (49%) [35] |
| Once a week | 10 (16%) |
| Several times a month | 11 (17%) |
| Once a month | 1 (2%) |
| Several times a year | 8 (13%) |
| Once a year | 0 |
| Never | 0 |

## 4. Difficulties in attending

Teachers reported relatively little difficulty in attending the courses.  Given that it was a week long and there was no cost this is probably to be expected.  Possible difficulties were listed and teachers were asked to tick the difficulties that they encountered.  The selections were as follows:

| Difficulty | Citations |
|---|---|
| Cost of the training | 0 |
| Distance travelled to attend | 5 |
| Getting time off work | 3 |
| Cost of accommodation and food | 0 |
| Leaving family for the duration of the training | 2 |
| Other difficulties not listed | 0 |
| No real difficulties attending | 16 |

## 5. Cost/ Benefit assessment?

Teachers were asked to assess as to whether the course was worth the time and cost incurred.  The training was free of charge, and deemed highly useful by virtually all respondents, but the overwhelming feedback was that the course was too short.  It seems very likely that some teachers took this question as an opportunity to express the need for more time.  Logistically this is probably impossible for short-term volunteers and highlights the need for more training support from the local Hubs.

| | Citations |
|---|---|
| Definitely worth the time and cost | 34 (59%) [36] |
| Probably worth the time and cost | 13 (22%) |
| Probably not worth the time and cost | 4 (7%) |
| Definitely not worth the time and cost | 7 (15%) |

## 6. Suggested improvements

Teachers were actually very constructive with their feedback, with 54 of the 69 making suggestions. Some took another opportunity to commend the training, which corroborates with the positive reports overall.  In terms of improving the course several teachers said that the classroom was far too cold, with one suggesting that training should be held in the summer.  One teacher asked for handouts, while several suggested that using a projector would improve the training.  One teacher on the Moodle course requested that the Learning Centre in her school be Networked.  Two teachers suggested a more formal assessment would improve the training.  An enormous 31 of the 54 respondents for this question said that they needed more time for the training, which strongly corroborates with the findings for the desired duration question.

# 4.2 Rwanda Training

## Introduction

The surveys were administered in electronic format directly after the Africa '09 training. The responses were quite standard and there are no major surprises. As in every country, feedback was only collected from a fraction of the trainees. While this is unlikely to have compromised the findings, it will be useful to get a wider selection of respondents in 2010. The data collected by the Rwanda team seems to have been quite representative, and overall the training seems to have very been successful.

## Section One- All respondents

### 1. Trainee Profiles

| | |
|---|---|
| Total number of respondents | 22 |
| Male | 13 (59.1%) |
| Female | 9 (40.9%) |
| Number of teacher respondents | 19 (86.4%) |
| Number of school administrator respondents | 2 (9.1%) |
| Number of headmaster/ headmistress respondents | 1 (4.5%) |
| Number of respondents with no school function | 0 |

The demographic of respondents from the training is very positive. Firstly, the gender balance is quite close. While there is room for improvement, the discrepancy is small enough to be able to rectify relatively easily. Even more importantly, all of the respondents had a relevant school function, which is fundamental to the efficiency of the Camara model. Unfortunately there is no data as to whether the trainees were from Camara schools, which is a major shortfall.

In terms of age the vast majority of respondents were between 18 and 40. This is probably to be expected but it is welcoming to note that there was significant participation from groups outside of this range.

| Age Group | Number of Participants |
|---|---|
| Less than 18 | 1 (4.5%) |
| 18-30 | 11 (50%) |
| 30-40 | 7 (31.8%) |
| 40-50 | 1 (4.5%) |
| 50-60 | 2 (9.1%) |

## 2. Training Modules

| | |
|---|---|
| Skillbuilder | 15 (68.2%) |
| Pedagogy of ICT/ Training of Trainers | 7 (31.8%) |

The data is very limited in terms of what training courses were attended. The trainees clearly completed the surveys directly after two training sessions, and there is no evidence as to what other training was conducted during the month. Furthermore there is no information as to what level of Skillbuilder was attended, though one would assume it was basic. There is a patent shortfall in this regard and it is very important that volunteers document who was trained in what modules for 2010.

## 3. Distances travelled for training

| | |
|---|---|
| Less than 5km | 17 (77.3%) |
| 5-10km | 2 (9.1%) |
| 10-20km | 1 (4.5%) |
| 20-40km | 2 (9.1%) |
| Over 40km | 0 |

An overwhelming majority of the respondents were from the immediate locality of the Hub. Given that they were all from educational institutions the trend is perfectly acceptable. It is important to stress that teachers from every recipient school should be trained and the success of the training is entirely dependent on this criterion. If there are sufficient numbers of schools to work with in the local area it is justifiable to show a bias towards them in the establishment phase of the Hub. Camara Rwanda can use this period to develop a foundation of very strong 'champion' schools. When it has developed its expertise, capacity, financial resources, and national credibility it can be more equitable in reaching rural schools. It is important that at no point are more remote schools neglected altogether, particularly in Rwanda where accessibility is far less of an issue than in other countries.

## 4. Trainee Course Timing Preferences

| | |
|---|---|
| Respondents who want future training to be full-time | 14 (63.6%) |
| Respondents who want future training to be part-time | 4 (18.2%) |
| No preference | 4 (18.2%) |

Interestingly all respondents claimed to have attended training for at least five days. Either the course went on for longer than expected or this data should be treated with some scepticism. It is interesting that respondents are so keen for training to be full-time in the future. In terms of the longevity of training, respondent preferences break down as follows:

| | |
|---|---|
| 1 Week  7 | (31.8%) |
| 2 Weeks 5 | (22.7%) |
| 1 Month 4 | (18.2%) |
| 3 Months | 4 (18.2%) |
| More than 6 Months | 2 (9.1%) |

## 5. Cost of Training

The reported training costs charged to trainees were very difficult to explain. 15 trainees claimed that they were given the training for free. Two trainees claimed the training cost $100, one claimed it cost $120, and one claimed it was 15,000 Rwandan Francs (approximately €18). There is seemingly no reason for the discrepancies of the charges and it seems highly unusual that four trainees would be charged while the rest were not. Furthermore, all those who said they did pay for the training stated in a subsequent answer that neither they nor their school paid.

Bizarrely while three respondents cited the cost of training as being a major difficulty in attending, only one of these had reported paying a training fee. There is a possibility that these respondents were refer-ring to accommodation or transport charges, though the survey disaggregated quite clearly. It is certainly important for future years to continue monitoring charges and additional costs incurred, and differentiating between them will clearly be essential.

## 6. Subjective Evaluations of the Training

Below are the questions that trainees were asked in order to evaluate the relevance and merits of the training. The questions were left closed so as to facilitate quantification. Without a set syllabus and examina-tion structure it is virtually impossible to get statistics on the objective merits of the training, but subjective feedback on its quality and relevancy is certainly of some use. At the end of the survey trainees were asked how the training could be improved in an open-ended question so as to collect data that would have other-wise remained uncaptured. In this field three respondents cited difficulty in understanding English as being a problem, and one suggested that money should be provided to trainees for food. The answers to the closed questions were as follows:

**i) How relevant was the training content to your teaching requirements?**

| | |
|---|---|
| Very Relevant | 11 (50%) |
| Quite Relevant | 9 (40.9%) |
| Not Very Relevant | 0 |
| Not at all Relevant | 0 |
| No Answer | 2 (9.1%) |

**ii) How would you rate the training content?**

| | |
|---|---|
| Very Useful | 14 (63.6%) |
| Quite Useful | 5 (22.7%) |
| Not Very Useful | 0 |
| Not At All Useful | 0 |
| No Answer | 3 (13.6%) |

**iii) How would you rate the delivery of the training?**

| | |
|---|---|
| Very Good | 12 (54.5%) |
| Quite Good | 6 (27.3%) |
| Not Very Good | 0 |
| Very Poor | 0 |
| No Answer | 4 (18.2%) |

**iv) How confident were you in using computers before the training?**

| | |
|---|---|
| Very Confident | 7 (31.8%) |
| Quite Confident | 3 (13.6%) |
| Not Very Confident | 4 (18.2%) |
| Not at all Confident | 5 (22.7%) |
| No Answer | 3 (13.6%) |

**v) How confident are you in using computers after the training?**

| | |
|---|---|
| Very Confident | 10 (45.5%) |
| Quite Confident | 8 (36.4%) |
| Not Very Confident | 1 (4.5%) |
| Not at all Confident | 0 |
| No Answer | 3 (13.6%) |

**vi)  How regularly do you think you will use computers in the classroom?**

| | |
|---|---|
| Several Times a Week | 14 (63.6%) |
| Once  a Week | 3 (13.6%) |
| Several Times a Month | 1 (4.5%) |
| Once a Month | 0 |
| Several Times a Year | 1 (4.5%) |
| Once a Year | 0 |
| No Answer | 3 (13.6%) |

**vii)  What were the major difficulties in attending the training?**

| | |
|---|---|
| Cost of the Training | 3 (13.6%) |
| Distance Travelled to Attend the Training | 0 |
| Costs of Accommodation and Food | 2 (9.1%) |
| Getting Time off Work | 2 (9.1%) |
| Leaving Family for the Duration of the Training | 3 (13.6%) |
| Other Difficulties not Listed | 2 (9.1%) |
| No Real Difficulties Attending | 7 (31.8%) |
| No Answer | 3 (13.6%) |

**viii)  Would you agree that the course was worth the time and cost?**

| | |
|---|---|
| Definitely Worth the Time and Cost | 14 (63.6%) |
| Probably Worth the Time and Cost | 3 (13.6%) |
| Probably Not Worth the Time and Cost | 1 (4.5%) |
| Definitely Not Worth the Time and Cost | 0 |
| No Answer | 4 (18.2%) |

## M&E Report 2009

## Introduction

The surveys were administered in paper format to trainees directly after training. 192 people were trained in Zambia, but surveys were only administered in the second two weeks. 59 surveys were collected, representing 31% of total trainees. This is certainly sufficient to be representative, and thus the findings can be considered as valid. The volunteers reported considerable resistance to the computer-based survey, which many teachers found complicated. The surveys issued were an abbreviated version, omitting the more intricate questions, but generating useful data nonetheless. Fortunately, the question structures used were quite robust and left ample room to assess the validity of the responses.

