# Lighting, ICTs and Education in the Koinadugu District of Sierra Leone

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| | |
|---|---|
| 3G | Third Generation |
| AMASS | Ahmadiyya Muslim Agricultural Secondary School |
| BECE | Basic Education Certificate Examination |
| EFO | Energy For Opportunity |
| ICT | Information and Communication Technologies |
| ICT4E | Information and Communication Technologies for Education |
| IEA | International Energy Agency |
| JSS | Junior Secondary School |
| LED | Light Emitting Diode |
| MEWR | Ministry of Energy and Water Resources |
| NGO | Non-Government Organisation |
| NPSE | National Primary School Examination |
| SHS | Solar Home System |
| SSS | Senior Secondary School |
| UNDP | United Nations Development Program |
| UNICEF | United Nations Children's Fund |
| WAEC | West African Examination Council |
| WASSCE | West African Senior School Certificate Examination |

## 1. Introduction

It has long been established that local economic development and livelihood diversification are frequently contingent upon the availability of modern forms of energy (Azoumah, Yamegueu, Ginies, Coulibaly, & Girard, 2011; Bazilian et al., 2012; Christian Aid, 2006; UNDP, 2005; World Bank, 2008). The achievement of improved educational outcomes, in particular, can often be realised through electricity access, as it allows for the establishment of improved lighting facilities and is an essential component of information and communication technologies (ICTs), such as computers and the internet. Therefore, unsurprisingly, from independence onward the establishment of modern electrical grids has been a key goal of most sub-Saharan African states and their aid donors. For a number of reasons, however, progress has often been lacklustre, and rates of grid expansion have rarely matched those of population growth (Bhattacharyya, 2013). Moreover, a persistent bias toward urban centres, as the main drivers of national economic growth (Acker & Kammen, 1996; Khennas, 2012), has meant that of the estimated 589 million Africans with no direct access to electricity 75% are rural residents (IEA, 2012). At present, the widespread expansion of grid electricity networks into rural Sub-Saharan Africa remains financially unviable and is highly unlikely to be achieved in the foreseeable future (R. Pode, 2013; Wamukonya, 2007).

Sierra Leone is a case-in-point- in the country's attempts at post-civil war recovery electricity supply has remained a consistent and economically pernicious problem. In 2009 only ten percent of the overall population had access to grid electricity, while in rural areas the level was only one per cent (MEWR, 2009). Overall, the vast majority of connections are limited to the capital city of Freetown and the major urban centres of Makeni, Bo and Kenema, leaving most of the rest of the country with little or no grid access. In response to this situation (along with the unreliability of supply which results in frequent blackouts) many businesses and households rely on small gasoline or diesel-powered generators. This option, however, remains far beyond the reach of most citizens and therefore among the (majority) rural population generator ownership is only around one percent (MEWR, 2009). On the whole, although infrastructure reconstruction has been vigorously pursued, the situation seems unlikely to change for rural communities in the near future. Due to the severe national energy deficit, electrification projects have necessarily been focused on supplying the concentrated demand of urban centres and plans for improved rural electrification have remained largely aspirational (MEWR, 2009). This situation is a concern for students attending schools in rural areas of Sierra Leone, who are increasingly finding themselves on the wrong side of the technical divide: attending schools that have no access to ICTs to aid and enhance their learning outcomes, nor sufficient sources of lighting to be able to conduct night-time study effectively. Night time study facilitates access to technical resources (i.e. text books), that are usually not available for students to borrow or take home.

This report provides a critical examination of education, lighting and ICT access in the Koinadugu District of Sierra Leone. Focusing on 35 Junior Secondary Schools, and 5 Senior Secondary Schools in the District, it analyses the current geography of lighting and ICT access, as well as student and teacher aspirations about the role that improved access to electricity, namely in the form of solar power, could present for education outcomes. Data for the research was collected in February and March 2014: it involved student surveys, interviews with teachers

and the analysis of the District's formal education statistics (enrolment numbers and demographic composition, teacher qualifications, exam scores, etc.).

## 2. Lighting, ICTs and Education in Africa

Currently, most of rural Africa relies on kerosene, candles, and battery powered torches, for light. Kerosene lamps alone provide primary lighting for an estimated 580 million people across the continent (Lighting Africa, 2010). While kerosene yields considerable heat, such lamps are extremely inefficient light sources and provide only a dim 30 to 60 lumens; candles are an even poorer light source, providing around 13 lumens of light. This is compared to the 600 to 900 lumens that conventional electric bulbs produce (R Pode, 2010). Deemed insufficient for reading, domestic light levels below 60 lumens hinder a child's ability to study – the most highly correlated benefit of increasing access to electricity (R Pode, 2010). Furthermore, as the World Bank notes, candles and kerosene "are typically expensive and often both dangerous and environmentally harmful" (Lighting Africa, 2010, p. 14): they produce toxic smoke and create household fire and burn hazards (Chaurey & Kandpal, 2010). While dry cell-powered torches are much safer to use, they produce only marginally better light and the poor quality batteries generally available represent not only a considerable drain on household finances but also a considerable source of pollution given the lack of disposal facilities. It has been estimated that while off-grid rural houses in the developing world collectively spend an estimated US$40 billion per year for light (about 20% of world expenditures), they receive only around 0.1 per cent of global electric light supply (Hogarth, 2012). Rural African households are paying a premium price for a poor source of lighting.

In this context, there has been increasing interest in the potential of small-scale decentralised power systems, typically based on renewable energy sources. Among these, solar cells have emerged as a key technology not least because Sub-Saharan Africa's solar energy endowment is almost twice as high as that of Europe, currently the largest solar energy market (Deichmann, Meisner, Murray, & Wheeler, 2011). Moreover, due to its decentralized nature, relative immunity to supply or price fluctuations, consistently falling cost and its investment appeal to institutions looking to shift to lower carbon energy sources, solar power is seen as a leapfrog technology with the potential to mimic the success of mobile phones across the continent (Collier & Venables, 2012; Deichmann et al., 2011).[1]As well, technological shifts such as the now widespread dissemination of Light-Emitting Diode (LED) lighting (R Pode, 2010) along with dramatic reductions in the cost of equipment have considerably improved performance-to-cost ratios for solar equipment compared to other energy technologies (Bazilian et al., 2013; Nygaard, 2009). Indeed, the use of solar power technologies is increasingly being seen as a vital technology to help reduce energy deficiency issues that plague sub-Saharan Africa (Khennas, 2012; Kornbluth, Pon, & Erickson, 2012; Suberu, Mustafa, Bashir, Muhamad, & Mokhtar, 2013; Szabó, Bódis, Huld, & Moner-Girona, 2013).

[1] From 1960 to 2000 landline telephone access in Africa grew at 3.2 percent per year, with only 1.4 percent of the population having access. Access to mobile phones, in contrast, has grown at a rate of 55 percent per year since 1993, with only 22.5 percent of the population now having access. Landline telephones have essentially been made redundant (see Deichmann *et al.* 2011:217).

Related to electricity access has been the increasing recognition that information and communication technology (ICT) can be used as an effective tool in supporting teaching and learning (Hennessy, Harrison, & Wamakote, 2010, p. 40). As such, there are been a noticeable growth in Information Communication and Technology for Education (ICT4E) in sub-Saharan Africa, with initiatives being supported by a variety of local and international development agencies(Muianga et al., 2013). There has, however, been a gulf between the rhetoric of those advocating the use of ICT in education in Africa and the reality of classroom practice (Unwin, 2005). Access to electricity and ICT hardware (e.g., computers) remains a perennial issue for many schools in sub-Saharan Africa (Hennessy et al., 2010, p. 40), as do the ongoing costs associated with them, for instance maintenance and internet access. Even when ICTs have been made available for schools, this has not always translated into improved educational outcomes, as they have not been effectively integrated as a pedagogical tool:

> All too often, computer laboratories in educational institutions across Africa are underutilized. Whilst there are indeed some notable exceptions to this generalization, computer laboratories in schools and higher educational institutions stand idle for much of the time, piles of old or broken hardware accumulate in dusty corners, and very often one can find computers hidden under plastic covers that have rarely if ever actually been used. This is a wasteful tragedy, because new technologies can have a tremendously positive influence on learning attainment and educational practice if they are appropriately managed and used (Unwin, 2005, p. 117).

There appears to be growing consensuses on ICTs in education in Africa that there is a need to move beyond simplistic add (ICTs) and stir approaches for schools, to a more integrated approach. This, most importantly, requires an extensive teacher training components, as well as making sure that ICT integration is coherent with the school's overall curriculum and that it is relevant to the teaching context (Hennessy et al., 2010, p. 40; Tikly, 2011; Unwin, 2005).

