Supporting African Maths Initiatives

(A company limited by guarantee)

Report and Financial Statements for the period ended 28th February 2016

Charity number 1161994

Company number 9458921

Chair's Report

This first year as an incorporated charity has been a tremendously exciting time for SAMI. From the expansion of our outreach to schools and communities in Kenya, to our African Data Initiative drive to create a new open-source statistical software package, to our continued successful running of Maths Camps and to our ongoing advances to research in extracurricular mathematics education, 2015 has been a busy and productive year.

None of this would have been possible without certain key people and we would just like to take this opportunity to give them our thanks.

The financial support and fundraising of Marc Jeannin and Aurelia Van Damme helped us start up as a charity, and we are very grateful to all our donors and fundraisers in 2015 detailed in the report.

Zach Mbasu is devoted to improving education and has worked tirelessly this year to improve the lives of many. Zach has been an ambassador for SAMI single-handedly leading many of the initiatives throughout Kenya and Tanzania. Danny Parsons has been involved in advancing many of SAMI's projects and has adapted to many different roles this year. His commitment to the charity has been invaluable. Doing three maths camps in a row deserves a special mention. Chris Clarke has helped SAMI in so many ways, and we are particularly appreciative of his intelligent technological support. Santiago Borio has worked hard in both Kenya and London for SAMI and particular thanks is owed for setting up and running the London maths camp. David Stern has been a constant support and his visionary ideas have helped guide the aims of the charity. Roger Stern tirelessly ran an impressive crowdsourcing campaign in the summer and has been working hard on the ADI project ever since.

Thanks to Franca Hoffman, Jeff Goodman and Emily Fleming for their dedicated work in guiding the charity in their role as directors.

In closing, thank you to everyone for a most successful year. More information can be found at www.samicharity.co.uk.

Amy Fletcher
Chair

Supporting African Maths Initiatives - Report of the Management Committee for the period ended 28th February 2016

The Management Committee presents their report and the financial statements for the period ended 28th February 2016 and confirm they comply with the requirements of the Charities Act 2011 and the Charities SORP (FRS 102).

Reference and Administration Information

Charity name: Supporting African Maths Initiatives
Charity registration number: 1161994
Company registration number: 9458921
Registered address: Flat 3, 214 Bermondsey Street, SE1 3TQ

Management Committee

Directors

Miss Amy Fletcher	Chair
Mr Jeff Goodman	
Miss Franca Hoffmann	
Mrs Emily Fleming	

Other members

Mr Chris Clarke
Mr Rafael Sanchez Bailo
Mr Santiago Borio Penaloza
Miss Mairi Walker
Mr Andrew Harris
Mrs Jo De Silva

Aims and Objectives

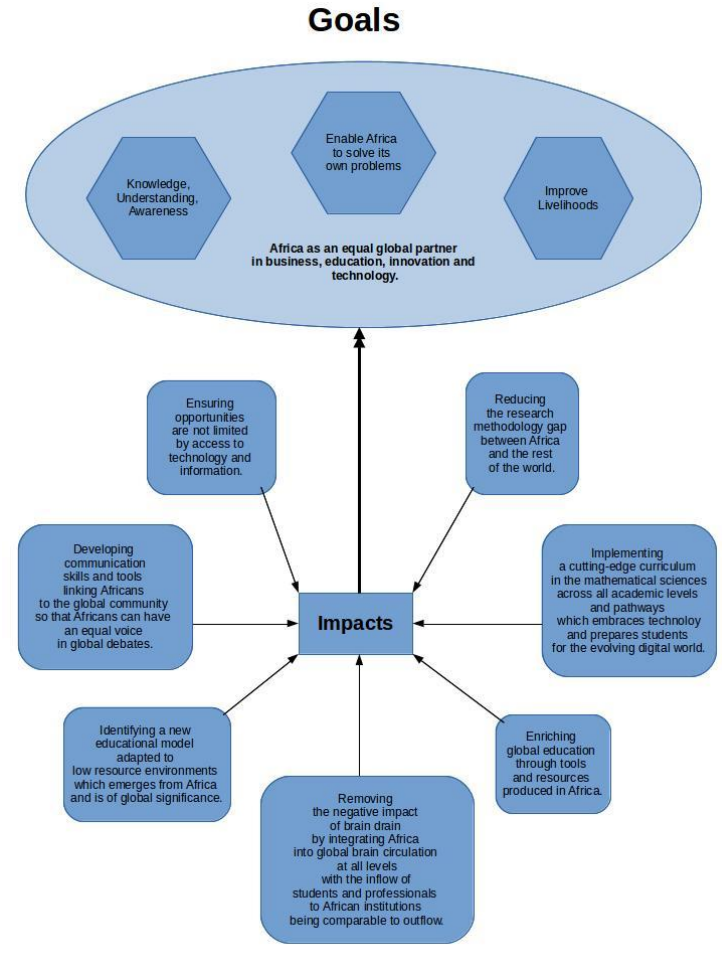
Our charity's objectives as set out in the company's memorandum of association are:

To advance education in mathematics for the public benefit, in particular but not exclusively by:

a) supporting initiatives that promote mathematics and improve the standard of mathematics education in Africa through the provision of advice, funding, consultancy services and volunteers designed to support such initiatives;

b) carrying out research into the effectiveness of new teaching and learning initiatives in mathematics, the useful results of which will be disseminated for public benefit.

Our aims as a charity can be summarised by the following infographic:



Ensuring our activities meet our aims and objectives

We review our activities every quarter using a system called Objective and Key Results (OKRs). We have an overriding working document evolving into a “Theory of Change” which is helping to guide our work and ensure that we are working towards our aims. We have referred to the guidance contained in the Charity Commission’s general guidance on public benefit when reviewing our aims and objectives and in planning our future activities. In particular the trustees consider how planned activities will contribute to the aims and objectives they have set.