Interestingly, in some of the evaluations the respondents gave virtually identical narrative responses to the immediately preceding survey, suggesting a certain amount of consensus-building in discussions with adjacent trainees. Evidently having to critique the training generated some thought and discussion amongst respondents, and many of the suggestions are very useful in terms of designing the logistics of future training sessions.

### 1. Trainee Profiles

| | |
|---|---|
| Total number of respondents | 59 |
| Male | 31 (53%) |
| Female | 20 (47%) |
| Age range | 16- 60 |
| Number of teacher respondents | 50 (86%) [37] |
| Number of non-teachers with educational function | 8 (14%) |
| Number of respondents with no educational function | 0 (0%) |
| Teachers who were male | 28 (56%) |
| Teachers who were female | 22 (44%) |

The gender balance for the Zambia training was enormously positive. So too was the fact that such a large proportion of the trainees were teachers, and that the remainder had an educational function. Two trainees work in the district teacher's resource centre, two were school accountants, two were Principals, one was a teacher trainer, and one was a college lecturer. This is probably the most optimal trainee profile which Camara is ever likely to get, and is very encouraging.

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37. Of 58 respondents. One respondent did not specify his occupation.

The two most prominent age groups were 30-40 year olds, and 40-50 year olds, with 28 and 20 trainees respectively. This demographic thus constitutes 81% of the total, with only seven trainees under thirty and four trainees between fifty and sixty. One disappointing statistic was that so few of the teachers were from schools that had received or were due to receive Camara computers.

| | |
|---|---|
| Number respondents from recipient schools | 22 (37%) |
| Number of respondents from schools that were not recipients | 37 (63%) |

## 2. Training Modules

| | |
|---|---|
| Respondents who attended one course | 27 (46%) |
| Respondents who attended two courses | 22 (35%) |
| Respondents who attended three courses | 3 (5%) |
| Respondents who attended four courses | 4 (7%) |

The contrast between course attendance in Zambia and Tanzania is interesting. Firstly, only 23 (39%) of Zambian participants opted to do the Basic Skillbuilders course, implying a somewhat higher level of proficiency. Secondly, the majority of respondents chose to do more than one course, compared to only 28% of respondents in Tanzania. Given that the courses were given at the same time and were free in both countries, it is difficult to determine where the discrepancy lies. However, the fact that the Zambia trainees were all educators is probably a significant factor.

## 3. Distances travelled for training

| | |
|---|---|
| Less than 5km | 11 (19%) [38] |
| 5-10km | 14 (24%) |
| 11-40km | 24 (41%) |
| 41-100km | 9 (16%) |
| Mean distance travelled | 21km |
| Median distance travelled | 12km |

The mean distance travelled was quite high, which was compounded by the fact that the training centre was very inaccessible by public transport. 28 (47%) respondents cited transport and distance as being a major difficulty in attending the training in an open question, with one emphasising that he had a 120km round trip every day. One respondent suggested that there should be training in multiple locations to reduce the travel requirements. Even if this is unfeasible it is very important that training should be conducted in a more accessible place.

38. Of 58 respondents. One did not specify.

### 4. Trainee Course Timing Preferences

| | |
|---|---|
| Respondents who want future training to be full-time | 44 (75%) |
| Respondents who want future training to be part-time | 15 (25%) |
| Respondents who want future training to last 4/5 days | 1 (2%) |
| Respondents who want future training to last 2 weeks | 34 (58%) |
| Respondents who want future training to last 1 month | 22 (37%) |
| Respondents who want future training to last more than 1 month | 2 (3%) |

The desired course length is much more moderate than it was in Tanzania.  There is probably some justification for piloting a full-time, month-long course in one country to determine what actual attendance rates it attracts.  There could well be a significant difference between the amount of block training teachers would like to attend and what is actually feasible for them.  Clearly, the idea of a two-week course in seems highly popular in Zambia.

### 5. Relevance and Delivery

Respondents were asked to rate the relevance of the training to their teaching requirements.  From the responses given the material covered was clearly highly relevant, even allowing for the inevitable courtesy bias:

| | |
|---|---|
| Very relevant | 56 (95%) |
| Some relevance | 2 (3%) |
| Not at all | 1 (2%) |

Interestingly the delivery, while considered very good or excellent, was given a slightly lower rating than the content of the material.  This is probably explained by the fact that four respondents reported that the facilitators went too fast.  However, the overall delivery was clearly deemed to have been of very high calibre.

| | |
|---|---|
| Excellent | 30 (52%) |
| Very good | 24 (41%) |
| Good | 4 (7%) |
| Fair | 0 |
| Poor | 0 |

## 6. Confidence in using computers

Teachers were also required to rate their confidence in using computers both before and after the training.

| | Confidence before training | Confidence after training |
|---|---|---|
| Very Confident | 5 (9%) [39] | 30 (51%) |
| Confident | 17 (29%) | 29 (49%) |
| A little | 25 (43%) | 0 |
| Not at all | 11 (19%) | 0 |

      The changes in confidence are very positive, with all respondents claiming to be confident or very confident after training.  The actual finding of this question is quite limited in two respects.  Firstly, without an examinable curriculum there is no empirical measure against which to rate trainee proficiency.  Therefore, while teachers may feel far more comfortable using computers there is not necessarily a significant corresponding improvement in ability.  Secondly, improved ability in using computers does not necessarily correlate strongly to better use of them in the classroom.  While it is reasonable to assume that such a significant rise in the confidence of teachers using computers will generate a corresponding increase in the effective use of technology in the classroom where it is available, there is certainly a need to test this correlation in future years.  All respondents reported that they would use technology in the classroom regularly once it became available, with 13 intending to use it daily.   While this reported enthusiasm is certainly positive, it is likely to be highly misleading.

## 7. Time and cost

      Teachers were asked to assess as to whether the course was worth the time and cost incurred.  The responses were as follows:

| | Citations |
|---|---|
| Yes | 54 (93%) [40] |
| No | 4 (7%) |

      Given that the training was given free of charge, it is interesting that the mean cost of attendance incurred by trainees was 191,250 Kwacha (€27.54). [41] The vast majority (78%) [42] of attendees reported that their employers had paid for the expenses incurred, with 5 (11%) reporting that they had split the costs with their employer, and the remaining 5 (11%) reporting that they had borne the full costs of attendance themselves.  Significantly, of the five attendees who paid their own expenses in full, all reported that the training had been worth the time and cost.

39. Of 58 respondents.  One respondent did not specify.
40. Of 58 respondents.  One respondent did not specify.
41. Exchange rate as of December 2009.  The training was in July.
42. Of 46 respondents.   12 did not specify who paid their expenses.

## 8. Suggested improvements

The single most cited way to improve the training was giving it more time, with a surprising 44 respondents (75%) emphasising this point in an open question.  A significant factor underpinning this was the expressed desire by several trainees for more time to practice what they had learnt, with two even asking to be examined on it.  While four respondents explicitly stated that the facilitators had delivered the material too quickly, it appears that most trainees were just anxious to receive more training.  Another significant suggestion was the provision of handouts or notes for teachers.  The data certainly seems to suggest a conspicuous demand for an examinable, comprehensive training framework, delivered in a more accessible location.  However, the core relevance and delivery of the Zambia '09 training was virtually universally lauded by trainees, and future developments should deliberately build on this success.

# 4.4 Tanzania Training

## M&E Report 2009

## Introduction

The surveys were administered in paper format to trainees in two schools directly after the Africa '09 training.  Respondents were asked to give their names, and the volunteer team both delivered the training and administered the surveys which compromises the data somewhat.  Nonetheless, respondents seem to have been quite frank, and the data obtained is certainly useful.  Unfortunately volunteers did not administer a baseline perceived self-efficacy survey, but the findings of that section provide a valuable insight into the complexity of the context in which Camara works.

## Section One- All respondents

### 1.    Trainee Profiles

| | |
|---|---|
| Total number of respondents | 52 |
| Male | 32 (62%) |
| Female | 20 (38%) |
| Mean Age | 30 |
| Median Age | 28 |
| Age range | 16- 65 |
| Number of teacher respondents | 25 (49%) [43] |
| Number of school student respondents | 9 (18%) |
| Number of school administrator respondents | 4 (8%) |
| Number of respondents with no school function | 13 (25%) |
| Male teachers | 21 (84%) [44] |
| Female teachers | 4 (16%) |

Considering that Tanzania was the only Africa '09 country without a Hub the trainee profiles are quite positive.  While the gender balance is decidedly skewed, there was sizeable female participation which can be developed in the coming years.  However, what was notable was the fact that all of the school students who responded were male.  Even more pressing was the fact that only 16% of the teachers who participated were female.

The fact that such a sizeable proportion of the respondents were teachers, students or school administrators (75%) is very positive.  The other respondents included a hospital laboratory technician, a librarian, three monks, two novices, two postulants, two nurses, one religious sister, and a pharmaceutical assistant.  One of the teachers who attended the training was also deputy-vice principal in his school.  The vast majority of respondents from schools had either received or been promised Camara computers, which is clearly positive.