## 3. The Education System in Sierra Leone

Sierra Leone's education system is divided into four stages. The first stage, primary school education, lasts six years, which is then followed by three years of junior secondary school education which lasts three; next is four years of senior secondary school education and then finally four years of university or other tertiary education (see Figure 1). Students sit three major exams during their schooling, all of which are administered by the West African Examinations Council (WAEC), a body that oversees examinations in English speaking West African countries (i.e., Nigeria, Ghana, Liberia, Sierra Leone and the Gambia). The first exam is the National Primary School Examination (NPSE), which students sit at the end of primary school; the second is the Basic Education Certificate Examination (BECE), which students sit at the end of junior secondary school; and finally the West African Senior School Certificate Examination (WASSCE), which is sat at the end of secondary school and essentially acts as a university entrance exam.

Sierra Leone's education system was developed during the nineteenth and twentieth centuries and was styled on the British education system. It was elitist in nature, aimed at the urban middle class who would take up low to mid-level civil servant position in the government. During this

period the majority of the population were not formally educated or only received a couple of years of primary education. Thus, at Independence in 1961, Sierra Leone inherited an educational system that was largely irrelevant to the needs of a rural population; nevertheless, as with other newly formed African states, a decision was made to extend this system to all parts of the country(Banya, 1991, 1993). After being sustained throughout the 1960s and 1970s,the system went into a noticeable decline in the 1980s due an overall lack of Government fiscal support (Banya, 1991).This decline was dramatically compounded with the Sierra Leone civil war in the 1990s, which resulted in the destruction of much of the country's infrastructure:1,270 primary schools were destroyed and in 2001, at the end of the war, an estimated 67 per cent of all school-age children were out of school(Mocan & Cannonier, 2012; World Bank, 2007).The situation has improved considerably since then with primary school enrolment doubling between 2001 and 2005 and the reconstruction of many schools since the end of the war. This increase is in part thanks to the *The Education Act* that was passed in 2004, which abolished school fees for all children at primary school and at junior secondary school for girls in the northern and eastern provinces (World Bank, 2007). Fees were also abolished for the NPSE which, along with the increase in school enrolment, has led to 78,000 students taking the exam in 2005. Despite these achievements, in 2012 there were an estimated 26% of all children of primary school age not attending school (Haas, 2012).

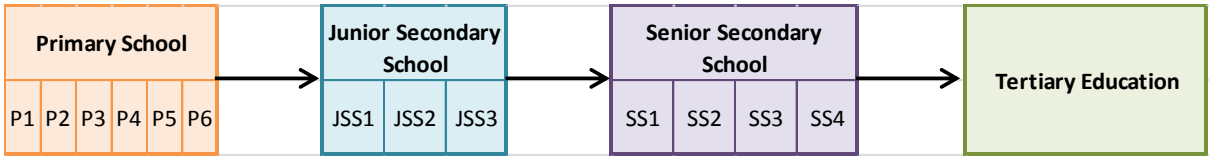



Figure 1 - Structure of the Sierra Leonean Education System

The introduction of the free primary education in 2004 caused a number of issues as it was not complimented with adequate school buildings or teaching and learning materials, and ultimately brought about an increase in teachers' workloads and student /teacher ratios(Nishimuko, 2007). Overall, there is a severe lack of qualified teachers in the country, especially in rural areas. This has in part been an after effect of the civil war, when many qualified teachers fled Sierra Leone for safety and employment in other countries(World Bank, 2007). The negative impacts of this on educational outcomes have been self-evident, with mass failure of exams, particularly the WASSCE, being a perennial issue. In 2013, in an effort to address this dilemma, an extra class – Senior Secondary School Level 4 (SSS4) – was added to the Secondary School Curriculum (which was previously only three years in length). The move has been controversial, with many critics noting that it does little or nothing to address some of the systemic issues in Sierra Leone's education system (e.g., lack of teachers, poor facilities, gender disparities, etc.) that are *truly* hindering learning outcomes (*Sierra Leonean Express Media*, 2012).

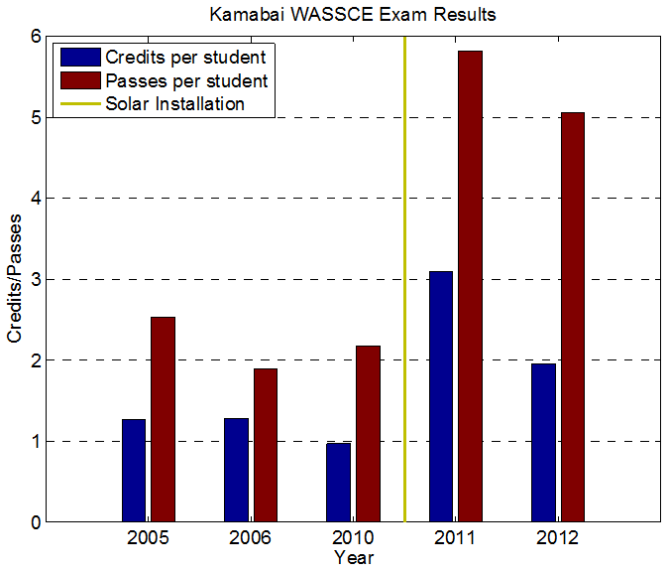



Figure 2 - Kamabai Secondary School's West Africa Secondary School Certification Examination (WASSCE) test results(Kemeny, Munro, Schiavone, van der Horst, & Willans, forthcoming)

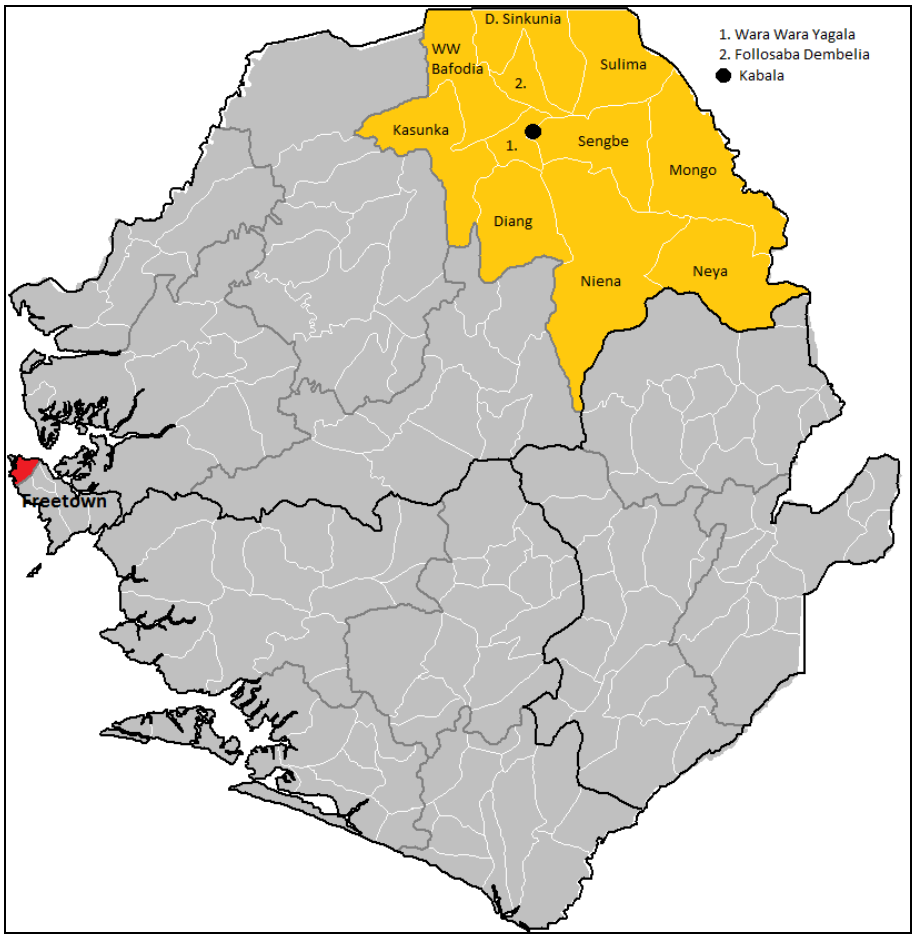
There has been very little research on the role on the impact of the relationship between improved lighting, ICTs and education in Sierra Leone.[2] One exception has been a recent study on renewable energy in three villages across northern Sierra Leone. This included data from Kamabai Secondary School in Bombali District which had a solar power system installed in 2010. As Figure 1 indicates, since the installation of the system, student test scores for WASSCE substantially increased. The school's principal attributed this as a direct result of students now being able to study at night thanks to the provision of lighting (even creating competition among students for the desks directly surrounding light fixtures); while one of the student's interviewed described the installations as provide the "sustenance of life." The solar lighting also has allowed students from many surrounding villages to study at night (Kemeny et al., forthcoming). An earlier study noted a similar phenomenon at Kamakwie Secondary School (also in the Bombali District) – with a detectable increase in student exam results after the school had solar power system installed in 2009 (which provided power for night-time lighting and computers)(Munro & Christiansen, 2010). The findings in these two studies concur with the broader literature of lighting and education – that there is a positive correlation between access to modern energy and improved educational outcomes.