Activities

All our activities focus on working towards the aims and objectives outlined above and are undertaken to further our charitable purposes for the public benefit.

Maths Camps in Africa

SAMI helps run maths camps in the summer in various countries in Africa. The first camp was held in 2011 in Kenya and the initiative has spread to Ethiopia, Ghana and Tanzania. Participation in the maths camps by teachers from the UK led to the creation of SAMI. SAMI now helps with raising funds, recruitment of volunteers and resources creation.

Purpose of the maths camps

During the maths camps, the focus is not on facts and formulas memorised in school but on critical thinking, teamwork and creativity, on being logical and persistent in solving puzzles and problems, and giving every student a chance to apply themselves. Rather than aiming to teach content, our goal is to inspire students, awakening their enthusiasm in mathematics by stimulating their natural curiosity. This can best be achieved through a 'learning by doing' approach, making sure students actively participate in the classes through activities and games. Since 2011 a large number of resources have been created that are now more widely available for free for the public benefit. These include guided activities for use in schools and university for student led or facilitator led maths clubs. The maths camps have shown that students' perception of mathematics can change significantly over the course of just a few days, and the gain in self-confidence and enthusiasm has helped students improve their results across subjects in the long-run.

The camps have been highly successful in part due to their key values: sustainability, teaching extra-curricular maths, being inclusive, creating an immersive environment where everyone is learning, using the latest technology, developing and communicating new educational resources, and creating a community of mathematics enthusiasts.

Kenya camp 2015

The fifth annual Maseno Maths Camp, hosted at Maseno University, took place in August 2015. A team of 20 local volunteers and 9 international volunteers helped to once again make the camp a huge success. More than 35 students from Forms 1 to 4 attended this year's camp.

The camp was run by AMI and was largely self sufficient using ticket prices and sponsorship with a small donation from SAMI. SAMI also supported the camp in advance and during the camp with volunteers and resources. SAMI funded three teachers from Tanzania to attend the camp, which then allowed them to take the lead in setting up the first maths camp in Tanzania in 2016.

Ethiopia camp 2015

92 students attended the 3rd annual Bahir Dar Maths Camp hosted at the Bahir Dar University, Ethiopia. These students were joined by a supporting team of 18 local and 6 international volunteers. Over 20 schools were represented and students ranged from Grade 7 to Grade 11. The camp was funded and run by Bahir Dar University with help from SAMI in the form of volunteers and resources. Bahir Dar University has fully embraced the maths camp model and provides the funds for students each year.

Ghana camp 2015

Local and international volunteers gathered together to organise the second Ghana Maths Camp which was hosted at the African Institute for Mathematical Sciences (AIMS), Biriwa campus. Special thanks are owed to AIMS Ghana for their great support in hosting and accommodating the camp including many of the volunteers during the planning week. 15 local volunteers and 7 international volunteers helped make the camp successful. 37 students attended from 14 different schools. The students were entering into Forms 1 to 3 in secondary schools from around the country and ranged in age from 14 to 21.

The camp was largely funded locally, but SAMI supported the camp with a donation to cover the remaining expenses.

Maths Camp in UK

The maths camps taking place in Africa have been so successful that they have inspired camps to take place in the UK. This is a perfect example of how initiatives that are conceived of and are successful in a low resource environment can have global relevance. The first London camp was held in 2014 at King's College School in Wimbledon.

London Camp 2015

King's College London University provided the venue for the 2nd annual London Maths Camp which hosted 41 pupils from 10 different schools in October 2015. University lecturers from Reading University (Dr David Stern), Oxford University (Professor Balazs Szendroi), Edinburgh University (Professor Bruce Hobbs) and Imperial College (Professor Terence Rudolph) and the maths juggler Colin Wright, gave talks on applications of mathematic, and the topics covered ranged from climatic and geophysical modelling to chaos theory. The camp was eye opening for the students and raised £7246.93 for SAMI. Six free places were given to students from low income families. Chris Olley, a lecturer at King's College London, was integral to having the camp hosted at the campus. SAMI members and a dedicated team of volunteers from Imperial College London ran the event.

Mini Maths Camps and Maths Clubs

SAMI has funded Zach Mbasu to run initiatives throughout the year. Zach Mbasu gave up his teaching job in Kenya to focus on improving maths education in Kenya by working for AMI, SAMI and other organisations such as Tablab and TutorWeb. For SAMI, Zach has been instrumental in running mini maths camps where the ideas from the summer camps are taken directly to schools, and in setting up maths clubs at schools and universities. Zach has organised a team of local volunteers who have begun helping out for free at maths camps and after demonstrating their commitment and capabilities, have been given small stipends by SAMI to carry on the work of visiting schools and creating teaching and learning resources.

SAMI has supported these initiatives by buying a mobile lab consisting of ten tablets and a RACHEL (Remote Area Community Hotspot for Education and Learning) router device to store content.

Mini Maths Camps

Santiago Borio was funded by SAMI to visit Kenya and help with two mini maths camps held in 2015. The first took place on the 19th-21st November 2015 at Lawson secondary school in Nyumbani village. The second was held 22nd-23rd November 2015 at Nyumbani orphanage in Karen, Nairobi.

Maths clubs at schools

SAMI supports visits to schools to set up maths clubs. The idea is that the local team runs the maths club on the first visit and gives out our Maths Club Starter Pack with a collection of resources needed to carry on with the club. If possible, follow up visits are carried out to encourage the students to run the clubs themselves with a suitable mentor helping them out to start with. In 2015, 12 schools were visited 3 times each, plus another 12 schools were visited a minimum of 1 time each. Most schools are located around Maseno, with a number also located in Nairobi and other regions.