---

43. Of 51 respondents.  One respondent did not specify their occupation.
44. Of the 25 teachers who responded.

| | |
|---|---|
| Number school respondents from recipient schools | 27 (69%) [45] |
| Number of respondents from schools that were not recipients | 3 (8%) |
| Number of school respondents who were unsure | 9 (23%) |

## 2. Training Modules

| | |
|---|---|
| Total number of courses attended by respondents | 66 |
| Intermediate Skill-builder | 10 (15%) |
| Networking | 2 (3%) |
| Basic Skill-builder | 38 (58%) |
| PC Repair and Maintenance | 6 (9%) |
| Moodle | 10 (15%) |
| Respondents who attended one course | 36 (72%) [46] |
| Respondents who attended two courses | 12 (24%) |
| Respondents who attended three courses | 2 (4%) |

The data regarding what training courses were attended is quite useful in several respects. Firstly, it implies that a large proportion of the respondents were very inexperienced in ICT and needed to attend the basic Skill-builder course. Secondly, it suggests that only 28% of respondents chose to do more than one course, despite presumably having the option to do more. This is particularly interesting given the fact that there was considerable demand for more training, and that training was given free-of-charge. There is certainly some basis to conclude that respondents were either unaware of the additional training available, or else that they were offered additional modules but declined. The obvious solution is to ask the volunteers involved.

## 3. Distances travelled for training

| | |
|---|---|
| Less than 5km | 35 (69%) [47] |
| 5-10km | 4 (8%) |
| 10-40km | 0 |
| 40-100km | 5 (10%) |
| 100-200km | 5 (10%) |
| Over 200km | 2 (4%) |

45. Of 39 respondents. 13 respondents were not associated with schools.                    **47**
46. Of 50 respondents. Two did not specify the courses they attended.
47. Of 51 respondents. One did not specify the distance travelled.

Naturally a large proportion of the trainees were from the local area. This is probably inevitable, and in no way undermines the project provided the trainees are primarily teachers from schools that have received Camara computers. Surprisingly there were no respondents from 10km-40km from the training centres, which is very difficult to explain. It would be interesting to find out how the course was advertised. The fact that two teachers whose schools had received Camara computers travelled over 200km to receive training is very positive. However, the regular training over long periods which Camara is considering would be very logistically difficult for these teachers. There is a strong argument for giving computers to schools in geographical clusters to facilitate proper training, maintenance, and monitoring. All respondents reported that they had attended all four or five days (depending on the school) of the training course. Again, this should be verified with the volunteers.

## 4. Trainee Course Timing Preferences

| | |
|---|---|
| Respondents who want future training to be full-time | 45 (88%) [48] |
| Respondents who want future training to be part-time | 6 (12%) |
| Respondents who want future training to last 1 week | 1 (2%) [49] |
| Respondents who want future training to last 2 weeks | 4 (8%) |
| Respondents who want future training to last 1 month | 11 (22%) |
| Respondents who want future training to last 3 months | 15 (31%) |
| Respondents who want future training to last 6 months | 10 (20%) |
| Respondents who want future training to last over 6 months | 8 (16%) |

The responses for preferred length of future courses are surprising. The fact that two-thirds of respondents want training courses to last three months or more is very encouraging at first sight as it suggests that a more long-term programme would be warmly received. However, there is some reason to believe that respondents answered their preferred length without considering external obstacles. This is clearly a cultural or linguistic quirk, since all of the trainees were in some form of full-time employment and could not possibly complete six months of full-time training. The fact that the training was free was presumably an influential factor.

48. Of 51 respondents. One did not specify.
49. Of 49 respondents. Two did not specify.

## Section Two- All respondents
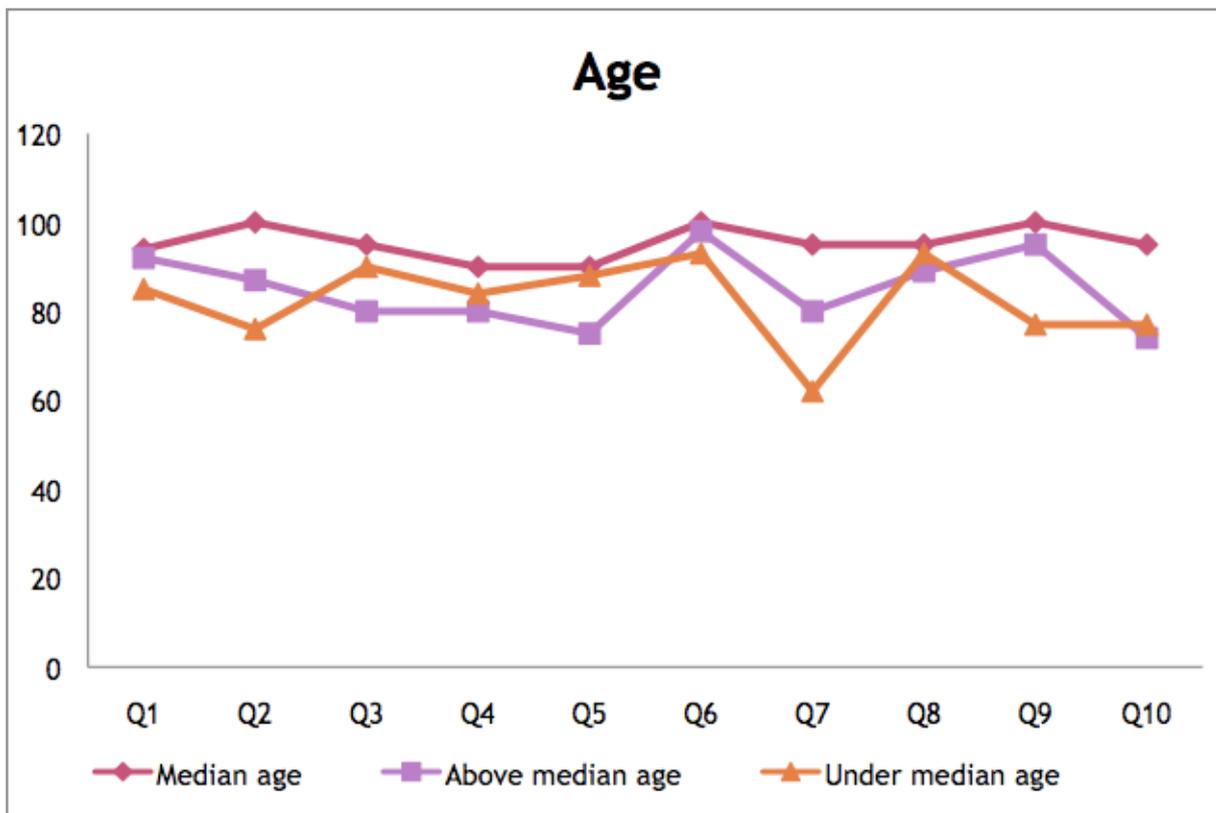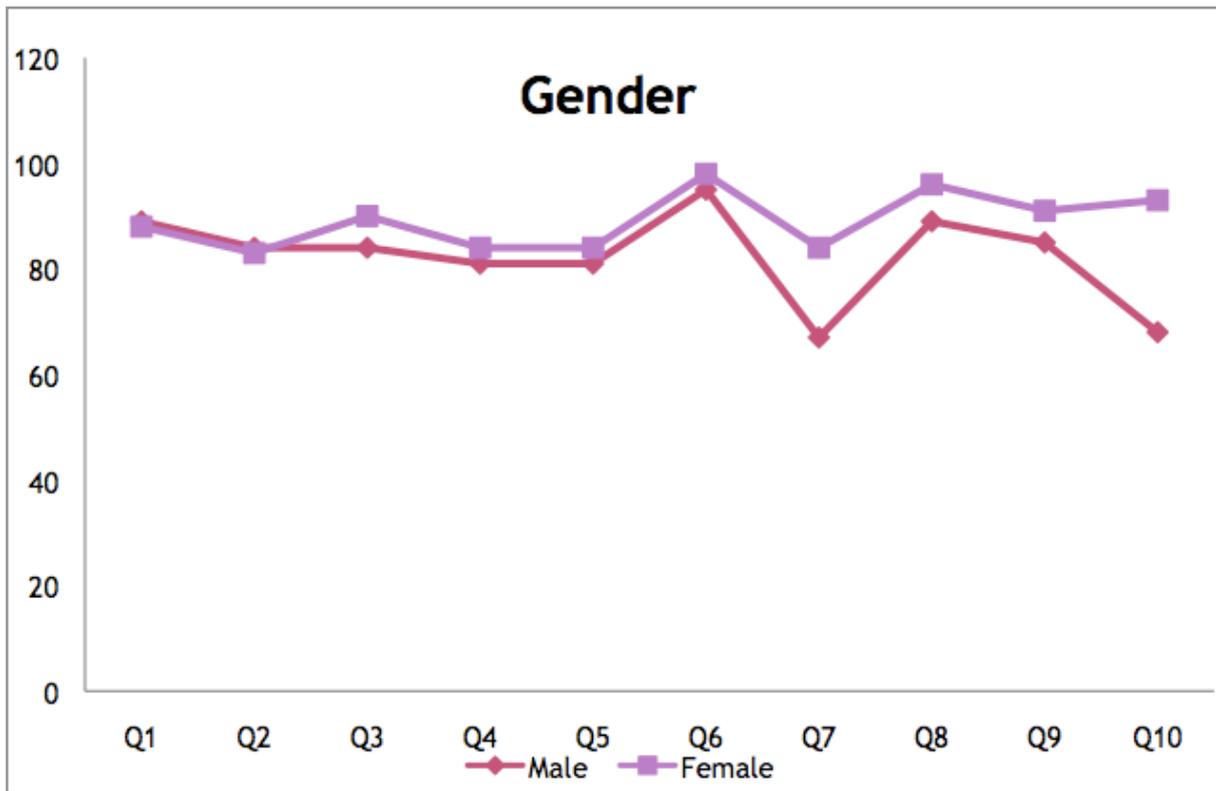
### Self-Efficacy