## 4. Research Methodology

Three main methods were used in the research project for collecting data: student surveys; teacher interviews and secondary data analysis. The project sampled 31 Junior Secondary Schools and 5 Senior Secondary Schools located across the Koinadugu District (see Table 1). A short structured survey was conducted with students in JSS2 and JSS3 to collect both quantitative and

[2]Indeed, in the World Bank's 232 page report on education in Sierra Leone that was published in 2007, there was surprisingly not a single mention of ICTs and lighting (World Bank, 2007).

qualitative data; between 20 and 60 surveys were conduct at each school (participation rates varied depending on the size of the school and the availability of students), with 806 students being surveyed in total. The survey questions focused on the students' access to light and ICTs, at home and at school, as well as their study habits. A more detailed survey was conducted with SS3 and SS4 students. The surveys included detailed questions about studying habits, lighting use and ICTs access as well their aspirational perspectives in terms of what difference the provision of electricity and lighting at the school would mean for their education. Between 20 and 26 students were surveyed at each of the senior secondary schools, with 107 students being surveyed in total.




Map 1 - Map of Sierra Leone with Koinadugu's Chiefdoms highlighted

Table 1 - Schools Targeted for this Research Project. JSS = Junior Secondary School; SSS = Senior Secondary School; SS = number of Student Surveys conducted; TI = number of Teacher Interviews conducted

| # | Schools | Chiefdom | JSS | SSS | SS | TI |
|---|---|---|---|---|---|---|
| **1** | Movement of Faith (MOF) Secondary School – Gbentu | Follosaba Dembelia | yes | no | 21 | 2 |
| **2** | Government Secondary School Sinkunia | Dembellia Sinkunia | yes | no | 45 | 5 |
| **3** | Kondehbiah Secondary School | Diang | yes | no | 21 | 5 |
| **4** | Lengekoro Agricultural Muslim Secondary School | Diang | yes | no | 21 | 2 |
| **5** | Musaia Commercial Secondary School | Follosaba Dembelia | yes | no | 24 | 5 |
| **6** | Alhakra Agricultural Secondary School | Sulima | yes | no | 60 | 5 |
| **7** | Government Secondary School – Falaba | Sulima | yes | no | 45 | 4 |
| **8** | Mongo Agricultural Secondary School | Mongo | yes | yes | 76 | 9 |
| **9** | Kamaron Community Secondary School | Mongo | yes | no | 30 | 5 |
| **10** | Gberefeh Comprehensive Academy Secondary School | Mongo | yes | no | 45 | 5 |
| **11** | Loma Secondary School | Sengbe | yes | yes | 40 | 10 |
| **12** | Ahmadiyya Muslim Agricultural Secondary School (AMASS) | Sengbe | yes | yes | 41 | 6 |
| **13** | Bambukoro Agricultural Secondary School | Sengbe | yes | no | 21 | 4 |
| **14** | Dankawallie Secondary School | Sengbe | yes | no | 21 | 4 |
| **15** | Movement of Faith (MOF) Secondary School - Koinadugu | Sengbe | yes | no | 21 | 4 |
| **16** | UMC Heritage Secondary School | Sengbe | yes | no | 21 | 4 |
| **17** | Yiraia Agricultural Secondary School | Sengbe | yes | no | 21 | 5 |
| **18** | Yogomaia Secondary School | Sengbe | yes | no | 21 | 5 |
| **19** | Alkalia Secondary School | Neini | yes | no | 21 | 5 |
| **20** | Firawa Government Secondary School | Neini | yes | no | 21 | 4 |
| **21** | Neini Ballah Memorial Secondary School | Neini | yes | no | 21 | 5 |
| **22** | Peter Calza Memorial Agricultural Secondary School | Neini | yes | no | 22 | 4 |
| **23** | St Anthony Secondary School | Neini | yes | no | 21 | 2 |
| **24** | Siradu Agricultural Muslim Seconday School | Neini | yes | no | 21 | 5 |
| **25** | Kurubonla Secondary School | Neya | yes | no | 24 | 5 |
| **26** | Kasunko Islamic Secondary School | Kasunko | yes | no | 21 | 4 |
| **27** | Fadugu Agricultural Secondary School | Kasunko | yes | no | 21 | 5 |
| **28** | Kamukeh Secondary School | Wara Wara Bafodia | yes | no | 21 | 5 |
| **29** | Kabala Secondary School | Wara Wara Yagala | yes | yes | 42 | 8 |
| **30** | Makakura Secondary School | Sengbe | yes | no | 21 | 5 |
| **31** | Bafodia Agricultural Secondary School | Wara Wara Bafodia | yes | yes | 41 | 5 |
| | | **TOTAL:** | 31 | 5 | 913 | 151 |

Short interviews were conducted with 133 Junior Secondary School teachers and 18 Senior Secondary School teachers.[3] This included teachers from a range of different disciplines (e.g., mathematics, history, science, etc.) as well as vice principals and principals. Some teachers were

[3]Six of the Senior Secondary School Teachers also taught some JSS classes.

new to their positions (less than a year's experience); while others had been involved in the profession for many years, including one principal with 39 years of teaching experience. The teacher interviews focus on the teacher's ICT use, technology access that was available at their schools, night time use of school facilities, changing trends in student attendance, and the potential that lighting and ICTs could have in terms of transforming education.

Finally, school data was collected from the 36 schools (JSSs and SSSs) in terms of school enrolment numbers, teacher numbers and qualifications and BECE and WAESSCE results. There were some gaps in this data, notably not all schools had their exam results.

## 5. General information on Schooling in Koinadugu

Koinadugu District is a district in the Northern Province of Sierra Leone. It is by far the largest District in Sierra Leone in geographical area. It is the capital and largest city is Kabala, which is also one of the main cities in Northern Sierra Leone. The district is divided into 11 chiefdoms. The District was recorded as having a population of 265,765 in the 2004 census, and has a total area of 12,121 $km^2$. While Junior Secondary Schools can be found spread across the different chiefdoms, there is a noticeable concentration of schools in Kabala. Of the five Senior Secondary Schools that are located in the District, three of them are in Kabala. From the data available, the BECE exam results indicated a distinct divide in educational outcomes between students attending schools in Kabala (84% pass rate) and those in the more remote chiefdoms of Nieni and Mongo (42% pass rate) (See Map 1). Schools are financed with a mixture of support from the government, religious groups and non-government organisations. There are also a large number of community-based youth organisations located in the District with a specific focus on promoting education(Tutu & Awimboora, 2013).

The school demographic data, from the 25 schools from which it was available, paints a picture of concern in terms of teacher qualifications and geographies. Only 11% of teachers held a university qualification, while 60% held a teaching certificate; nearly one third (29%) had no teaching qualifications at all. An earlier report by the World Bank produced similar findings, noting that the Northern Region of Sierra Leone (in which Koinadugu District is located) has the highest proportion of unqualified teachers in Sierra Leone (World Bank, 2007). Overall, only 45% of these teachers were salaried workers, the majority (55%) work as 'volunteer' teachers, presumably receiving direct payments from families for teaching services rendered. This is a common scenario in Sierra Leone, with a 2007 survey indicating that 50.4% of school teachers in Sierra Leone had secondary jobs to meet their financial needs (Nishimuko, 2007). The teaching profession, as a whole in Koinadugu District, is heavily male dominated (93%), with more than half of the schools (54%) having no female teachers at all. Kabala Secondary School, by far, had the greatest equity in terms of teacher gender ratios (one third were female), suggesting that there is an urban-rural gendered geographical divide. This is consistent with the World Bank's earlier nationwide research, where they noted that Sierra Leone has one of the lowest shares of female teachers in primary schools in Africa, with this issue being particularly acute in rural areas. In Freetown, the country's capital city, female teachers reportedly make up 49 per cent of the teacher cohort (World Bank, 2007).

Gender disparity also exists among students, while Sierra Leone recently (in 2012) managed to achieve gender parity in primary schools, majority disparities still exist in secondary school (UNICEF, 2012). As Figure 2 indicates, like the rest of Sierra Leone, female participation in Koinadugu District's schools drops off dramatically after the first couple of years of junior secondary. Overall, girls in Sierra Leone face a number of barriers to realising their education; this reportedly including; high rates of early marriage, teenage pregnancy, extra fees, lack of proper parental guidance as well as sexual exploitation in schools (Botti, 2010; Brock & Cammish, 1997; UNICEF, 2012). The latter is of particular concern, when one considers the high ratio of male teachers.