The mobile lab has been very helpful for visits to schools without computer facilities, and it has been particularly useful in regular visits to Joyland School in Kisumu for the physically challenged.

Maths Clubs at Universities

Zach Mbasu has consistently worked with 6 universities and worked with their maths clubs, statistics clubs and remotely supported them on activities and resources. This has included sharing with information about MOOCs coursera courses, open source learning resources, introducing programming, statistics and having TED talk sessions.

TabLab Collaboration

The TabLab Project in Tanzania is funded by the World Leadership School Organisation. They purchase tablets and send teacher trainers to facilitate getting started with the tablets. SAMI has helped as a consultant and has helped with some of their fundraising.

African Data Initiative

Background

The African Data Initiative (ADI) is a project aiming to address the problem of statistical literacy in Africa, and beyond. Statistical literacy in certain professions is invaluable in enabling informed decision making; this in turn is vital to creating a stable and sustainable society. Tackling this requires a combination of better training and suitable statistical software. Without the software the training is usually too theoretical. The appropriate software opens the door to training that can emphasize concepts rather than theory, and can provide a hands-on, applied approach. Hence, the initial phase of the project is to produce a new statistical software.

Over £30,000 was raised to support the first aim of the project-- that is,a statistical software tool that is developed and produced in Africa, by Africans. This work involves adapting two existing packages: Instat+ and R. The money for this aim of the project was raised through an online crowdfunding campaign hosted by chuffed.org, with fundraising completed in November 2015.

More and more people have to analyse data, even if they are not statisticians or experienced users of R. ADI aims to develop a free, open-source, easy to use software that can be used especially in Africa, where universities generally don't pay for software licences, and don't have well-defined software policies.

WHY WE NEED A NEW SOFTWARE PACKAGE

Many of the big stats packages like SPSS and SAS have many amazing features, but their licences are very expensive. Some stats tools, like Genstat, used to have a free licence for developing countries, which they stopped now. The obvious free, and well-documented alternative is R, but many people find it very intimidating as one has to learn a new coding language. Then there is Instat, a free software package that is simple to use even for people with low computer literacy. However, it is very outdated now, as it was built in the 80s using BBC Basic for the backend. Instat is still used by most met offices around Africa (and
other parts of the world, for example Sri Lanka), who don’t have a valuable alternative at the moment.

The aim of ADI is to develop a free and open-source package, based on a backend using R, with a comprehensible frontend to make it easier for anybody who has to analyse data to use good statistical practices, may it be weather experts, biologists, sociologists, psychologists, students learning statistics etc.

DEVELOPMENT IN AFRICA FOR AFRICA AND THE WORLD

The development team is based in Kenya and Tanzania, with experts coming in from abroad to give support and training. As most people using the software will be based in Africa, it is important for the development team to understand the needs of the users. Instead of paying experienced developers in Europe or the US (which would be much more expensive also), we want to give the opportunity to young talented African graduate students to make this happen, which will also help them take the next step in their careers.

SAMI's role

This project is led by African Maths Initiative (AMI) with the support of SAMI, the Statistical Services Centre (a not for profit consultancy unit within the University of Reading), the African Institute for Mathematical Sciences (AIMS) Tanzania, The International Association of Statistical Education (IASE) and Maseno University, Kenya.

SAMI's involvement includes holding and managing the funds raised in the UK, consulting on the progress of the project and being involved in decision making at the highest level.

SAMI personally funded a representative to attend the first inception meeting at AIMS Tanzania and has had regular visits from members and interactions with the support team since then to monitor the progress that has been made.

Activities

Work on the project began shortly after the 2015 Maseno Maths Camp in August 2015. The development team consists of: John Lunalo, Maxwell Fundi and Mary Mutahi - recent university graduates, based at AMI in Maseno and working full time on the project; Steve Kogo, Polycarp Okock - recent Masters graduates based at AIMS Tanzania and working part-time on the project; and Martha Nicholaus - a recent Masters graduate working full time and based in Tanzania. These 6 people make up the core development team and have been supported by various mentors based in both the UK and in Africa throughout the project's duration.

Activities

Below is a summary of the main activities up to February 2016:

- October 2015 - An inception meeting was hosted at AIMS Tanzania and attended by the core team plus Danny Parsons, David Stern, Roger Stern, Andrea Nenkam and Abib Duut. This was a 3 week meeting to kick start work on the project and plan work for the year ahead.
- November 2015 - A second meetup of the team was held at AMI's offices in Maseno, Kenya. This took place over 3 weeks and included the same people from the inception meeting, excluding Andrea Nenkam who returned to Mali, and included James Musyoka of Maseno University and AMI. By the end of this period some of the core structures of the software were in place and the first statistical features had been implemented.
- November 2015 to January 2016 - the core team continued on the development of the software with remote support from experts in the UK. The work fell behind schedule as some of the team members were ill for long periods.
- January to February 2016 - A third 3-week meet up took place at AIMS Tanzania, involving the core development team, excluding Martha Nicholaus who had left the project to take a job at Deloitte, and included most of the same support team. The meet-up concluded with a meeting to plan for a beta release of the software later in the year, set priorities for the work until the next meet-up, and discussed how the support team would work efficiently with the core team remotely.

By the end of this period most of the core structures of the software were in place, and many features including an Excel-like data spreadsheet, a solid internal connection to R to perform statistical analysis, produce graphs and summaries, were all in place, and the software was generally becoming more stable and usable. This meant the team could then put some focus towards preparing the software for a beta release later in the year to be made available to testers.