Perceived self-efficacy can be described as self-belief in one's abilities to succeed in specific situations.  It has been shown to have ramifications in terms of how people approach problems, perseverance, and resilience to adversity. [50] The self-efficacy section of the survey was introduced in view of the fact that without direct testing objective measures were unachievable for 2009.  Unfortunately, the survey is limited by the fact that a baseline was not established prior to the training.  Nonetheless, there are valuable insights apparent in terms of average gender, age, and occupational differentials.  The respondents were asked to rate how true each of ten statements were for them.  To quantify the data, a score was then allocated to each answer as the statement became increasingly true.  The questions are standardised and extremely robust, though volunteers reported some linguistic issues. The findings are graphed overleaf.  The scores were allocated as follows:

Exactly true          **100 points**

Moderately true       **75 points**

Hardly true           **50 points**

Not at all true       **25 points**

**Questions:**

| | |
|---|---|
| 1. | I can always manage to solve difficult problems if I try hard enough. |
| 2. | If someone opposes me, I can find the means and ways to get what I want. |
| 3. | It is easy for me to stick to my aims and accomplish my goals. |
| 4. | I am confident that I could deal efficiently with unexpected events. |
| 5. | Thanks to my resourcefulness, I know how to handle unforeseen situations. |
| 6. | I can solve most problems if I invest the necessary effort. |
| 7. | I can remain calm when facing difficulties because of my coping abilities. |
| 8. | When I am confronted with a problem, I can usually find several solutions. |
| 9. | If I am in trouble, I can usually think of a solution. |
| 10. | I can usually handle whatever comes my way. |

**Gender**

*Male* — *Female*



**Age**

*Median age* — *Above median age* — *Under median age*
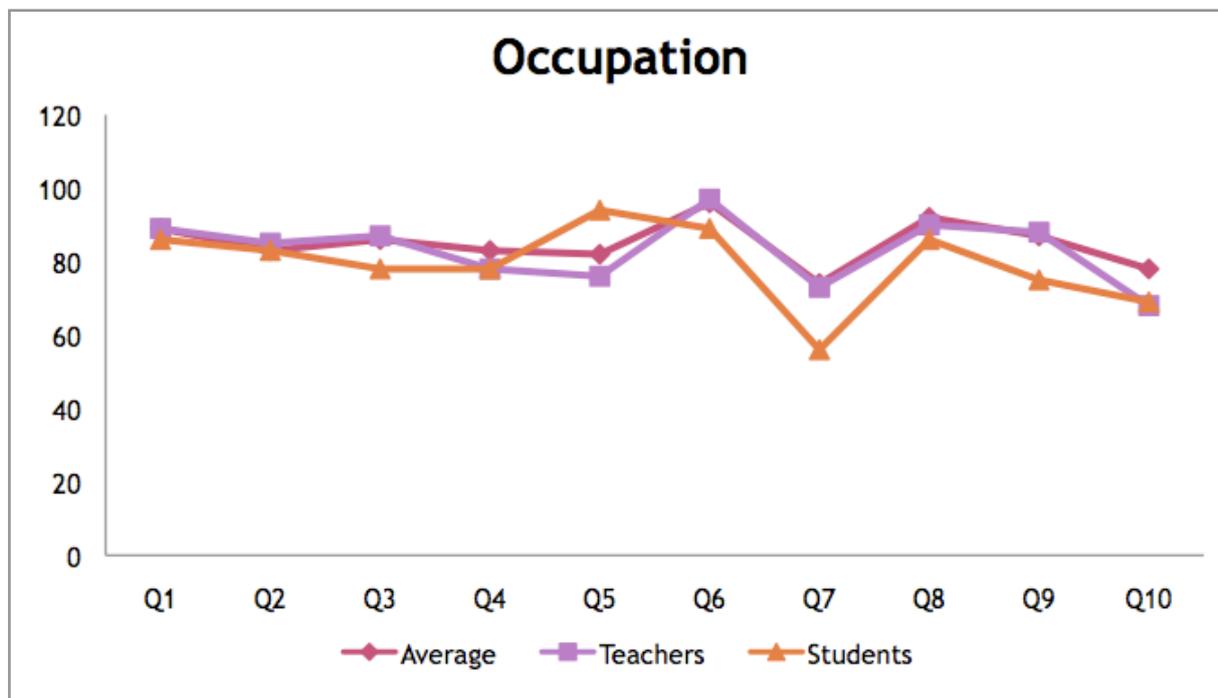
**Occupation**

Despite the research limitations, the findings are extremely interesting. The most notable aspect was the fact that gender, rather than age or occupation, was the biggest determinant of self-efficacy. Even more surprising was the fact that female respondents reported higher levels of perceived self-efficacy in eight of the ten questions. This is highly contradictory to what would have been expected, and is very difficult to explain. In this regard it would have been particularly useful to have undertaken a baseline study so as to ascertain what impact the training had in this regard. Notably, the two questions where women scored significantly higher than men in terms of perceived self-efficacy both concerned coping abilities.

A disaggregation of age also provided significant insights into the self-perceptions of the respondents. Older respondents scored higher than younger respondents in terms of being able to solve difficult problems and overcome opposition from others. Younger respondents perceived themselves as being more able in terms of accomplishing goals, dealing with unexpected events, and handling unforeseen situations. The major differential between the two age groups was younger respondents' low perceptions of their own coping abilities.

The median age of the respondents was 28, and the 5 trainees of this age reported the highest perceived self-efficacy of any group. Whether this was a function of their age or a response to the ages of other trainees in the group is difficult to ascertain. The median age respondents reported on average 90 points or over for every question. In three cases all five respondents reported that the statements were exactly true. These variances in perceived-self efficacy according to age are significant, and should be considered in the design of Camara's TEL (technology-enhanced learning) framework.

The occupational variances in perceived self-efficacy are also notable. Teachers had remarkably similar perceived self-efficacy levels to adults in other professions. Students, however, reported significantly lower levels for several questions. These questions pertained to the accomplishment of aims and goals, coping with difficulties, and finding solutions to problems. Students reported significantly higher than both teachers and the average in terms of self-perceived resourcefulness and handling unforeseen situations. This corresponds with Camara's experiences in Africa, and the readiness among students to embrace Linux.

# Section Three- Teachers Only

## 7. Relevance and Delivery

The purpose of section three was to ascertain how useful the training was for the 25 teachers specifically. Of the teachers who responded to the survey 21 were male and only 4 were female. They were asked to rate the training content, its delivery, and its relevance to their teaching requirements. Points were allocated to each rating:

| Score | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Content relevancy | Very relevant | Quite relevant | Not very relevant | Not at all relevant |
| Content rating | Very useful | Quite useful | Not very useful | Not at all useful |
| Delivery rating | Very good | Quite good | Not very good | Very poor |

Consequentially, an average rating approaching one is optimal whereas an average rating of four is the least desirable possible score. On this basis the average course content, delivery, and relevancy ratings are all very positive

| | |
|---|---|
| Content rating | 1.2 |
| Delivery rating | 1.17 |
| Relevance of content to teaching requirements | 1.52 |

## 8. Confidence in using computers

Teachers were also required to rate their confidence in using computers both before and after the training. Again scores were allocated to each answer and an average rating was determined. The possible answers and their scores are detailed below, followed by the disaggregated results:

| Score | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Confidence | Very confident | Quite confident | Not very confident | Not at all confident |

| Group | Confidence before training | Confidence after training | Points change |
|---|---|---|---|
| Teacher average | 3.22 | 1.54 | 1.68 |
| Male teachers | 3.32 | 1.55 | 1.77 |
| Female teachers | 2.6 | 1.4 | 1.2 |
| Median age | 3 | 1 | 2 |
| Above median age | 3.08 | 1.64 | 1.44 |
| Below median age | 3.38 | 1.5 | 1.88 |

The reported changes in confidence using computers are very interesting, and entirely contradict conventional wisdom. Female teachers reported higher confidence prior to training than their male counterparts. After training, gender had virtually no impact on reported confidence in using computers. It is very difficult to ascertain the reason underlying as to why females were more confident prior to training. The fact that there were only four female teachers suggests those who did attend training were necessarily driven and interested. The fact that reported confidence levels matched so closely after training (within 0.01 points) suggests that whatever gender discrepancy had existed was addressed.

Another interesting finding, which corroborates the self-efficacy results, was that respondents of the median age were more confident than any other age group. They also reported the highest increase of confidence in computer use of any group, and all rated themselves as being very confident after training. Notably, respondents above median age reported slightly higher levels of confidence prior to training than those below it. However, the participants below 28 reported significantly higher increases in confidence levels and overall higher levels of confidence in computer usage after training. What is very positive to note is that all groups reported significant increases in confidence after the course.

## 9. Frequency of use

Teachers reported that they planned to use computers in the classroom on average once a week after the training. However, there was a wide discrepancy between some responses, with two teachers reporting that they would only use computers in the classroom several times a year. Frequency of use is an important variable that should be addressed in the contracts with schools.

| Frequency | Number of citations |
| --- | --- |
| Several times a week | 12 (50%) |
| Once a week | 4 (17%) |
| Several times a month | 6 (25%) |
| Once a month | 0 |
| Several times a year | 2 (8%) |
| Once a year | 0 |
| Never | 0 |

## 10. Difficulties in attending

Teachers reported relatively little difficulty in attending the courses. Given that it was a week long and there was no cost this is probably to be expected. Possible difficulties were listed and teachers were asked to tick the difficulties that they encountered. Only one teacher ticked multiple boxes. The selections were as follows:

| Difficulty | Citations |
|---|---|
| Cost of the training | 0 |
| Distance travelled to attend | 5 |
| Getting time off work | 3 |
| Cost of accommodation and food | 0 |
| Leaving family for the duration of the training | 2 |
| Other difficulties not listed | 0 |
| No real difficulties attending | 16 |

## 11. Cost/ Benefit assessment?

Teachers were asked to assess as to whether the course was worth the time and cost incurred. This was the question that respondents seem to have had most difficulty with. Given the fact that the course was free, that virtually all respondents specifically asked for more time, and that participants were highly satisfied with the content and delivery, the number of negative responses seems high. The question was the last on the survey and in all likelihood was answered incorrectly by several respondents. For future surveys the phrasing and sequence will be changed, and the results cross-checked. Given that the biggest complaint was that the course was too short, there is a possibility that teachers took this question as an opportunity to assess whether the time allocated was appropriate. It is important to stress that answers for this question were entirely contradictory to the rest of the responses.

| | Citations |
|---|---|
| Definitely worth the time and cost | 11 (45%) [51] |
| Probably worth the time and cost | 1 (4%) |
| Probably not worth the time and cost | 2 (8%) |
| Definitely not worth the time and cost | 10 (42%) |

## 12. Suggested improvements

This was the only open-ended question in the entire survey. Of the 25 teachers 17 specifically said that the training should be longer. The primary rationale underpinning this suggestion was that teachers wanted more practice with computers, and to cover more material. In some cases it is apparent that teachers did not get individual access to computers, and this needs to be addressed. One teacher suggested that a Camara contact person should have been picked earlier, and that training should be timed around the school holidays. Another teacher suggested that trainees should get notes. Generally the comments were very positive, and the suggestions should be taken in that context.