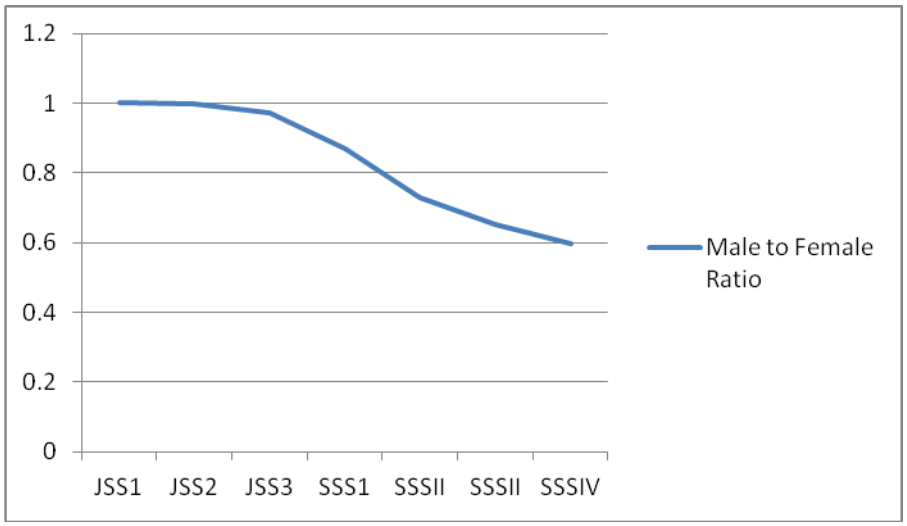



Figure 3 - Gender Disparity in JSS and SSS schools across Koinadugu District. Data sourced from 26 JSS and 5 SSS schools.

## 6. Lighting and Education in Koinadugu

Access to improved education has the potential to lift Sierra Leone's rural poor out of poverty, however like economic development and livelihood diversification, poverty reduction through improved education is frequently contingent upon the availability of modern forms of energy and associated technologies. Koinadugu's isolated rural population are experiencing a form of 'lighting poverty' – fragmented access to, and availability of, reliable and affordable lighting in Koinadugu District poses ongoing challenges to the economic and educational opportunities available to young people. Students seek to maximise the benefits of accessing education through the day with supported study in the evening. Throughout West Africa students can be seen building upon the lessons of the day congregated under whatever light source is available. Students in Koinadugu district are no exception.

Figure 4 - 'Chinese Light' a popular source of household lighting use across the Koinadugu District (Photo taken by Mohamed Kebbay, 2014)

The current study found that night-time was easily the most preferred time to study for both JSS (96%) and SSS (69%) students; however, their ability to realise this was heavily constrained due to poor lighting options and cost barriers. Among JSS students, the most common source of household lighting for study was 'chinese lights' (Figure 3) – battery powered torches (47.8%), followed by candles (40.8%), with Solar Home Systems (SHSs), kerosene lamps and generator also between in the mix (between 1 and 4% each); 4.4% of students reported that they had no lighting source at home. For SSS students, the variation was slightly different, with the majority reportedly using candles (65%) for household lighting, with 'chinese lights' being the second most popular (21%). There was, however, substantial variation on a school by school basis. Some, remote, junior secondary schools had more than three quarters of their students using candles for lighting, (i.e., Kondeiah, Yiraia, UMC Heritage, and Mongo Agricultural), while in Kabala, a high proportion of students had access to generators for lighting (24%), and a further 10% reported that they had small solar home systems installed solar home systems (SHS). The relative high number of SHS users is undoubtedly a result of sales from energy kiosks that EFO set up in Kabala Town in 2013 and 2014 (Kemeny et al., forthcoming).

Table 2 - Variation in Students' household lighting use across three JSS/SSS schools in the Koinadugu District

| | AMASS | Bafodia | Kabala | Loma | Mongo |
|---|---|---|---|---|---|
| **Kerosene** | 0% | 15% | 0% | 3% | 0% |
| **Candles** | 72% | 47% | 31% | 58% | 81% |
| **Torch** | 26% | 27% | 36% | 33% | 19% |
| **LED Lamps** | 0% | 0% | 0% | 0% | 0% |
| **SHS** | 0% | 0% | 10% | 3% | 0% |
| **Nothing** | 0% | 0% | 0% | 0% | 0% |
| **Other** | 2% | 12% | 0% | 3% | 0% |
| **Generator** | 0% | 0% | 24% | 3% | 0% |

The junior secondary school of Gberefeh in the Mongo District was by the far the most 'lighting poor' of the schools surveyed; 47% of its students reported that they had no access to lighting, and as such only 53% of students could study at night. This despite all of the students surveyed at the school (100%) indicating that night was their preferred time to study. Ultimately, the cost of lighting was a major barrier for Gberefeh students being able to study at night. Indeed, cost was a major issue for the majority of students across all of the schools, with 93% of JSS students; and 94% of SSS students citing it as a factor which limited their study time. Given that Koinadugu District is considered to be one of the poorest districts in Sierra Leone (The World Bank, 2010; UNICEF, 2010), a country that is already ranked near the bottom of the United Nations Human Development Index (UNDP, 2013), It is therefore unsurprising – although no less concerning – that a lack of household finances limits the use of lighting at night. A quote from a senior secondary student in Kamakwie (in nearby Bombali District) illustrates succinctly some of the wicked financial choices a student needs to make in Sierra Leone in order to realise their education:

> We don't have money to buy kerosene and moreover we have to eat, without food we can't study so the income that we usually save for lighting, I usually end up spending it on food and textbooks(quote by Senior Student in Kamakwie; cited in Munro & Christiansen, 2010).

The cost of lighting does not just present an issue of an absolute barrier to lighting, but it also dictates what quality of lighting that is made available to the youth (i.e., students) in their households. A recent survey of villages across the Northern Province of Sierra Leone (including Koinadugu District) showed that the source of lighting in villages was dominated by 'Chinese Lights' –between 85% and 100% of households in each of the villages stated it was their *main* source (Munro et al., forthcoming). This result contrasted with student household lighting use, with candles being a much more dominate source (40.8% for JSS students and 65% SSS students) – see Table 2 for a direct village comparison. This discrepancy is most likely explained by the patriarchal and gerontocratic organisation of Sierra Leonean society (especially in rural areas) (Hoffman, 2003), where adults' lighting needs take priority at a household level (i.e., they use household's 'chinese light'), while children are more likely to be relegated to using the cheaper (yet still relatively expansive) alternative of candle lighting. This is a major concern as, out of all of the household lighting options in rural Sierra Leone, candles produce the poorest amount of light, insufficient for students to be able to read effectively.

Table 3 - Household Chinese Lighting use variations in three villages in the Koinadugu District. Household statistics sourced from Munro et at (forthcoming); student use statistics sourced from this study.

| CHINESE LIGHT USE | Sinkunia | Bafodia | Mongo |
|---|---|---|---|
| **As the main source of household lighting** | 95% | 96% | 88% |
| **As the source of lighting used by students** | 22% | 27% | 19% |

Given the poor household lighting situation, schools present a potential alternative location for students to source their lighting needs. Indeed, many of the students surveyed reported that they preferred studying at the school at night due to the environment, interacting with peers and teachers. Just prior to and during the BECE and WASSCE testing periods each year, the teachers interviewed reported that the schools become in particular crowded places at night, with students studying and attending extra classes. Some schools have instigated night classes for students (which can be attended for a small fee), providing additional learning opportunities for students.

Schools across Koinadugu District, however, also had poor access to improved lighting. Only one school – Loma Junior and Senior Secondary School – in Kabala had a constant source of electricity at night, thanks to an solar power installation that been installed there by Energy For Opportunity (EFO) in January 2014. St Anthony and Kabala secondary schools both had generators; however, they were seldom used due to the high running costs. Around 40% of the schools conducted night classes and study groups; however, with the exception of Loma Secondary School, students were usually required to bring their own lighting source, usually in the form of chinese lights and candles. All of the schools surveyed, however, indicated that they had some plans for night classes, and would certainly implement them if they could secure night time lighting. The activities at Loma appear to support this, with it implementing a relatively formalised night class programs for its students (using lights from the solar power).