Research

SAMI has been active in research in the year 1st March 2015 - 28th February 2016, writing papers and attending conferences.

Edulearn

A research paper for EDULEARN in Barcelona in July 2015 was written collaboratively by a team from the UK, US and Kenya.

Research

Abstract:
For the last four years Maseno University, Kenya, has been running a maths camp bringing together both international and local, lecturers and teachers to engage secondary students in the subject through puzzles, games, technology and extra-curricular mathematics. This paper presents the core values that are behind the success of the camps as well as how the initiative has evolved to scale out to more students through school maths clubs. A case will be made that there are changes happening in Kenyan education which have created a window of opportunity for such initiatives to prosper, where traditional teacher training has not been a success. Finally it will be mentioned how the camps have already spread to Ethiopia, Ghana and the UK, illustrating the potential for innovation in such low resource environments to have global impact.

Keywords: Maths, camp, club, extra-curricular, technology, games, Kenya

[Reference] Emily Fleming, Zachariah Mbasu, David Stern, Danny Parsons, Mildred Ayere, Franca Hoffmann, James Musyoka, Thomas Mawora, Chris Clarke, Santiago Borio, Michael Obiero. Exploring The Role of Extra Curricula Maths Camps and Clubs in Kenya and Beyond. In *EDULEARN15 Proceedings*, 7th International Conference on Education and New Learning Technologies, pages 8170-8177. IATED, 6-8 July 2015.
[Link] https://library.iated.org/view/FLEMING2015EXP

EIRC

A research paper for the Educators International Research Conference (EIRC 2015) in Accra 29 July - 1 Aug 2015 was written by collaborators in the UK, Kenya and Ghana.

Abstract:

Last year in Cape Coast, Ghana, a maths camp was held, bringing together both international and local, university students, lecturers and teachers to engage secondary school students in the subject through puzzles, games, technology and extra-curricular mathematics. The goal was to spark a life-long love for mathematics in students, open their eyes to new ideas in the subject, and increase the chance that they will pursue mathematics and science in the future. The idea for a maths camp began with a group of AIMS (African Institute for Mathematical Sciences) postgraduate students who wanted to share their experiences and inspire school students in mathematics. This led to one of them visiting Kenya to participate in the Maseno Maths Camp, and from this a maths camp was brought to Ghana. This paper presents the core values behind the success of the Maseno Maths Camp and how the model has been adapted to the Ghanaian context. A report on the first maths camp in Ghana is given, as well as the bigger plans moving forward. FInally it will be mentioned how the maths camps have also spread to Ethiopia, and the UK, illustrating the potential for innovation in such low resource environments to have global impact.

EIRC

Keywords: Maths, technology, games, Ghana
[Reference] Torgbor, F., Parsons, D., Fleming, E., Stern, D., Goodman, J., Duut, A., Hoffmann, F., Clarke, C. and Borio, S. (2016). Bringing a Maths Camp to Ghana. *Africa Development and Resources Research Institute Journal*, Ghana: Vol. 25, No. 10 (3), Pp. 78-96, ISSN: 2343-6662, 31st August, 2016.
[Link] https://journals.adrri.org/wp-content/uploads/2016/08/Manuscript-Number-ADRRIJ-16-2370.pdf

Strathmore conference
Santiago Borio and Zach Mbasu delivered a workshop on training trainers on GeoGebra in the classroom focusing on investigative tasks and student-centred education. The aim of the workshop was to share materials that can be used by anyone with basic experience on GeoGebra to develop apps and use existing apps to train teachers and educators. They also presented the work that SAMI does on GeoGebra at Maseno Maths Camp in order to promote the camp and further develop the network with academics from the region. Time was spent at the end mentioning the crowdsourcing campaign and gaining further support.

TEDx winning video

SAMI sponsored the participation of Franca Hoffmann at the TEDxEuston Conference 2015 “Vision to Reality”. TEDxEuston is a regular TEDx event based in London dedicated to inspiring ideas on developing the African continent. Franca Hoffmann participated in the TEDxEuston 2015 video competition and won the first prize. Her contribution was a video showcasing several of the education initiatives established in collaboration between SAMI and AMI. Highlights included recent maths camps, maths clubs, and the African Data Initiative. The video features the direct impact that these education initiatives have on individuals by interviewing volunteers, participants and program organisers. The regular participation of SAMI members in TEDxEuston events generated wider interest in the charity and its activities.

In 2015 we were fortunate to have support from a wide range of sources. One of our principal supporters was The Adlington Golf Club who chose SAMI as one of their two nominated charities for the year. They ran many events in aid of our work, including a sponsored 50km walk past 18 golf courses, all led by SAMI member Jo de Silva. SAMI director Franca Hoffmann bravely did a bungee jump as part of RAG fundraising week at Imperial College London. Friends of SAMI Rebecca Fairbairn and Dave Curry asked for donations in lieu of presents at their wedding. Imperial College students Diletta Martinelli, Matteo Lostaglio and Eleonora raised money for SAMI through a series of events-- such as a 50km sponsored walk along the Thames, and a charity movie night. SAMI director and member Jeff Goodman and Santiago Borio kindly stepped in to help with shortfalls as maths camps in the summer.

Financial Review

The Statement of Financial Activities show a positive net movement in funds for the year of £30,025.

The total reserves at the period end stand at £30,025.