# 5. Online Feedback

*'Globalization, as defined by rich people like us, is a very nice thing... you are talking about the Internet, you are talking about cell phones, you are talking about computers. This doesn't affect two-thirds of the people of the world.'*

*Jimmy Carter*

## Introduction

The Online Feedback system was first piloted with a small sample of twelve schools in Uganda in January.  The main purpose of an online system was to collect comprehensive data from schools with no intermediary, while simultaneously minimising the courtesy bias by facilitating feedback with no face-to-face interaction.  The response-rate of the pilot was extremely high (42%), and the respondents were unexpectedly open and detailed in their answers.  On this basis the survey was sent to all Camara schools visited by the M&E officers in 2009.

The response rate for the second phase was quite disappointing by contrast, with a total of 11 surveys completed from 149 schools (7.4%). In total 15 schools responded to the surveys in 2009, representing a response rate of 10%. Considering that a sizeable proportion of the schools have no e-mail addresses, and only a minority have on-site internet access, this is actually a reasonably positive outcome. However, for the online system to become a more prominent component of Camara's M&E system there is a decided need to promote the surveys more heavily to schools as a primary condition in their original contracts, essentially making participation mandatory.

Perhaps the most worrying finding of the system was that no schools from Ethiopia responded.  While there were only 20 schools visited, and few of these had e-mail addresses, the absence of any direct feedback is a decided cause for concern.  Camara rang all of the schools in the four countries so there is no reason as to why Ethiopia would have such a poor response rate.  Lesotho, by contrast was relatively good given the poor school visit performance, with 3 out of only 13 schools completing the survey.  Kenya was disappointing, with 5 of 56 surveys completed.  Uganda was easily the most impressive in terms of responses, with 7 from 48 schools visited, including the pilot.  The findings included here are only from the second phase, as the findings of the pilot have already been published.

It is important to stress that the schools that responded to the survey are most likely the best positioned of the Camara schools in terms of resources and staff. Therefore the findings are not representative, merely indicative.  The feedback from teachers in terms of how strategically integrated ICT can facilitate better teaching proved to be highly valuable.  One teacher highlighted the benefits of ICT in terms of improving reading and communication skills.  Another pointed to improved student attitudes and the importance of ICT as a source of information.  The broad perspective from teachers was that ICT is an important tool for upskilling their students and enhancing learning.

In terms of using computers, the most frequently used software application was predictably Open Office Writer.  This was followed closely by the Open Office Spreadsheet programme which seems less likely to be accurate.  The few schools that do have the internet seem to use it regularly, and those that have been shown the offline Wikipedia software use it quite extensively.  It is clear that the HIV/Respect Software is not being used at all, and will not be until systematic teacher training is provided to support it.  The rule of thumb seems to be that the software provided needs to be accompanied by appropriate teacher training to be used in a meaningful way.  This applies to all of the Camarabuntu games and there is a definite need to promote these more actively.

### 1. Number of Schools

|               | Uganda | Kenya | Lesotho | Total |
|---------------|--------|-------|---------|-------|
| Total Schools | 3      | 5     | 3       | 11    |

### 2. Respondent's Role at school

|                        | Uganda   | Kenya    | Lesotho  | Total    |
|------------------------|----------|----------|----------|----------|
| Computer Teacher       | 1 (33%)  | 1 (20%)  | 2 (67%)  | 4 (36%)  |
| Headmaster/Headmistress| 0        | 4 (80%)  | 1 (33%)  | 5 (45%)  |
| Director               | 2 (67%)  | 0        | 0        | 2 (18%)  |
| Administrator          | 0        | 0        | 0        | 0        |
| Other                  | 0        | 0        | 0        | 0        |

### 3. Total Computers Received/ Still Working

|                         | Uganda     | Kenya      | Lesotho     | Total       |
|-------------------------|------------|------------|-------------|-------------|
| Computers Received      | 37         | 65         | 120         | 222         |
| Computers Still Working | 37 (100%)  | 28 [52]    | 116 (96.6%) | 181(82%)    |
| Computers Broken        | 0          | 20 (27%)   | 4 (3.3%)    | 24 (10.8%)  |
| Mean Received Per School| 12.3       | 15         | 40          | 20.2        |

### 4. Date of Reception

|      | Uganda  | Kenya   | Lesotho | Total   |
|------|---------|---------|---------|---------|
| 2009 | 0       | 1 (20%) | 0       | 1 (9%)  |
| 2008 | 2 (67%) | 0       | 2 (67%) | 4 (36%) |
| 2007 | 1 (33%) | 3 (60%) | 1 (33%) | 5 (45%) |
| 2006 | 0       | 1 (20%) | 0       | 1 (9%)  |
| 2005 | 0       | 0       | 0       | 0       |

52. Given the number of broken computers and the details given this figure is almost certainly misreported.

### 5. Hub's Fulfilment in Delivering Order

|  | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Very Efficient | 1 (33%) | 2 (40%) | 1 (33%) | 4 (36%) |
| Efficient | 1 (33%) | 3 (60%) | 2 (67%) | 6 (55%) |
| Neutral | 1 (33%) | 0 | 0 | 1 (9%) |
| Inefficient | 0 | 0 | 0 | 0 |
| Very Inefficient | 0 | 0 | 0 | 0 |

### 6. Uses of Computers in Schools (respondents were asked to tick all that applied)

|  | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Teaching students to use pcs | 3 (100%) | 5 (100%) | 3 (100%) | 11(100%) |
| Teaching other subjects with pcs | 1 (33%) | 0 | 0 | 1 (9%) |
| Writing exams, reports etc. | 0 | 3 (60%) | 1 (33%) | 4 (36%) |
| Administration | 2 (67%) | 3 (60%) | 0 | 5 (45%) |
| Other | 0 | 1 [53] | 0 | 1 (9%) |

### 7. Operating System Used

|  | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Linux | 2 (67%) | 4 (80%) | 1 (33%) | 7 (64%) |
| Windows | 1 (33%) | 0 | 2 (67%) | 3 (27%) |
| Linux and Windows Combination | 0 | 1 (20%) | 0 | 1 (9%) |

### 8. Operating System Preferred

|  | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Linux | 0 | 4 (80%) | 1 (33%) | 5 (45%) |
| Windows | 3(100%) | 1 (20%) | 2 (67%) | 6 (55%) |

The reasons given for preferring Windows included the fact that it is the Operating System commonly used by educational institutions and employers in all three countries and that teachers are used to it. The cited benefits of Linux are that it is virus free, has relevant educational programmes, and is easy to maintain.

One school in Kenya had downloaded additional games, a typing tutor, videos, and anti-virus software.  Another had downloaded Wine, which is a programme that allows Linux users to run software designed for Windows.  None of the other schools had downloaded any additional material.  The additional software requested is fascinating, and very much sets the bar for Camara in the future.  Some of the additional materials that schools suggested were as follows:

1.      Dictionaries in both English and Swahili.
2.      Additional games.
3.      Maths, English, Chemistry and Biology Educational Software.
4.      SSH to allow data exchange between two networked devices.
5.      Maps of The World and East Africa

### 9. Schools that Have Required Maintenance

|  | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Yes | 1 (33%) | 4 (80%) | 1 (33%) | 6 (55%) |
| No | 2 (67%) | 1 (20%) | 2 (67%) | 5 (45%) |

### 10. Schools that Have Received Maintenance

|  | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Yes | 1 (33%) | 2 (40%) | 1 (33%) | 4 (36%) |
| No | 2 (67%) | 2 (40%) | 2 (67%) | 6 (55%) |
| No Answer | 0 | 1 (20%) | 0 | 1 (9%) |

### 11. Schools that Were Charged for Maintenance [54]

|  | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Yes | 0 | 1 (50%) | 1 (50%) | 2 (40%) |
| No | 1(100%) | 1 (50%) | 1 (50%) | 3 (60%) |

In terms of improving the maintenance service the major demands are for more regular visits by technicians, and for maintenance training for teachers.  Some of the demands are clearly unrealistic, such as ongoing free maintenance, free replacement of broken computers, and monthly visits by technicians.  This is interesting from the point of view that teachers seem to very much view Camara as they would a traditional charity, with all that it entails, rather than a social enterprise.

54. Answers only included from schools who have either received maintenance or who are charged subscriptions.
    Several schools had said they were not charged but had not received maintenance.

### 12. Schools that Have also Received Computers from another Source

| | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Yes | 1 (33%) | 3 (60%) | 2 (67%) | 6 (55%) |
| No | 2 (67%) | 2 (40%) | 1 (33%) | 5 (45%) |

It is interesting that so many of the schools had received computers from another source.  In four of these cases it was from another donor, with UNESCO in Kenya and School Net Lesotho being mentioned in particular.  One school had actually bought laptops on the open market.  Clearly there is a bias in terms of better positioned schools getting computers from multiple sources.  There is a definite need to establish whether this applies specifically to the schools that responded to the survey, given that they are presumably more proactive, or whether it applies to the schools that approach Camara more generally.