The collected data indicates that the installation of solar lighting at Loma at night has not only been important in terms of an improved environment for being able to study and read; but, overall, it has created the impression that the school is a much safer place. As Table 4 indicates, only 10% of the students surveyed stated that they thought the school was a dangerous place at night; at all of the other schools, which do not have night time lighting, more than half of the students surveyed thought their school was unsafe at night – AMASS being the highest with 94% of students. This correlates closely with the teacher interviews, whereby only Loma and Bafodia were described as being safe at night for study. Unsurprisingly, a perceived safe environment along with improvement lighting appears to have had an impact of night time school use, with almost half of Loma's Senior Secondary School students regularly using the school buildings to study at night; this contrasts with AMASS where the school is unused during after school hours.

Table 4 - Student perspectives of safety and night time school use across the five Senior Secondary Schools

| | AMASS | Bafodia | Kabala | Loma | Mongo |
|---|---|---|---|---|---|
| **Students claiming that the school is unsafe at night** | 94% | 70% | 57% | 10% | 85% |
| **Students regularly studying at the school at night** | 0% | 25% | 14% | 45% | 19% |

## 7. ICT access and Education in Koinadugu

Schools across Sierra Leone have very little ICT infrastructure and access to the internet (Mangesi, 2007). Overall, computer use was extremely low across the district – by students and teachers – and almost non-existent outside of Kabala. Access to mobile phones was considerably better and, in conjunction with increased 3G mobile phone coverage in Sierra Leone, there was some evidence that they were being used for education activities, albeit on a relatively limited scale. Overall, internet in Sierra Leone is slow and relatively expensive. Recently (in 2012) the country was received a fibre optic connection to the global telecommunications network; this, in theory, should result in an increase in connection speeds as well as an overall reduction in connection costs. At this stage, however, it is unclear when and if this connection will reach the Koinadugu District.

The presence of computers in education programs in Koinadugu District was essentially non-existent. Only a very small minority of students had experience using computers: 3% of JSS students and 11% of SSS students. The students that had used computers were almost exclusively from schools located in Kabala (i.e., UMC Heritage, Loma, Kabala, AMASS), and even then computer use was a very occasional activity, usually at internet cafes in Kabala or Makeni. Not a single student surveyed reported using a computer regularly (i.e., on a weekly basis). Similarly, only a minority of teachers had experience using computers – 28% of JSS; and 32% of SSS teachers – once again, this was on a very occasional basis. Out of all of the JSS and SSS schools surveyed, only Dankawali reported actually owning computers; the school, however, had no form of electricity access and therefore the (potential) use of them in classes was made impossible: 0% of Dankawali students surveyed had previously used a computer before.

The lack of computers at schools and households across the Koinadugu District is perhaps unsurprisingly, given the general lack of availability of electricity within schools and households. The current 'energy poverty' situation of the District has essentially rendered the use of computers in schools near impossible. This, in conjunction with the overall lack of computing infrastructure, the high cost of internet access, and the general lack of teacher training in computer skills, presents a major barrier for integrating it as an ICT pedagogical tool. This is unfortunate as the small minority of SSS students who did report having used computers and accessing internet stated that they had used it for educational purposes (studying: 49%; reading: 32%). The entire cohort of SSS students surveyed, along with the teachers interviewed, all state that they believe that computers represented a very important education tool that should be integrated into school programs.

There was a reasonable degree of access to mobile phones among the students' household. Across the JSS students, 43% of those surveyed reported that their household owned a mobile phone. There was, however, great variation between the schools with all students from some villages reporting no mobile phone ownership (i.e., Gberefeh Alhakra, Siradu, Yiraia, Bambukoro), while others, mainly those located in Chiefdom Headquarter Towns and Kabala, reported high levels of ownership (i.e., over 90%). Only a small minority (2%) of the JSS student households' mobile phones were 'smart phones' that could access the internet through a 3G network. Household mobile phone ownership was higher among SSS students (64%), as was

access to 3G internet via their phones (35%). Mobile phone ownership and 3G access, however, was dominated by students from the SSSs in Kabala (i.e., Loma, Kabala, and AMASS). Students with 3G internet access in Kabala frequently used their phones as a studying aid (see Table 3). Thus, informally at least, students with access to these technologies are often using them to further their education.

Table 5 - Overview of Mobile Phone ownership and use across the five SSSs in Koinadugu District. AMASS, Kabala and Loma are all located in Kabala, the District Capital

| | | AMASS | Bafodia | Kabala | Loma | Mongo |
|---|---|---|---|---|---|---|
| **Household mobile ownership** | | 100% | 15% | 100% | 100% | 19% |
| **Internet (3G) on mobile phone** | | 35% | 10% | 67% | 65% | 4% |
| **Frequency phone internet use** | Regular | 10% | 0% | 29% | 30% | 0% |
| | Occasional | 15% | 0% | 38% | 25% | 4% |
| | Rare | 10% | 0% | 0% | 5% | 4% |
| | Never | 65% | 100% | 33% | 40% | 92% |
| **Phone used for study** | | 35% | 0% | 52% | 45% | 4% |
| **Study use** | Reading | 57% | | 30% | 10% | 100% |
| | Search information | 43% | | 70% | 80% | 0% |
| | Other | 0 | | 0% | 10% | 0% |

Across the SSS teachers interviewed, 68% owned mobile phones, with 53% having internet access (via a 3G network) on their phone. Like the students, there was a distinct geography to this ownership and access. All of the SSS teachers based in Kabala owned mobile phones with 3G internet access; in Mongo, while 4 out of the 5 teachers owned a mobile, only one had 3G internet access; while no teacher based at Bafodia SSS owned a mobile phone. Those teachers with 3G access noted that they accessed the internet regularly, and often used it to aid in their teaching in terms of reading and searching for information.

Overall, while there is a relatively high level of internet access through mobile phones in Koinadugu District, especially when compared to computers, this use is almost exclusively focused in Kabala, the District's capital, indicating that there is a considerable urban-rural divide.

## 8. Conclusion and Recommendations

Access to electricity, lighting and ICT in the education sector in Koinadugu District is poor, more so than in less isolated districts in Sierra Leone. Furthermore there is distinctive and uneven distribution between schools in Kabala and those in the more remote parts of the District; the former having relatively better access, the former lagging far behind. Overall, Koinadugu District appears to be sitting on the wrong side of the digital divide in terms of its education program, with many students struggling to source affordable and decent lighting to realise their night time study. In terms of education, computers are essentially non-existent in the

District. Amongst the minority of students and teachers that have used a computer before, it appears to have been the result of a novelty experience, rather that something that has been integrated into their daily lives and educational programs. Access to mobile phones (and 3G internet) is a relatively better scenario, with a considerable number of students and teachers informally drawing upon these technologies to help improve educational outcomes. This phenomena, however, was largely restricted to Kabala.

Figure 5 - Clockwise from top left; EFO solar power installation at a school in Mattru Jong; Community Charging Station in Kamabai (Bomablia District); Solar Home System (SMS); LED Lantern. Both systems are designed and manufactured by barefoot power.

In terms of strategies to address and improve this situation, initial priorities should focus on increased (and more affordable) access to electricity and improved lighting in the District educational setting. There are two main locations where this could occur – at the household level and at schools – and ideally both should be addressed at the same time. One approach would be to install module solar power using EFO's integrated school/charging station approach. This approach would involve installing a solar power system at the target school, which would provide electricity for lighting the school up at night as well as electricity for an adjacent 'energy kiosk.' The energy kiosk – or Community Charging Station (CCS) – is an innovative model that EFO has developed, combining for-profit and non-profit operating procedures, for the sustainable dissemination of improve lighting products. The kiosk serves as a hub for the charging of mobile phones and the rental and sale of solar powered rechargeable LED lanterns and solar home systems (SHSs). The LED lanterns rival the cost of battery powered lights and kerosene, but provide a much higher lumen output and have no adverse health effects (Willans, Christiansen, & Munro, 2011). Though the CCS is *initially* funded through non-profit finance, its self-sustaining operation is based on purely for-profit principles. All services, including charging and lantern rental, occur on a for-profit basis with all revenue put back into operations. Ongoing

support for the CCS, such as maintenance and resupply of lighting products, is also all handled through for-profit principles. Excess profit is then used to fund future community projects such as improving education facilities at the school or paying teacher salaries. So far EFO has installed over 30 CCS installations around Sierra Leone, all have proven to be profitable ventures (Kemeny et al., forthcoming; Munro et al., forthcoming). Through such an installation, increased lighting can be realised within schools (directly through the solar installation) and at the household level through LED lantern and SHS sales. The CCS model has the added benefit of introducing the prospect of at least a few local jobs to the area, through employment at the kiosk. These jobs in other locations have been taken up by young people who are either in the process of disengaging from school and need part time work and financial assistance to continue or are already disengaged from school and need access to what is traditionally a very tight labour market.