Reserves policy

The risk of unforeseen emergency or other unexpected need for funds is absolutely minimal. Operational costs are negligible as SAMI does not employ any full time employees and does not have an office or a building to maintain. SAMI does not rely on any continuing grants or any matched funds to cover our costs. It is for these reasons that SAMI has chosen to adopt a 'zero level' reserves policy. Our policies require that requests for funding of projects come in writing and any expenditure must be approved by the Trustees. These requests are reviewed in line with our objectives and with our current financial situation. Work done on the African Data Initiative (ADI) is strictly budgeted on the (restricted) funds raised for this project. Work done to support AMI's projects in Africa are each individually reviewed prior to any funds being paid. As the charity is in its early stages, the trustees have opted not to support any projects beyond the financial restraints of our current (unrestricted) fundraising.

Risk Management

The Management Committee have assessed the likely risks to which the charity is exposed, in particular including those related to the operations and finances of the charity, and are satisfied that systems are in place to mitigate our exposure to the major risks.

Structure, governance and management

Previous charity

A previous unincorporated entity formed in 2013 with the same name ceased on the 25th of February 2015 and donated its assets of £288 to the new incorporated company.

Governing document

SAMI is a charitable company limited by guarantee, incorporated on the 25th of February 2015 and registered as a charity on the 3rd of June 2015.

The company was established under a Memorandum of Association by which it is governed in addition to its Articles of Association.

Structure, governance and management (continued)

Appointment of Trustees

The trustees of SAMI serve for one year and stand down at the following year's AGM. Members and supporters of SAMI are written to in advance of the meeting to ask if anyone would like to be a trustee. New trustees are voted in at the AGM, and trustee positions may include previous trustees, if there is no one else who would like to take over.

Organisation

The board of trustees, with a lot of help from other members, administers the charity. Trustees meet regularly throughout the year, and formally on at least three occasions. Trustees and members use a number of online systems to help run the charity. The OKR (Objectives and Key Results) system is used to set objectives three times a year, and then follow progress on these objectives. SAMI member Chris Clarke has developed a moodle site to store all key information for trustees, in order to encourage the smooth running of the charity.

Currently all ten members are voting members.

Related parties and co-operation with other organisation

Before its incorporation, SAMI was set up after teachers helped at one of the maths camps in Kenya and wanted to extend the good work that was being done by AMI. AMI is a Kenyan NGO with which SAMI continues to work with very closely. SAMI and AMI collaborate together on activities and make payments on behalf of each other in the appropriate countries.

Approved by the directors and signed on their behalf by:

Emily Fleming 20 December 2016
Director

INDEPENDENT EXAMINER'S REPORT TO THE TRUSTEES AND MEMBERS OF SAMI

I report on the financial statements of the charity for the period ended 28 February 2016 as set out on pages 16 to 22.

The directors (who are also the trustees for the purposes of charity law) are responsible for the preparation of the accounts. The directors consider that an audit is not required for this year under section 144(2) of the Charities Act 2011 (the 2011 Act) and that an independent examination is needed.

Having satisfied myself that the charity is not subject to audit under company law and is eligible for independent examination, it is my responsibility to:

- examine the accounts under section 145 of the 2011 Act;
- follow the procedures laid down in the general Directions given by the Charity Commission under section 145(5)(b) of the 2011 Act; and
- state whether particular matters have come to my attention.

Basis of independent examiner's report

My examination was carried out in accordance with the general Directions given by the Charity Commission. An examination includes a review of the accounting records kept by the charity and a comparison of the accounts presented with those records. It also includes consideration of any unusual items or disclosures in the accounts, and seeking explanations from you as trustees concerning any such matters. The procedures undertaken do not provide all the evidence that would be required in an audit and consequently no opinion is given as to whether the accounts present a "true and fair view" and the report is limited to those matters set out in the statement below.

Independent examiner's statement

In connection with my examination, no matter has come to my attention:

1 which gives me reasonable cause to believe that, in any material respect, the requirements:

- to keep accounting records in accordance with section 386 of the Companies Act 2006; and
- to prepare accounts which accord with the accounting records, comply with the accounting requirements of section 396 of the Companies Act 2006 and with the methods and principles of the Statement of Recommended Practice: Accounting and Reporting by Charities

have not been met; or

2 to which, in my opinion, attention should be drawn in order to enable a proper understanding of the accounts to be reached.

Michael Crerar CA **20 December 2016**
Geoghegans
Chartered Accountants
6 St Colme Street
Edinburgh
EH3 6AD

Statement of financial activities (incorporating Income and Expenditure account)
For the period ended 28th February 2016

Income

	Unrestricted funds (£)	Restricted funds(£)	Total 2016(£)
Donations			
Income from unincorporated body (SAMI pre charity)	288	-	288
Crowdfunding campaign to design a new statistics package	-	31,496	31,496
Personal fundraising and donations	9,175	-	9,175
Charitable activities			
SAMI London Maths Camp tickets	8,506	-	8,506
Other trading activities			
Attracting donations in exchange for used books	7	-	7
Attracting donations in exchange for used corks	140	-	140
School Christmas Fayre	425	-	425
Using Easy Fundraising online	215	-	215
Investment income			
Bank interest	5	-	5
Total income	**18,761**	**31,496**	**50,257**

Statement of financial activities (incorporating Income and Expenditure account) – continued
For the period ended 28th February 2016

Expenditure

	Unrestricted funds (£)	Restricted funds(£)	Total 2016(£)
Charitable activities			
Maths Camps in Africa	749	-	749
Maths Camp in UK	1,399	-	1,399
Maths Clubs and Mini Maths Camps	6,469	-	6,469
African Data Initiative	580	10,007	10,587
Research	428	-	428
Governance costs–independent examiners fees	600	-	600
Total expenditure	**10,225**	**10,007**	**20,232**

Net income/expenditure and net movement in funds	8,536	21,489	30,025
Funds brought forward	-	-	-
Funds carried forward	**£ 8,536**	**£ 21,489**	**£30,025**

Balance Sheet as of 28th February 2016

	Total funds 2016 (£)
Current assets:	
Debtors	6,233
Cash at bank and in hand	24,392
Total current assets	30,625
Creditors: Amounts falling due within one year	600
Net current assets or liabilities	30,025
Total net assets	30,025
Reserves	
Unrestricted funds	8,536
Restricted funds	21,489
	30,025

For the period ended 28 February 2016 the company was entitled to exemption from the requirement to have an audit under the provisions of section 477 of the Companies Act 2006. No notice has been deposited with the company under section 476 of the Companies Act 2006 requiring an audit to be carried out.