### 13. Comparison of Camara Hardware with other Computers

| | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Much Better | 0 | 2 (40%) | 1 (33%) | 3 (27%) |
| Better | 1 (33%) | 2 (40%) | 2 (67%) | 5 (45%) |
| Neutral | 2 (67%) | 1 (20%) | 0 | 3 (27%) |
| Worse | 0 | 0 | 0 | 0 |
| Much Worse | 0 | 0 | 0 | 0 |

### 14. Comparison of Camara Software with other Computers

| | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Much Better | 0 | 2 (40%) | 2 (67%) | 4 (36%) |
| Better | 1 (33%) | 2 (40%) | 0 | 3 (27%) |
| Neutral | 1 (33%) | 1 (20%) | 1 (33%) | 3 (27%) |
| Worse | 1 (33%) | 0 | 0 | 1 (9%) |
| Much Worse | 0 | 0 | 0 | 0 |

Some of the more interesting justifications for these hardware and software comparisons were as follows:

1.  Given the developments in the industry working with P2s and P3s is tedious.

2.  The Camara computers are durable and rarely break down.

3.  A bit old, sometimes slow, and I don't like the CRTs.

4.  All computers are useful and Camara computers are no different.

5.  The hardware is small and the software is not easily affected by viruses.

Given the significant improvements in the quality of Camara computers since the end of 2008, it is likely that teachers will become increasingly satisfied with the hardware. While there is a decided courtesy bias at play that is clearly skewing the responses, the justifications are quite credible. It is important to remember that many teachers are only exposed to other computers in internet cafes, where the hardware is often slowed down considerably by viruses. There is a definite need to continue developing and promoting the Camarabuntu suite based on teacher and student demands.

### 15. Average Cost of a Camara Computer

|  | Uganda | Kenya | Lesotho | Average |
|---|---|---|---|---|
| Local currency | 100,000 UGS | 3,833 KSH | 400 Maloti | €36.79 [55] |
| Euro | €36.89 | €36.17 | €38.24 | €36.79 |

### 16. Teacher Satisfaction Rates with the Cost of Camara Computers

|  | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Very Satisfied | 0 | 1 (20%) | 2 (67%) | 3 (27%) |
| Satisfied | 2 (67%) | 2 (40%) | 0 | 4 (36%) |
| Neutral | 1 (33%) | 0 | 1 (33%) | 2 (18%) |
| Dissatisfied | 0 | 2 (40%) | 0 | 2 (18%) |
| Very Dissatisfied | 0 | 0 | 0 | 0 |

### 17. Respondent Schools that had Received Training from Camara

|  | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Yes, from the Irish volunteers | 2 (67%) | 4 (80%) | 0 | 6 (55%) |
| Yes, from the local Hub | 0 | 0 | 0 | 0 |
| No | 1 (33%) | 1 (20%) | 3 (100%) | 5 (45%) |

### 18. Proportion of Schools that were told what to do with PCs upon End-of-Life

|  | Uganda | Kenya | Lesotho | Total |
|---|---|---|---|---|
| Yes | 0 | 4 (100%) | 0 | 4 (40%) |
| No | 3(100%) | 0 | 3 (100%) | 6 (60%) |

**19. Likelihood of Schools buying Camara Computers Again.**

|              | Uganda   | Kenya    | Lesotho  | Total    |
|--------------|----------|----------|----------|----------|
| Very Likely  | 0        | 2 (40%)  | 2 (67%)  | 4 (36%)  |
| Likely       | 2 (67%)  | 3 (60%)  | 1 (33%)  | 6 (55%)  |
| Neutral      | 1 (33%)  | 0        | 0        | 1 (9%)   |
| Unlikely     | 0        | 0        | 0        | 0        |
| Very Unlikely| 0        | 0        | 0        | 0        |

In terms of suggesting as to how Camara could improve its service to schools teachers were very insightful. Some of the more helpful recommendations were as follows:

1. Regular maintenance services, at least twice a year.
2. Send more competent maintenance technicians.
3. Install software appropriate to the national education system.
4. Give more training to teachers.
5. Allow schools to install additional software, especially Windows.

# 6. Hub Audits

*'The paradox of education is precisely this - that as one begins to become conscious one begins to examine the society in which he is being educated'.*

*James Arthur Baldwin*

On the basis of data collected through the monitoring system, each of the Hubs was evaluated based on its performance for 2009 as a precondition to receiving more computers and support.  Given that it was a first attempt, the scores allocated to the Hubs were quite subjective, if based on concrete statistics.  The objective in the coming years is to use key performance indicators to evaluate the Hubs quantitatively wherever possible.  The Hubs were audited under three subsections:  Training; Hardware deployment; and Management and Governance.  The two operational sections each represented 30% of the overall audit, while the Management section was allocated the remaining 40%.
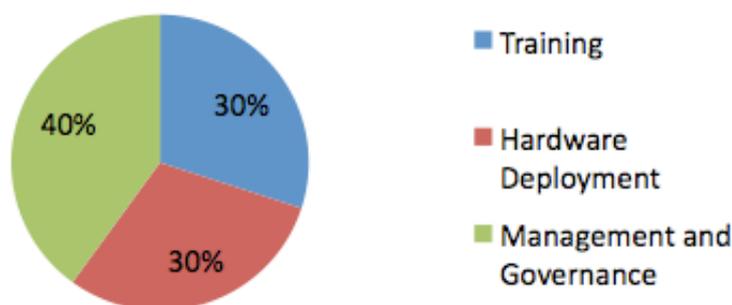


Each subsection was comprised of a series of criteria against which the Hub was evaluated, and each criterion was given a coefficient to reflect its relative importance.  The Hub was then awarded a percentage based on its performance by relevant Headquarters staff, which was then multiplied by the coefficient to establish an overall score.

### Audit Key

| Evaluations | Percent |
|---|---|
| Excellent Performance- innovative model for HQ and the other Hubs | 100% |
| Good Performance- achieves most things but room to improve | 75% |
| Average Performance- substantial performance gaps | 50% |
| Poor Performance- achieving very little in the area. | 25% |
| No Performance- has done virtually nothing in the area. | 0% |

Given the sensitive nature of the audits it was deemed inappropriate to publish a full evaluation of the partner Hubs.  However, a summary of each evaluation, including of the Dublin Hub, is given below.  On the back of its extremely disappointing performance the board of the Lesotho Hub decided to replace its CEO.  Camara Headquarters also decided to withdraw from its partnership with the Hub in Ethiopia.

A major shortfall captured by the audits was that three of four established Hubs had done virtually nothing in terms of training or developing localised materials.  The Hubs were generally stronger in terms of hardware deployment and management, though Lesotho was disappointing in all respects.  The audits in 2010 will focus less on the quality of the volunteer programmes in the Hubs, and increasingly on their hardware, training, and support outputs against predefined key performance indicators (KPIs).

## 1. Camara Dublin

| Summary Audit | Score | Total | Percentage |
|---|---|---|---|
| Volunteers | 3.5 | 7 | 50% |
| Training And Software Content Development | 5.25 | 14 | 38% |
| **TEL** | **8.75** | **21** | **42%** |
| | | | |
| Security, Safety and Quality Control | 6.5 | 10 | 65% |
| Maintenance, Recycling and Afritrack | 6 | 8 | 75% |
| Workshop and Shipping Processes and Mark-Up Price | 4.75 | 8 | 59% |
| **Hardware Delivery and Support** | **17.25** | **26** | **66%** |
| | | | |
| M&E | 8.75 | 14 | 63% |
| Financial Reporting, Efficiency, and Sustainability | 7.25 | 13 | 56% |
| Operational Sustainability, Governance, and Best Practice | 7.75 | 13 | 60% |
| **Management and Governance** | **23.75** | **40** | **59%** |
| | | | |
| **Total** | **49.75** | **87** | **57%** |

## 2. Hamara (Ethiopia)

| Summary Audit | Score | Total | Percentage |
|---|---|---|---|
| Volunteers | 4 | 16 | 25% |
| Training And Software Content Development | 0 | 14 | 0% |
| **TEL** | **4** | **30** | **13%** |
| | | | |
| Security, Safety and Quality Control | 4.5 | 10 | 45% |
| Maintenance, Recycling and Afritrack | 3 | 12 | 25% |
| Workshop and Shipping Processes and Mark-Up Price | 4.75 | 8 | 59% |
| **Hardware Delivery and Support** | **12.25** | **30** | **41%** |
| | | | |
| M&E | 5.25 | 14 | 38% |
| Financial Reporting, Efficiency, and Sustainability | 7.5 | 13 | 58% |
| Operational Sustainability, Governance, and Best Practice | 6 | 13 | 46% |
| **Management and Governance** | **18.75** | **40** | **47%** |
| | | | |
| **Total** | **35** | **100** | **35%** |

### 3. Camara Kenya

| Summary Audit | Score | Total | Percentage |
|---|---|---|---|
| Volunteers | 14.25 | 16 | 89% |
| Training And Software Content Development | 7 | 14 | 50% |
| **TEL** | **21.25** | **30** | **71%** |
| | | | |
| Security, Safety and Quality Control | 5.5 | 10 | 55% |
| Maintenance, Recycling and Afritrack | 7 | 12 | 58% |
| Workshop and Shipping Processes and Mark-Up Price | 5 | 8 | 63% |
| **Hardware Delivery and Support** | **17.5** | **30** | **58%** |
| | | | |
| M&E | 10.5 | 14 | 75% |
| Financial Reporting, Efficiency, and Sustainability | 4.75 | 13 | 37% |
| Operational Sustainability, Governance, and Best Practice | 8 | 13 | 62% |
| **Management and Governance** | **23.25** | **40** | **58%** |
| | | | |
| **Total** | **62** | **100** | **62%** |