The integration of ICTs into the educational curriculum is a much more logistically difficult task. The installation of solar electricity at the school, obviously, eliminates one pernicious barrier to realising computer access at school – a lack of electricity access and according to some school leaders this may assist in attracting and retaining qualified staff to such isolated geographical locations. However, gaining access to sustainable capital investment to obtain ICT equipment is also needed. Once ICT equipment is accessible at the school there needs to be a much broader, more in depth and integrated approach to introducing ICTs, to ensure access translates to engagement and improved educational outcomes. Students and teachers may be keen to engage with equipment in computer labs for the novelty factor however a phased approach is needed to ensure ICTs are utilised in a meaningful way. Such an approach to scale up the integration of ICTs in schools in Koinadugu would need to; first, familiarises educators and qualified teachers with ICT equipment; second, provide training in basic maintenance and utilisation of ICT infrastructure for students, staff and school leadership teams (managing the computers, conserving energy, protecting from viruses, developing basic procedures for checking equipment in and out, transparent security procedures, etc.); third, local support would need to be put in place to ensure teachers begin using the machines for their own professional practice (lesson planning and research) and finally formal professional development would need to take place to train teachers to integrate the use of ICTs into the classroom and curriculum with children and young people.

More broadly, increased numbers of teachers with formal qualifications who have had exposure to ICTs through their formal training is important. Advocacy and support to improve policy development and investment – at both local and national levels of government, that aims to improve the number of formally qualified teachers, improves gender disparity in teacher and student ratios and improves the overall quality of education and retention rates for students (particularly female students) across the district is needed to set the conditions for sustainable integration of ICTs in education in Koinadugu.

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## Appendix A – Student Enrolment Numbers and Gender Ratios

Enrolment data was not available for Bafodia JSS and SSS; Gberefeh JSS; Falaba Gov JSS; Siradu JSS; St Antony JSS; and Sinkuna Gov JSS.

### AMASS Senior Secondary School (Sengbe Chiefdom)

| YEAR | SSS I | | SSS II | | SSS III | | SSS IV | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| **2009 – 2010** | 285 | 155 | 270 | 130 | 250 | 110 | | | **805** | **395** | 0.5 |
| **2010 – 2011** | 290 | 164 | 285 | 150 | 270 | 130 | | | **845** | **444** | 0.5 |
| **2011 – 2012** | 280 | 180 | 239 | 130 | 225 | 100 | | | **744** | **410** | 0.6 |
| **2012 – 2013** | 290 | 178 | 270 | 150 | 261 | 139 | | | **821** | **467** | 0.6 |
| **2013 – 2014** | 256 | 180 | 218 | 90 | 212 | 90 | 150 | 67 | **836** | **427** | 0.5 |

### Loma Senior Secondary School (Sengbe Chiefdom)

| YEAR | SSS I | | SSS II | | SSS III | | SSS IV | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| **2009 – 2010** | 249 | 182 | 239 | 193 | 231 | 182 | | | **719** | **557** | 0.8 |
| **2010 – 2011** | 253 | 173 | 233 | 198 | 243 | 194 | | | **729** | **565** | 0.8 |
| **2011 – 2012** | 301 | 251 | 262 | 167 | 263 | 153 | | | **826** | **571** | 0.7 |
| **2012 – 2013** | 327 | 275 | 315 | 243 | 258 | 164 | | | **900** | **682** | 0.8 |
| **2013 – 2014** | 119 | 152 | 321 | 274 | 289 | 238 | 151 | 129 | **880** | **793** | 0.9 |

### Mongo Secondary School (Mongo Chiefdom)

| YEAR | SSS I | | SSS II | | SSS III | | SSS IV | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| **2008 – 2009** | 10 | 7 | 19 | 9 | 3 | 2 | | | **32** | **18** | 0.6 |
| **2009 – 2010** | 30 | 15 | 10 | 8 | 8 | 6 | | | **48** | **29** | 0.6 |
| **2010 – 2011** | 33 | 20 | 39 | 20 | 18 | 12 | | | **90** | **52** | 0.6 |
| **2011 – 2012** | 50 | 20 | 59 | 21 | 60 | 25 | | | **169** | **66** | 0.4 |
| **2012 – 2013** | 61 | 16 | 40 | 15 | 50 | 10 | | | **151** | **41** | 0.3 |
| **2013 – 2014** | 53 | 19 | 58 | 10 | 15 | 9 | 25 | 16 | **151** | **54** | 0.4 |

## Kabala Secondary School (Wara Wara Yagala Chiefdom)

| YEAR | SSS I | | SSS II | | SSS III | | SSS IV | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| **2012 - 2013** | 348 | 210 | 200 | 310 | 182 | 119 | | | **730** | **639** | 0.9 |
| **2013 - 2014** | 309 | 289 | 339 | 310 | 194 | 127 | 110 | 49 | **952** | **775** | 0.8 |

## Kurubonla Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| **2009 - 2010** | 30 | 25 | 17 | 10 | 20 | 19 | **67** | **54** | 0.8 |
| **2010 - 2011** | 40 | 22 | 24 | 30 | 15 | 20 | **79** | **72** | 0.9 |
| **2011 - 2012** | 56 | 41 | 33 | 28 | 31 | 15 | **120** | **84** | 0.7 |
| **2012 - 2013** | 68 | 43 | 25 | 17 | 30 | 22 | **123** | **82** | 0.7 |
| **2013 - 2014** | 105 | 80 | 60 | 40 | 28 | 20 | **193** | **140** | 0.7 |

## Kamaron Community Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| **2011 - 2012** | 20 | 26 | 12 | 13 | 0 | 0 | **32** | **39** | 1.2 |
| **2012 - 2013** | 18 | 25 | 12 | 10 | 4 | 6 | **34** | **41** | 1.2 |
| **2013 - 2014** | 32 | 50 | 16 | 19 | 10 | 4 | **58** | **73** | 1.3 |

## Mongo Agricultural Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| **2008-2009** | 11 | 6 | 12 | 7 | 17 | 6 | **40** | **19** | 0.5 |
| **2009 - 2010** | 13 | 8 | 16 | 9 | 15 | 9 | **44** | **26** | 0.6 |
| **2010 - 2011** | 35 | 18 | 32 | 20 | 20 | 16 | **87** | **54** | 0.6 |
| **2011 - 2012** | 29 | 10 | 65 | 74 | 84 | 45 | **178** | **129** | 0.7 |
| **2012 - 2013** | 82 | 102 | 68 | 83 | 86 | 49 | **236** | **234** | 1.0 |

## Alhakra Agricultural Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 12 | 8 | 11 | 13 | 14 | 6 | **37** | **27** | 0.7 |
| 2010 - 2011 | 26 | 14 | 18 | 15 | 16 | 9 | **60** | **38** | 0.6 |
| 2011 - 2012 | 23 | 16 | 18 | 21 | 12 | 12 | **53** | **49** | 0.9 |
| 2012 - 2013 | 31 | 20 | 34 | 21 | 26 | 22 | **91** | **63** | 0.7 |
| 2013 - 2014 | 43 | 28 | 23 | 20 | 19 | 24 | **85** | **72** | 0.8 |

## Kamukeh Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 43 | 15 | 0 | 0 | 0 | 0 | **43** | **15** | 0.3 |
| 2010 - 2011 | 18 | 6 | 32 | 4 | 0 | 0 | **50** | **10** | 0.2 |
| 2011 - 2012 | 9 | 7 | 5 | 3 | 8 | 4 | **22** | **14** | 0.6 |
| 2012 - 2013 | 15 | 11 | 16 | 13 | 13 | 7 | **44** | **31** | 0.7 |
| 2013 - 2014 | 17 | 19 | 6 | 10 | 6 | 4 | **29** | **33** | 1.1 |

## Movement of Faith (MOF) Junior Secondary School – Gbentu

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 35 | 12 | 15 | 19 | 9 | 13 | **59** | **44** | 0.7 |
| 2010 - 2011 | 30 | 25 | 20 | 15 | 10 | 15 | **60** | **55** | 0.9 |
| 2011 - 2012 | 27 | 15 | 13 | 9 | 5 | 6 | **45** | **30** | 0.7 |
| 2012 - 2013 | 20 | 15 | 20 | 17 | 15 | 3 | **55** | **35** | 0.6 |
| 2013 - 2014 | 35 | 27 | 20 | 12 | 20 | 16 | **75** | **55** | 0.7 |

## Musaia Commercial Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 35 | 27 | 25 | 32 | 17 | 13 | **77** | **72** | 0.9 |
| 2010 - 2011 | 40 | 18 | 35 | 22 | 19 | 14 | **94** | **54** | 0.6 |
| 2011 - 2012 | 45 | 34 | 37 | 25 | 18 | 8 | **100** | **67** | 0.7 |
| 2012 - 2013 | 40 | 20 | 30 | 21 | 13 | 12 | **83** | **53** | 0.6 |
| 2013 - 2014 | 32 | 48 | 18 | 19 | 18 | 13 | **68** | **80** | 1.2 |