The directors acknowledge their responsibility for:

(i) ensuring the company keeps accounting records which comply with sections 386 and 387 of the Companies Act 2006; and

(ii) preparing financial statements which give a true and fair view of the state of affairs of the company as at the end of the financial year, and of its surplus or deficit for that financial year in accordance with the requirements of sections 394 and 395 of the Companies Act 2006.

These accounts have been prepared in accordance with the provisions applicable to companies subject to the small companies regime within Part 15 of the Companies Act 2006 and the Financial Reporting Standard for Smaller Entities (effective January 2015).

Approved and authorised for issue by the Directors on 20 December 2016 and signed on their behalf by:

Signed: _____
Emily Fleming (director)

Signed: _____
Jeff Goodman (director)

Notes to the Accounts
For the period ended 28 February 2016

1 Accounting policies

Basis of accounting

The financial statements have been prepared under the historical cost convention. They are in accordance with accepted accounting standards in the United Kingdom and comply with the provisions of The Charities Act 2011 and Reporting by Charities: Statement of Recommended Practice applicable to Charities preparing their accounts in accordance with the Financial Reporting Standard for Smaller Entities (the FRSSE) (effective 1 January 2015).

Income recognition

Donations and other income are accounted for when receivable by the charity. Investment income including bank interest is accounted for on an accrual basis.

Expenditure recognition

The charity is not registered for VAT and accordingly expenditure is shown gross of irrecoverable VAT.

Charitable expenditure comprises donations to beneficiaries and related administration costs. Donations to beneficiaries are recognised when a constructive obligation arises that result in the payment being unavoidable.

Governance costs include those costs associated with meeting the constitutional and statutory requirements of the charity and include the independent examination fees and costs linked to the strategic management of the charity.

Funds held by the charity are:

Unrestricted funds
These are the funds that can be used in accordance with the charitable objectives at the discretion of the Trustees.

Restricted funds
These can be funds that can only be used for particular restricted purposes within the objectives of the charity. Restrictions arise when specified by the donor or when funds are raised for particular restricted purposes.

Notes to the Accounts (continued)
For the period ended 28 February 2016

2. Breakdown of expenditure on Charitable Activities

Expenditure (Unrestricted)	Maths camps in Africa (£)	Maths camp in Uk (£)	Maths clubs and mini maths camps (£)	African Data Initiative (£)	Other (£)
Costs directly allocated to Charitable activities					
Stipends	-	-	4,113	-	-
Flights	-	-	449	545	-
Technology	-	-	1,000	-	-
Food, accommodation and resources for students	646	1,259	-	-	-
Food, accommodation and resources for local teachers	103	-	-	-	-
Conference Fees	-	-	-	-	428
Support costs allocated to Charitable activities					
Office space in Kenya	-	-	565	-	-
Internet for office	-	-	49	-	-
Foreign transfer bank fees	-	-	73	-	-
Publicity	-	-	220	-	-
Visas	-	140	-	35	-
Governance costs – independent examiners fees	-	-	-	-	600
Total expenditure (unrestricted)	**£ 749**	**£ 1,399**	**£ 6,469**	**£ 580**	**£ 1028**

2. Breakdown of expenditure on Charitable Activities (continued)

Expenditure (restricted)	African Data Initiative (£)
Costs directly allocated to Charitable activities	
Stipends	8,474
Flights	633
Buses	178
Food and accommodation for programmers to attend meetings	361
Support costs allocated to Charitable activities	
Internet	226
Foreign transfer bank fees	70
Visas temporary passports, vaccinations	65
Total expenditure (restricted)	**£ 10,007**

Notes to the Accounts (continued)
For the period ended 28 February 2016

3. Funds

	Income	Expenditure	At 28 February 2016
Unrestricted funds			
General fund	18,761	(10,225)	8,536
	18,761	(10,225)	8,536
Restricted funds			
African Data Initiative	31,496	(10,007)	21,489
	31,496	(10,007)	21,489
Funds	£ 50,257	£ (20,232)	£ 30,025

Details of restricted funds

African Data Initiative
Funds received to support the ADI project to address the problem of statistical literacy in Africa and beyond.

4. Trustee remuneration

None of the trustees received remuneration or expenses during the period.