### 4. Camara Uganda

| Summary Audit | Score | Total | Percentage |
|---|---|---|---|
| Volunteers | 12 | 16 | 75% |
| Training And Software Content Development | 0 | 14 | 0% |
| **TEL** | **12** | **30** | **40%** |
| | | | |
| Security, Safety and Quality Control | 5.5 | 10 | 55% |
| Maintenance, Recycling and Afritrack | 4 | 12 | 33% |
| Workshop and Shipping Processes and Mark-Up Price | 6 | 8 | 75% |
| **Hardware Delivery and Support** | **15.5** | **30** | **52%** |
| | | | |
| M&E | 12.25 | 14 | 88% |
| Financial Reporting, Efficiency, and Sustainability | 6 | 13 | 46% |
| Operational Sustainability, Governance, and Best Practice | 6.25 | 13 | 48% |
| **Management and Governance** | **24.5** | **40** | **61%** |
| | | | |
| **Total** | **52** | **100** | **52%** |

### 3. Camara Kenya

## 5. Camara Lesotho

| Summary Audit | Score | Total | Percentage |
|---|---|---|---|
| Volunteers | 4 | 16 | 25% |
| Training And Software Content Development | 0 | 14 | 0% |
| **TEL** | **4** | **30** | **13%** |
| | | | |
| Security, Safety and Quality Control | 4 | 10 | 40% |
| Maintenance, Recycling and Afritrack | 0 | 12 | 0% |
| Workshop and Shipping Processes and Mark-Up Price | 4.25 | 8 | 53% |
| **Hardware Delivery and Support** | **8.25** | **30** | **28%** |
| | | | |
| M&E | 5.25 | 14 | 38% |
| Financial Reporting, Efficiency, and Sustainability | 3 | 13 | 23% |
| Operational Sustainability, Governance, and Best Practice | 4 | 13 | 31% |
| **Management and Governance** | **12.25** | **40** | **31%** |
| | | | |
| **Total** | **24.5** | **100** | **25%** |

# 7. Outcomes and Impact

*'We have high expectations of ICT and its transformative effects in all areas of the economy and society. Communications technology has fundamentally changed the way people live, work, and interact socially, and we in Rwanda have no intention of being left behind or standing still as the rest of the globe moves forward at an ever increasing pace'.*

*Paul Kagame, President of Rwanda (2006)[56]*

The benefits of using technology in education are two-fold:

1. The meaningful use of technology can significantly improve educational outcomes;

2. Technological literacy is a prerequisite for the performance of highly-skilled jobs.

Both of these impacts can significantly contribute to sustainable economic growth and to the opportunities available to individuals. The purpose of this section is to summarise some of evidence available demonstrating the benefits of Technology-enhanced Learning and Technology Literacy, and its relevance to Development.

## Educational Benefits of TeL

A study commissioned by the British Educational Communications and Technology Agency (Becta) found that the meaningful usage of TeL produced a substantial increase in student attainment across the educational spectrum.[57] The estimated mean benefits are:

1. 56% of a GCSE grade in Science
2. 41% of a GCSE grade in Design and Technology
3. 82% of a GCSE grade in modern foreign languages
4. 37% of a GCSE grade in geography,

The study concluded that 'There is no consistent relationship between the average amount of ICT use reported for any subject at a given key stage and its apparent effectiveness in raising standards. It therefore seems likely that the type of use is all-important'.[58]

A study commissioned by UNESCO found that students using literacy software have been demonstrated to develop reading fluency at three times the rate of those who do not. It also demonstrated that technology-support is particularly useful for children who cannot get help from home or where there are large classroom sizes.[59]

56. World Bank, Extending Reach and Increasing Impact: IC4D (2009), p 51.
57. Becta- http://publications.becta.org.uk/display.cfm?resID=25841
58. Becta- http://publications.becta.org.uk/display.cfm?resID=25841
59. http://www.unescobkk.org/fileadmin/user_upload/ict/e books/Literacy/Using_ICT_to_Develop_Literacy.pdf

## Economic Growth and Job Creation

A World Bank report on the role of ICT in Development concluded that:
'In India, long-term investment in world-class technology institutes produced a critical mass of technology leaders able to compete globally'.[60]

- A one percent increase in the number of internet users has been demonstrated to increase exports by 4.3% in both Developed and Developing countries.

- A 10% increase in the penetration of broadband services has been demonstrated to increase gross domestic product (GDP) by 1.3%. It is very likely that this figure fails to capture the real extent of informal economic activity enabled through the use of technology.[61]

- Every job created in Information Technology-enabled services sector in the Philippines has resulted in the creation of between two and three new jobs in other sectors through significant increased demand for local services.

- While India has been the most active beneficiary in terms of attracting IT-enabled service providers, it is predicted to have a talent shortfall of over a million workers in the industry by 2012.

- Developing countries with better ICT infrastructure attract more outsourcing and foreign investment and trade more as a result.[62]

60. IC4D 2009 Report. Information and Communication for Development 2009, p112.
61. IC4D 2009 Report. Information and Communication for Development 2009, pp 5 & 6.
62. IC4D 2009 Report. Information and Communication for Development 2009, pp 107, 109 & 112

# 8. MSC Stories

*'I am beginning to suspect all elaborate and special systems of education.  They seem to me to be built up on the supposition that every child is a kind of idiot who must be taught to think'.*

*Anne Sullivan*

The Most Significant Change (MSC) technique was developed by Rick Davies and Jess Dart in the early 1990s.  It is a participatory technique used for gathering qualitative data directly from beneficiaries. An abiding problem with trying to get beneficiary feedback in Africa is the significant courtesy bias.  The major benefit of MSC is that it offers beneficiaries an opportunity to identify the single most important impact of an intervention.  Rather than parroting the opinions of an external NGO to ensure continued support, they have to critically rank and evaluate the benefits.  It is invaluable information to help calibrate and focus an organisation based on customer demands.

The MSC stories below were collected in October 2009; in Ethiopia, Kenya and Uganda.  A Camara facilitator asked students to participate in the study, and for permission to publish the stories.  Interestingly, younger students were much more assured in voicing an opinion.  Students were generally quite upfront about giving feedback; though in terms of documentation only the most interesting offerings were included in this report.  In this sense the information is certainly not representative, but is arguably the best articulation available of the core of Camara and its purpose.  Members of staff were subsequently asked to discuss the stories and identify which were most meaningful for them in terms of the core function of the organisation. The stories selected were thus used to inform analysis of the model, and organisational strategy for 2010. In this manner the MSC technique facilitated direct beneficiary input in developing and enhancing the core design and structure of Camara.

## Ethiopia
### 1.  Harambee College- Nursing Campus (adults)

Students were asked to identify the most significant change that ICT education had made to them personally.

**Man 1:** '...Reading from the textbook is not easily understandable to me.  When I have used the e-library on the computers it is easier to understand.  I will not forget what I have seen on the computer. That is good.'

**Man 2:**  'I think the computers in this college have brought a significant advantage... books are very expensive so you can easily get useful animation using the cds, so that is helpful.... that is easier to understand when you compare to books.'

## 2. Kamara Nursery (8-10 year olds)

Story told by Yisak Gezahegn (originally in Amharic)

**Yisak:** 'People in Europe are able to communicate using the internet, but here we are not able to do that.  I want the internet to communicate with people in other parts of the world.... I want to use the internet to communicate by voice like a telephone and by picture.'

**Interviewer:** 'Who do you want to communicate with?'

**Yisak (laughs):** 'People in Ireland....'

'I want to know how to develop cartoons and animations with computers.  Our teachers need to be trained so that they in turn can teach us this'

**Interviewer:** 'What do you want to do when you leave school?'

**Yisak:** 'Become Minister of Health'

## 3. Kamara Nursery (10-12 year olds)

(Originally in Amharic)

During the course of the focus group the students had highlighted the most significant changes that the computers represented for them.  The benefits cited were acquiring knowledge and finding a job.  They were then asked to pick which was more important.

**Boy 1:** 'First of all you must get the knowledge; otherwise you cannot get a job'.

**Boy 2:** 'Even if you get the job and you don't have the knowledge it will be very difficult for you to do the job'.

**Girl 1:** 'If there's no knowledge then there's no job'.

**Girl 2:** 'Always knowledge comes first.  Knowledge comes prior to the job'.

## Kenya

### 4. Star of the Sea (8-13 year olds)

Star of the Sea is an all-girl's public school based in Mombasa.  Students were asked to identify how they would use computers in their future careers.

**Girl 1:** 'As a judge I won't like to carry files everywhere so I store my information in a flash disk, then I can carry this.'

**Girl 2:** 'I'd like to be a pharmacist so I'll use the computer to find out about any kind of medicine.'

**Girl 3:** 'As a scientist I'll use the computer to share ideas with my fellows in other parts of the country so that I can learn from them and exchange knowledge.'

When asked to identify the most significant change that ICT education had made for them, the students cited the following:

**Girl 4:** 'It has made me more knowledgeable.'

**Girl 5:** 'It has made me learn how to study information.'

**Girl 6:** 'I can learn the history of some time ago like the adventurers and the African explorers.'

**Girl 1:** 'When it's the day we have lessons we don't have to stay in class all the time, at least you can have some fun with the computers and that helps our medical (gestures at her head).'

**Girl 7:** 'I've learned things in detail- like I have to come in and research things that I know, for instance things that I can't see with my naked eye.'

### 5. Brainsworth Secondary School (17/18 years old)

The students were asked to identify the careers that they would like to pursue, and to assess whether being able to use a computer will be necessary in these professions.

**Boy 1:** 'As a journalist you need computers to work because you can't just process data or analyse reports without a computer'.

**Boy 2:** 'If I am computer literate, I can use the knowledge of the computer to control the heartbeat of the people, maybe if they are sick. But as a doctor if I do not have the knowledge of Camara I would fail at my job'.

**Boy 3:** 'I would like to be a teacher so I can teach other people how to use a computer'.

Students were then asked to identify the most significant change that access to ICT education had made to them personally:

**Boy 4:** '...The world is a digital world. For you to cooperate and live in the world, to exist in the world according to the times, you must be computer literate'.