## Peter Calza Memorial Agricultural Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 102 | 89 | 88 | 70 | 64 | 16 | **254** | **175** | 0.7 |
| 2010 - 2011 | 82 | 48 | 83 | 85 | 65 | 38 | **230** | **171** | 0.7 |
| 2011 - 2012 | 44 | 33 | 37 | 32 | 58 | 50 | **139** | **115** | 0.8 |
| 2012 - 2013 | 52 | 35 | 48 | 36 | 35 | 30 | **135** | **101** | 0.7 |
| 2013 - 2014 | 25 | 35 | 60 | 52 | 37 | 23 | **122** | **110** | 0.9 |

## Firawa Government Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 85 | 100 | | | | | **85** | **100** | 1.2 |
| 2010 - 2011 | 65 | 95 | 38 | 62 | | | **103** | **157** | 1.5 |
| 2011 - 2012 | 75 | 95 | 35 | 55 | 20 | 30 | **130** | **180** | 1.4 |
| 2012 - 2013 | 85 | 95 | 45 | 65 | 25 | 35 | **155** | **195** | 1.3 |
| 2013 - 2014 | 89 | 121 | 45 | 50 | 30 | 35 | **164** | **206** | 1.3 |

## Alkalia Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 60 | 35 | 40 | 28 | 35 | 30 | **135** | **93** | 0.7 |
| 2010 - 2011 | 30 | 28 | 33 | 41 | 20 | 15 | **83** | **84** | 1.0 |
| 2011 - 2012 | 39 | 40 | 28 | 35 | 22 | 26 | **89** | **101** | 1.1 |
| 2012 - 2013 | 42 | 25 | 35 | 28 | 38 | 26 | **115** | **79** | 0.7 |
| 2013 - 2014 | 22 | 68 | 15 | 35 | 30 | 33 | **67** | **136** | 2.0 |

## Neini Ballah Memorial Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2012 - 2013 | 25 | 44 | | | | | **25** | **44** | 1.8 |
| 2013 - 2014 | 35 | 39 | 20 | 26 | 18 | 16 | **73** | **81** | 1.1 |

## Kondehbiah Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 35 | 24 | 23 | 20 | 14 | 11 | **72** | **55** | 0.8 |
| 2010 - 2011 | 42 | 30 | 31 | 20 | 18 | 14 | **91** | **64** | 0.7 |
| 2011 - 2012 | 48 | 39 | 38 | 25 | 28 | 15 | **114** | **79** | 0.7 |
| 2012 - 2013 | 54 | 44 | 40 | 32 | 22 | 20 | **116** | **96** | 0.8 |
| 2013 - 2014 | 62 | 49 | 43 | 36 | 28 | 23 | **133** | **108** | 0.8 |

## Yiraia Agricultural Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2011 - 2012 | 16 | 15 | 13 | 16 | 0 | 0 | **29** | **31** | 1.1 |
| 2012 - 2013 | 17 | 17 | 19 | 13 | 11 | 7 | **47** | **37** | 0.8 |
| 2013 - 2014 | 14 | 16 | 11 | 14 | 7 | 5 | **32** | **35** | 1.1 |

## Lengekoro Agricultural Muslim Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 17 | 11 | 17 | 5 | 7 | 1 | **41** | **17** | 0.4 |
| 2010 - 2011 | 14 | 3 | 12 | 5 | 8 | 4 | **34** | **12** | 0.4 |
| 2011 - 2012 | 8 | 8 | 13 | 1 | 8 | 4 | **29** | **13** | 0.4 |
| 2012 - 2013 | 11 | 9 | 7 | 6 | 7 | 2 | **25** | **17** | 0.7 |
| 2013 - 2014 | 18 | 22 | 9 | 7 | 7 | 6 | **34** | **35** | 1.0 |

## Kasunko Islamic Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 – 2010 | 42 | 31 | 43 | 27 | 32 | 26 | **117** | **84** | 0.7 |
| 2010 – 2011 | 47 | 29 | 45 | 30 | 36 | 25 | **128** | **84** | 0.7 |
| 2011 – 2012 | 58 | 37 | 49 | 30 | 39 | 30 | **146** | **97** | 0.7 |
| 2012 – 2013 | 64 | 31 | 53 | 35 | 47 | 32 | **164** | **98** | 0.6 |
| 2013 – 2014 | 64 | 56 | 72 | 47 | 63 | 43 | **199** | **146** | 0.7 |

## Fadugu Agricultural Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 – 2010 | 150 | 160 | 130 | 135 | 100 | 125 | **380** | **420** | 1.1 |
| 2010 – 2011 | 130 | 120 | 110 | 115 | 80 | 75 | **320** | **310** | 1.0 |
| 2011 – 2012 | 165 | 145 | 127 | 118 | 75 | 90 | **367** | **353** | 1.0 |
| 2012 – 2013 | 112 | 113 | 120 | 129 | 109 | 115 | **341** | **357** | 1.0 |
| 2013 – 2014 | 114 | 133 | 116 | 132 | 110 | 121 | **340** | **386** | 1.1 |

### Yogomaia Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 – 2010 | 50 | 40 | 26 | 14 | 0 | 0 | **76** | **54** | 0.7 |
| 2010 – 2011 | 35 | 45 | 50 | 20 | 0 | 0 | **85** | **65** | 0.8 |
| 2011 – 2012 | 50 | 40 | 26 | 14 | 11 | 9 | **87** | **63** | 0.7 |
| 2012 – 2013 | 47 | 39 | 33 | 31 | 22 | 56 | **102** | **126** | 1.2 |
| 2013 – 2014 | 70 | 88 | 50 | 72 | 57 | 73 | **177** | **233** | 1.3 |

### AMASS Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 – 2010 | 277 | 220 | 230 | 190 | 210 | 160 | **717** | **570** | 0.8 |
| 2010 – 2011 | 264 | 180 | 240 | 171 | 250 | 163 | **754** | **514** | 0.7 |
| 2011 – 2012 | 268 | 190 | 250 | 165 | 230 | 159 | **748** | **514** | 0.7 |
| 2012 – 2013 | 270 | 232 | 250 | 200 | 230 | 190 | **750** | **622** | 0.8 |
| 2013 – 2014 | 253 | 206 | 206 | 180 | 208 | 170 | **667** | **556** | 0.8 |

### Movement of Faith (MOF) Junior Secondary School - Koinadugu

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 – 2010 | 60 | 40 | 50 | 55 | 0 | 0 | **110** | **95** | 0.9 |
| 2010 – 2011 | 55 | 50 | 50 | 55 | 21 | 9 | **126** | **114** | 0.9 |
| 2011 – 2012 | 45 | 55 | 40 | 60 | 12 | 8 | **97** | **123** | 1.3 |
| 2012 – 2013 | 60 | 40 | 30 | 40 | 38 | 22 | **128** | **102** | 0.8 |
| 2013 – 2014 | 55 | 45 | 60 | 40 | 6 | 16 | **121** | **101** | 0.8 |

## Loma Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 – 2010 | 156 | 232 | 182 | 224 | 274 | 181 | **612** | **637** | 1.0 |
| 2010 – 2011 | 166 | 205 | 112 | 157 | 278 | 272 | **556** | **634** | 1.1 |
| 2011 – 2012 | 105 | 138 | 173 | 216 | 196 | 192 | **474** | **546** | 1.2 |
| 2012 – 2013 | 180 | 110 | 210 | 120 | 253 | 263 | **643** | **493** | 0.8 |
| 2013 – 2014 | 192 | 236 | 201 | 252 | 315 | 355 | **708** | **843** | 1.2 |

## Bambukoro Agricultural Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 – 2010 | 30 | 25 | 20 | 15 | 0 | 0 | **50** | **40** | 0.8 |
| 2010 – 2011 | 25 | 10 | 28 | 20 | 0 | 0 | **53** | **30** | 0.6 |
| 2011 – 2012 | 27 | 15 | 13 | 9 | 5 | 6 | **45** | **30** | 0.7 |
| 2012 – 2013 | 20 | 17 | 13 | 10 | 3 | 4 | **36** | **31** | 0.9 |
| 2013 – 2014 | 36 | 37 | 17 | 10 | 13 | 9 | **66** | **56** | 0.8 |