Appendix 1

Explanation of key words and phrases used in the infographic

- All academic levels – primary school up to and including the PhD level and beyond. If activities are not designed with the scope of creating PhD holders then whatever change is attempted lower down (e.g. primary schools) could be undermined by people with higher qualifications but less knowledge.
- All pathways – maths for mathematicians, maths for scientists, maths literacy, vocational maths, and maths for other professions and walks of life.This is very important as a concept, because most people specialise, but particularly in the African context it is important and constructive to see this as a whole. We will not be constrained by thinking about one particular strain, and we can turn this into an advantage-- perhaps by Africa becoming an equal partner, and by taking on some of these bigger picture solutions as most other players and organisations are looking at a smaller level.
- Brain drain – The intellectual elite are integrating and migrating into the global system due to better pay and employment opportunities, however in developing countries, the local system cannot afford to lose them. (In some small countries, losing individuals as a result of brain drain is a problem. For example, in the case of Madagascar, graduates did not want to return to their country as they would face academic isolation. Alternatively, when individuals do not leave this can result in people developing in isolation, which can also be problematic. In some instances brain drain can be beneficial, as those individuals who choose to return after going away share their knowledge and skills with the local population.)
- Brain circulation – There is a need to improve the system by improving the circulation of people into the system, there are opportunities for dynamic individuals.
- Low resource environment - SAMI aims to dispel the myth that a low resource environment means no access to technology, problem solving, or extracurricular activities. Many low resource environments have time in abundance to do extra curricular activities. Thinking about Kenya and South Africa, there are large portions of the school day where pupils are waiting aimlessly or are simply having their time filled without much of an educational purpose. There is no way to create enough good skilled teachers to have a good teacher to pupil ratio. This is the essence and challenge of a low resource environment. However, this setting lends itself well to technology based approaches. At some stage the technology will need to be a tool to help pupil based learning activities. Modern day technology can now provide feedback which is relevant. A myth regarding low resource environments is that there is a lack of funding. Governments do invest in education in low resource environments, but often the money is not spent wisely. The maths camp in Maseno in 2014 relied on local funds. Another myth is that extra curricular activities are a luxury, but in fact they are easy to implement and do exist in Africa.

Appendix 1 (continued)

- Educational model - The concepts, ideals and values at the foundation of the educational system. A model that has the values of formative assessment and feedback. An educational model encompasses concepts, the what and the why, the role of school, the aim of education, the teacher-student role. Research methodology gap - The research methods used throughout Africa for most areas of research from universities to professionals are the same methods as were used in the 1960s. Now we have big data and large data sets. People in e.g. Agriculture and medicine, are taught statistics as a service subject. Tools they are taught and the tools that are available are from the 1960s. There has been an explosion in tools and data that are available. These make conducting research much easier.The tools used by global research are growing exponentially. However, the gap in terms of the methodologies used has been getting rapidly worse. It is difficult to overstate the magnitude of this problem. For example, a large percentage of money spent on agricultural research in Africa is wasted due to this problem.

Appendix 2

Underlying Dimensions: Situational constraints and choices

Before considering how we hope to move towards the high level outcomes via a lower tier of activities, outputs and outcomes, it is important to discuss some of the dimensions that may constrain or guide us. We will start by discussing those we view as imposed by choosing to work in an African context and can be chosen to be seen from positive or negative perspectives.

Young*/Old Demographic*

Africa has the world's youngest population which could be its greatest asset or greatest burden. (possibly worth adding example where such thought process comes in…). For example, we could not begin to think that in the future there will be anywhere near enough highly trained and skilled teachers to teach all of Africa's youth, and therefore we cannot consider anything that would depend on this fact.

*I**ndividuals****/Institutions*

Individuals have large amounts of responsibility and influence. They can really make a difference. This has some clear negative connotations when considering issues such as corruption, however, this can also be turned into a strength given the ability for these individuals to provide information and communicate between a much wider target audience. An example might be the importance of formative feedback being pushed within school and university contexts by the same small groups of individuals who have a great deal of influence within both contexts..

Demand*/Supply-Driven Change*

Change is driven by demand. There is potential for large-scale systematic reforms.

Low*/High Resource Environments*

Working in low resource environments is challenging, but has the potential to impact universally.

One might argue that the diversity of Africa does indeed provide a number of high resource environments (strong-performing private schools for example, akin to many of those in Western countries), however we could not possibly feel justified focusing within this specific domain and claiming it representative of wider Africa. It is clear by example that if you were to create a set of resources that helped young children fundamentally grasp concepts through 1:1 student-teacher interactions, this model could not then be transferred into a situation where the ratio may in fact be 1:50. If however we take the converse and find something that works within a 1:50 environment

then it will hold many of the same benefits when implemented back in our initial high resource environment.

Appendix 2 (continued)

Whilst the previous dimensional *choices* are already made through the decision to work within the wider African context, there are still numerous further dimensions where choices have to be made. We have identified the following 4 pairs as significant for what we want to achieve:

Top-down ***Bottom up***
Adaptive ***Disruptive***

Formal ***Informal***

Content ***Implementation***

These dimensions all have the ability to drastically change the appearance and nature of an initiative. If we were to just take 2 we could represent such choices and outcomes by the following diagram:

	Adaptive	Disruptive
Formal	Improving current school curricula to include problem solving	Completely replacing current school curricula to take a different approach
Informal	Build on existing community literacy programs	Create a new set of microworlds that enable education to become a core component of daily life

We would assert that when considering how to move in the direction of our proposed outcomes, it is important to consider how it is possible to provide progress across all dimensions in which we have choices; from grassroots initiatives to government-backed schemes, building on work which has already been done, as well as bringing in completely fresh and new ideas, and providing influence within defined instructional institutions as well as anywhere else learning can take place. We could see how these different approaches could all potentially add value and move towards a specific long term outcome.

Supporting African Maths Initiatives

Appendix 3

Key values

- **Sustainability:** From its inception, the first maths camp - the Maseno Maths Camp - was an initiative instigated and supported by lecturers at Maseno University as a locally sustainable initiative. All camps are not-for-profit ventures, with local and international educators volunteering their time freely. In 2014, the Maseno Maths Camp was able to run with all local expenses covered by student registration fees. Full fees for the week including accommodation and food are 5000 Kenyan Shillings (around $60) with a large number of local students paying reduced fees. There is a similar scenario in the Ghana maths camp, and in Ethiopia the students are funded from the university budget. Volunteers at the camps include a mix of local and international mathematics students, teachers, educators, lecturers, academics, researchers, PhD students and mathematics enthusiasts, a mix designed to maintain engagement of participants whilst ensuring that the event does not rely on any given individual. Exceptional participants are encouraged to become volunteers and are mentored into a new role once they finish school.