## Camara Volunteers- Mombasa Hub

The volunteer programme in the Mombasa Hub has been an exemplary model of volunteerism in Africa. While volunteers are traditionally perceived as benefactors, rather than beneficiaries of an intervention, the programme in Kenya has demonstrated how symbiotic and transformative this relationship can be.

### 6. Sheyha Salim:

'I had finished my school in 2005. First I did some packages- Windows. Then in 2006 I heard from my auntie, who knew Farid[63], about Camara... something about computers and she knew that I also like computers. So she came and told me that there's someone she knows.... so I joined them last year, I started in February. It was Skomara[64] at that time. When I started there I didn't know about computers, I just knew the packages- so I was like 'what the hell is this?' you know. I didn't know about the maintenance or those things- other stuff I didn't know.

So I was not interested at that time, because I saw new things there. But when I stayed for some time I got interested, you know how to use the computers and things like that. Then I stayed there for the whole year, and then this year- two years now. Me and my colleagues sat down and just said would we go to college and continue schooling. So we enrolled in Mombasa Aviation for a diploma in IT to continue our studies there...'

**Interviewer:** 'So what benefit has volunteering with Camara brought to you in terms of practical experience, do you think it's important?'

**Sheyha:** 'Yeah it is. About helping people- I go out and help people. Like we go for trips- Camara take us for trips, they teach us stuff here then we go out for trips and we show more people'.

63. Farid Ali- Then Kenya Technical Director, now Technical Director for Camara Africa.
64. Original Camara Hub in Kenya. Dissolved in late 2008.

**Interviewer:** 'And how long is it till you graduate from the diploma?'

**Sheyha:** 'We do a one year course- so in December'.

**Interviewer:** 'And what do you think you'll do then?  Get a job somewhere?'

**Sheyha:** 'I have to do my degree first'.

## 7.  Amina Farid

'I finished my high school last year, 2008.  I did computer studies in school, and after that I wanted to pursue further studies in computers.  But since I was waiting to go to university, time was long until next year so I thought I couldn't just stay like that doing nothing.  Then I overheard about Camara... my teacher who used to teach me computer studies in school, they wanted computers from Camara.  So he called me over and told me there's a place called Camara- they train students there but with a different operating system.'

'So I was curious, I wanted to know more about it since I just knew about Windows.  So I came here... the next day I registered and I was in Camara.  I was taught many things that I didn't even know.  In school I was just taught how do use the Windows applications- Office, Excel, all that.  But here I was even taught to use the command line which I didn't even know about.  I realised that Linux was so interesting.  As I was here my friends told me about Mombasa Aviation and I thought I shall go for further studies in my computer knowledge.  So I went there and I registered for a diploma in IT.... so next year I'll be finished my diploma and I'll go for a degree in IT.'

**Interviewer:**  'Has it been beneficial, in terms of pursuing your studies, to work with Camara?
Has that helped?

**Amina:**  'Yeah actually right now I'm schooling and at the same time I still come to Camara.  To be frank I just love Camara, I just can't go away from it.  It's in my blood (laughs).  I got to learn things that I didn't even know.  I'd get to learn these things, you know?  And out there we won't get to learn these things. Like take an example: maintenance, it's very expensive to study maintenance....'

**Interviewer:**  'What do you think you'll do after you finish your studies?'

**Amina:** 'Possibly a masters or something... but first get work at least to know how IT is being used out there'.

'I joined Camara last February.  It wasn't like I was coming to join; I was in fact brining my sister to join.  So the first time we went to Camara it was quite difficult for me to understand because we thought it was packages in another way.  We went then and we saw people stripping the computers, Amina just put it in those words.  And then after two weeks my mum pushed us to go back, she didn't know what was going on.  So when we went back I told my sister "I'll support you, I'll just go there", because my dream was to be in business management.  So we started going together and we got into our groups- so it's like we would meet and then we'd start going to classes together and all that stuff.  So I became interested.

So in November I changed my course to do IT.  Yeah it has benefited me in such a way that when you go to class- you know most of the schools or colleges nobody opens the computers maybe until you're doing finals.  So when they taught us about the RAM, the CPUs and all that stuff, it's like the two of us- we know everything.  And then there was an exam about how to remove a computer and get it back in less than ten minutes.  We did that with Athman[65] the first time he trained us.  So it was quite easy, it was like passing through.  So yeah it has been fun, and I haven't regretted a single bit.

So I've been here, I've been doing maintenance; we have been going outside to help people.  And at the same time we have been helping personal people- homes.  People call us and say "my hard drive has been this and that" so we just go and check it out.  So yeah, like we are the experts!  We are the first ladies in our area (laughs).  People are like "A lady!"- It was like the computers are practically dead and now they are working.  People are curious about Camara so we try to bring them over.... so I think it is actually benefiting us a lot.'

# Uganda
## 9. Green Circle Primary School

The students were asked to list the jobs they hope to work in when they leave school.  When asked whether they would need computers for those jobs they gave the following responses:

**Boy 1:** 'A pilot will need the information in the computer for directions.'

**Boy 2:** 'If you are a doctor and if somebody has got his medical sheet you can take the sheet and type the words into the computer so that if the patient comes along later you can look up the computer for the words.'

**Boy 3:** 'For me to become a surgeon I need to learn more about the theoretics.'

### 10. Kitooke Secondary School (17/18 year olds)

Kitooke is one of the more remote Camara schools.  When asked whether computers would help them in their future careers the students gave the following responses:

**Boy 1:** 'The computers can help you store very much information … that you can't store in your head'.

**Girl 1:** 'You can put information on the web so everyone around the world can know what you're doing'.

### 11. Mubende Infants School- Class 1 (10/11 year olds)

The students were asked to list the jobs they hope to work in when they leave school.  When asked whether they would need computers for those jobs they gave the following responses:

**Boy 1:**  'I want to use the computer as a doctor in order to search for the file if somebody comes suffering from AIDS they want to search the database for this.'

**Boy 2:** 'I want to use the computer for communication'.

**Girl 1:** 'I want to use the computer to search for news in other countries'.

**Boy 1:**  'I use a computer to know what is taking place in the world'.

When asked whether computers would help them in their future careers the students gave the following responses:

**Boy 1:** 'I will use a computer to know my fellow musicians and their backgrounds so that I become an international musician'.

**Boy 2:** 'I will use a computer to talk to my friends from outside countries'.

**Girl 1:** 'I will use a computer to count money'.

**Boy 3:** 'I will use a computer to carry out research'.

**Boy 4:** 'I will use the computer to work out the mechanical problems in machines'.

**Boy 5:** 'I will use the computer to see the past'.

**Boy 6:** 'I will use the computer to know information which is taking place in outside countries'.

Students were then asked to identify the most significant change that access to ICT education had made to them personally:

**Boy 7:** 'It has helped me to know more about the past'.

**Boy 8:** 'It has helped me to get friends in outside countries'.

**Boy 9:** 'It has helped me to make research about science'.

**Boy 10:** 'It has helped me to know the background about Africa'.

**Boy 11:** 'It has killed boredom'.

### 13. Mubende Infants School- Class 3 (9/10 year olds)

The students were asked to list the jobs they hope to work in when they leave school. When asked whether they would need computers for those jobs they gave the following responses:

**Girl 1:** 'I want to be a bank manager and I will use a computer for counting money'.

**Girl 2:** 'I want to be a typist and I will use the computer for typing'.

**Boy 1:** 'I want to be a mathematician; I will use it to conjure the numbers'.

**Boy 2:** 'I want to be a pilot and I will use the computer to find directions'.

**Boy 3:** 'I want to be an artist and I will use the computer to draw some pictures'.

**Boy 4:** 'I want to be a typist and I will use the computer to type exams'.

**Boy 5:** 'I want to be a lawyer and I will use a computer to keep documents'

**Boy 6:** 'I want to be an accountant and I will use a computer to count the money'.

**Boy 7:** 'I want to be a footballer and I will use a computer to keep the score mid-season'.

**Boy 8:** 'I want to be a footballer and I will use a computer to look for skills'.

**Boy 9:** 'I want to be a secretary and I will use a computer to teach people how to use a computer'.

Students were then asked to identify the most significant change that access to ICT education had made to them personally:

**Boy 10:** 'We have learned the story of Ugandan culture and other countries'.

# 9. Conclusion

*'Anyone who tries to make a distinction between education and entertainment doesn't know the first thing about either.'*

*Marshall McLuhan*

For an organisation that is less than five years old Camara has already developed some significant advantages. The model for distributing computers is enormously efficient, with the net cost of delivering a fully-refurbished computer to port in Africa at €21 as of 2010. There is an understandable drive to increase hardware outputs and reduce this cost further. The hardware and software on the Camara computers seems to be quite appropriate to user needs across the region, and the training delivered by the Africa '09 volunteers was almost universally commended by trainees.

However, the programme is being seriously undermined in some respects which need to be addressed strategically. There is a patent need to implement a robust local training programme aimed at teachers from Camara schools. Though a large number of people were trained in 2009, it was extremely costly and many schools received no training support whatsoever. The introduction of a set curriculum aimed at teachers, in which trainees are objectively graded, is rightly acknowledged to be a core organisational priority. The benefits of introducing a Learning Centre Management Module would be enormous relative to its costs.

In terms of maintenance there needs to be considerably more focus on demonstrating that the contract offered to schools is honoured in a systematic manner. The success of local maintenance and training supports will ultimately rest on the abilities of Camara Headquarters in Kampala and Dublin to build the operational and reporting capacities of the local Hubs. Powering the Learning Centres is a significant problem, since the Camara policy of insisting that recipient schools have electricity is clearly not being adhered to. This dramatically reduces the access students get to computers, and correspondingly, the effect of the programme as a whole. Finally, the introduction of a universally agreed reporting structure across the organisation is paramount if the outputs are to be calibrated and evaluated effectively.