- **Extra-curricular mathematics:** The camps are designed to open students' eyes to the world of mathematics and show that mathematics is not all about calculations. The aim is to introduce mathematics not found in a classroom, both through the choice of content and through the delivery of the subject material. Each camp focuses on five or six different "themes" in mathematics, such as modelling, combinatorics, programming, code breaking, statistics, non-Euclidean geometry and game theory. Whatever the theme, the focus is on understanding concepts and problem solving situations, very different from the calculation and formula emphasis students experience at school. Moreover, the organisers believe in making high level mathematics accessible to high school students. Even though the camps are not tailored to help students with the mathematics covered in the school curriculum, students often find that their achievements in mathematics improve on their return to school, and even see improvements in other subjects. The case studies of Cabrine and Evans, in our research paper for EDULEARN, illustrate this point even if they are exceptional rather than representative students.

- **Inclusive:** All high school students (aged roughly 14 to 18) are welcome to attend the camps. There are no entry requirements and the camps aim to have a mix of pupils with different socio-economic backgrounds and different achievements so far in maths. Equal numbers of boys and girls at the camps is a target, with a good mix every year so far, and there is a maximum number of students from any one individual school to ensure that a variety of schools are represented. Many students come from local public schools, but private and national schools are also represented. Students are not separated by any of these factors during sessions at the camps and despite the wide range in ages, schools, backgrounds and mathematical ability of students who attend the camps, this has never caused an issue. The focus at the camps is not on the facts and formulas memorised in school but on critical thinking, creativity and being logical and persistent in solving puzzles and problems, so any student can succeed at the camp by applying themselves.

Supporting African Maths Initiatives

Appendix 3 (continued)

- **Everyone Learns:** The camp is set up to allow learning opportunities for everyone, not just the students attending. Local university student volunteers learn ideas applicable to their university maths clubs and get valuable new input to their studies. They meet and work alongside local and international lecturers, teachers and PhD students and integrate themselves into a wider professional network. Teachers who accompany their students are given a few separate sessions to discuss what they have observed and learned from the sessions, how they could take this back to their classrooms and how they can receive support from the organisers in doing so. In general, teachers attend the sessions together with the students and learn alongside them. Local and international teachers have the opportunity to interact with mathematics lecturers and researchers and learn new academic depth and background to the material they teach at school level. Local lecturers and teachers see a different style of teaching in action. Volunteers learn new branches of mathematics from being involved in a dynamic group with different specialisms. Mathematics researchers gain hands-on teaching experience alongside experienced teachers and receive feedback on their input. Thanks to this sharing of expertise across all levels the maths camps have been attracting enthusiastic and skilled volunteers consistently over the years, facilitating the smooth running of the camps.

- **Technology:** Technology plays a key role in the camps. Software such as Geogebra and Scratch are used to give students an opportunity to explore mathematics and programming in an interactive environment. Many students have not used a computer before; but rather than teach them how to use a computer, mathematical activities are designed which will allow them to learn how the computer works at the same time as doing the maths. Whenever possible free open source software is used, and all the resources that the students are exposed to are given to them at the end of the week on a DVD.

- **Development of New Educational Material:** Each camp week is preceded by a preparation week where local and international organisers and volunteers get together to prepare the maths camp. This model has proven to be very successful given the challenge of organising such an event with facilitators being engaged in other full-time work both locally and abroad. The preparation week does not only serve as a training for local and international volunteers and as important team building in preparation for the camp week, allowing to share expertise, to learn new mathematics and to explore new teaching methods, it is also a valuable opportunity to create new educational material. This is where new ideas and concepts are developed and tested with local and international partners working together on a tight deadline. Since 2011 a large number of resources have been created, both within and outside the preparation week, that are now more widely available. A secondary aim of the preparation week, in the last few years, has been to develop and improve the Maths Camp Starter Pack, a collection of mathematics resources that can be used by students, teachers, academics and interested individuals to run a similar event independently, be it for a half-day or a full week.

Supporting African Maths Initiatives

Appendix 3 (continued)

- **Immersive environment:** Students are immersed in mathematics throughout the whole week. The structure of the camp is designed to make time for physical activities and card games. Links between card games and mathematics are highlighted and physical activities are chosen carefully to involve teamwork, critical thinking and logic. It is a core belief of the camps that mathematics can be learnt through games. Students work in pairs and groups throughout the week to encourage mathematical discussion. There are puzzles of the day which students work on during their free time, and the computer labs are open outside formal sessions so that students are given the opportunity to explore the programmes they have been introduced to independently.

- **Community:** Students enjoy the opportunity to meet peers from other schools and to interact with local and international students, teachers, lecturers and researchers. Breakfasts, lunches and dinners are all taken together; these and other activities outside of lessons create a good working relationship between all camp participants. They help create an environment that breaks through the traditional hierarchies in educational institutions and gives mental space for critical thinking, allowing to challenge each other and learn from each other across all academic levels and backgrounds. A key value of the camps is that there are no barriers between students and facilitators, there are interactions between everyone and everyone has a voice. This sense of community builds with a few students returning year after year, in some cases even becoming volunteers after they leave school. Students are keen to share what they have learned on their return home, and almost universally state an enjoyment of mathematics when leaving the camp. This is a small but important step towards creating a community of individuals enthusiastic about mathematical ideas, and eager to embrace mathematical concepts in their future endeavours.