## Dankawallie Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 – 2010 | 23 | 15 | 16 | 18 | 15 | 10 | **54** | **43** | 0.8 |
| 2010 – 2011 | 32 | 18 | 22 | 13 | 16 | 16 | **70** | **47** | 0.7 |
| 2011 – 2012 | 40 | 25 | 38 | 23 | 25 | 12 | **103** | **60** | 0.6 |
| 2012 – 2013 | 20 | 23 | 18 | 20 | 35 | 23 | **73** | **66** | 0.9 |
| 2013 – 2014 | 19 | 14 | 18 | 15 | 16 | 7 | **53** | **36** | 0.7 |

## UMC Heritage Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 – 2010 | 21 | 25 | 22 | 28 | 24 | 30 | **67** | **83** | 1.2 |
| 2010 – 2011 | 29 | 45 | 35 | 46 | 40 | 55 | **104** | **146** | 1.4 |
| 2011 – 2012 | 44 | 56 | 50 | 61 | 51 | 63 | **45** | **55** | 1.2 |
| 2012 – 2013 | 55 | 70 | 57 | 73 | 65 | 76 | **177** | **219** | 1.2 |
| 2013 – 2014 | 68 | 71 | 66 | 72 | 70 | 73 | **204** | **216** | 1.1 |

## Kabala Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 170 | 230 | 220 | 248 | 242 | 271 | **632** | **749** | 1.2 |
| 2010 - 2011 | 169 | 234 | 241 | 260 | 245 | 258 | **655** | **752** | 1.1 |
| 2011 - 2012 | 179 | 226 | 236 | 255 | 240 | 263 | **655** | **744** | 1.1 |
| 2012 - 2013 | 194 | 199 | 192 | 229 | 208 | 240 | **38** | **668** | 17.6 |
| 2013 - 2014 | 298 | 248 | 233 | 239 | 242 | 256 | **773** | **743** | 1.0 |

## Makakura Junior Secondary School

| YEAR | JSS1 | | JSS2 | | JSS3 | | TOTAL | | M/F ratio |
|---|---|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 35 | 15 | 25 | 5 | | | **60** | **20** | 0.3 |
| 2010 - 2011 | 43 | 35 | 40 | 12 | 20 | 5 | **103** | **52** | 0.5 |
| 2011 - 2012 | 42 | 29 | 31 | 2 | 30 | 8 | **103** | **39** | 0.4 |
| 2012 - 2013 | 32 | 21 | 21 | 20 | 24 | 20 | **77** | **61** | 0.8 |
| 2013 - 2014 | 41 | 17 | 34 | 26 | 30 | 20 | **105** | **63** | 0.6 |

## Appendix B – Exam Results: WASSCE and BECE

WASSCE results were not available for Mongo, Kabala and Bafodia SSSs. No WASSCE Exams were conducted in 2012-2013 due to the addition of SSS4 classes.

BECE results were not available from Sinkunia Gov JSS, Lenegkoro JSS, Musaia JSS, Alhakra JSS, Falaba Gov JSS, Kamaron JSS, Gberefeh JSS, Yiraia JSS, Nieni Ballah JSS, St Anthony JSS, Kurubonla JSS, and Bafoida JSS.

### AMASS Senior Secondary School WASSCE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2008 – 2009 | 205 | 105 | 103 | 50 | 102 | 55 | 49% |
| 2009 – 2010 | 250 | 108 | 135 | 55 | 115 | 53 | 53% |
| 2010 – 2011 | 268 | 128 | 165 | 80 | 103 | 48 | 62% |
| 2011 – 2012 | 225 | 100 | 150 | 58 | 75 | 42 | 64% |

### Loma Sennior Secondary School WASSCE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2008 – 2009 | 98 | 57 | 17 | 6 | 81 | 51 | 15% |
| 2009 – 2010 | 110 | 85 | 46 | 13 | 64 | 72 | 30% |
| 2010 – 2011 | 153 | 148 | 37 | 16 | 116 | 132 | 18% |
| 2011 – 2012 | 268 | 192 | 24 | 13 | 244 | 179 | 8% |

### Mongo Agricultural Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2008 - 2009 | 63 | 10 | 49 | 7 | 14 | 3 | 77% |
| 2009 - 2010 | 58 | 21 | 20 | 10 | 38 | 11 | 38% |
| 2010 - 2011 | 71 | 50 | 51 | 10 | 20 | 40 | 50% |
| 2011 - 2012 | 81 | 46 | 62 | 40 | 19 | 6 | 80% |
| 2012 - 2013 | 95 | 44 | 18 | 10 | 77 | 34 | 20% |

## Kamukeh Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2011 - 2012 | 8 | 4 | 8 | 4 | 0 | 0 | 100% |
| 2012 - 2013 | 8 | 2 | 5 | 0 | 3 | 2 | 50% |

## Movement of Faith (MOF) Junior Secondary School – Gbentu BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2008 - 2009 | 20 | 10 | 15 | 8 | 5 | 2 | 77% |
| 2009 - 2010 | 15 | 11 | 13 | 8 | 2 | 3 | 81% |
| 2010 - 2011 | 25 | 15 | 21 | 14 | 4 | 1 | 88% |
| 2011 - 2012 | 10 | 12 | 9 | 10 | 1 | 2 | 86% |
| 2012 - 2013 | 16 | 10 | 14 | 9 | 2 | 1 | 88% |

## Peter Calza Memorial Agricultural Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 62 | 15 | 50 | 8 | 12 | 7 | 75% |
| 2010 - 2011 | 58 | 35 | 30 | 15 | 28 | 20 | 48% |
| 2011 - 2012 | 54 | 50 | 40 | 32 | 14 | 18 | 69% |
| 2012 - 2013 | 33 | 28 | 12 | 6 | 21 | 22 | 30% |

## Siradu Agricultural Muslim Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2010 - 2011 | 15 | 10 | 10 | 7 | 5 | 3 | 68% |
| 2011 - 2012 | 15 | 10 | 11 | 8 | 4 | 2 | 76% |
| 2012 - 2013 | 20 | 16 | 17 | 8 | 3 | 8 | 69% |

## Firawa Government Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2011 - 2012 | 23 | 27 | 15 | 25 | 8 | 2 | 80% |
| 2012 - 2013 | 26 | 34 | 20 | 30 | 6 | 4 | 83% |

## Alkalia Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2008 - 2009 | 35 | 28 | 25 | 15 | 10 | 13 | 63% |
| 2009 - 2010 | 19 | 15 | 15 | 10 | 4 | 5 | 74% |
| 2010 - 2011 | 22 | 24 | 18 | 15 | 4 | 9 | 72% |
| 2011 - 2012 | 20 | 25 | 17 | 16 | 3 | 9 | 73% |
| 2012 - 2013 | 32 | 28 | 15 | 12 | 17 | 16 | 45% |

## Kondehbiah Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2008 - 2009 | 10 | 8 | 8 | 7 | 2 | 1 | 83% |
| 2009 - 2010 | 14 | 11 | 12 | 10 | 2 | 1 | 88% |
| 2010 - 2011 | 18 | 14 | 14 | 11 | 4 | 3 | 78% |
| 2011 - 2012 | 28 | 15 | 26 | 14 | 2 | 1 | 93% |
| 2012 - 2013 | 22 | 20 | 18 | 17 | 4 | 3 | 83% |

## Kasunko Islamic Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 32 | 26 | 28 | 24 | 4 | 2 | 90% |
| 2010 - 2011 | 36 | 25 | 34 | 23 | 2 | 2 | 93% |
| 2011 - 2012 | 39 | 30 | 38 | 30 | 1 | 0 | 99% |
| 2012 - 2013 | 47 | 32 | 43 | 26 | 4 | 6 | 87% |

## Fadugu Agricultural Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2008 - 2009 | 100 | 125 | 90 | 110 | 10 | 15 | 89% |
| 2009 - 2010 | 80 | 75 | 68 | 60 | 12 | 15 | 83% |
| 2010 - 2011 | 80 | 75 | 62 | 69 | 18 | 6 | 85% |
| 2011 - 2012 | 75 | 90 | 70 | 82 | 5 | 8 | 92% |
| 2012 - 2013 | 109 | 115 | 95 | 102 | 14 | 13 | 88% |

## Yogomaia Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2011 – 2012 | 10 | 12 | 9 | 9 | 1 | 3 | 82% |
| 2012 – 2013 | 33 | 20 | 32 | 18 | 1 | 2 | 94% |

## AMASS Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2008 - 2009 | 263 | 180 | 160 | 90 | 103 | 90 | 56% |
| 2009 - 2010 | 208 | 155 | 150 | 95 | 58 | 60 | 67% |
| 2010 - 2011 | 250 | 162 | 180 | 103 | 70 | 59 | 69% |
| 2011 - 2012 | 230 | 158 | 225 | 153 | 5 | 5 | 97% |
| 2012 - 2013 | 230 | 189 | 203 | 161 | 27 | 28 | 87% |

## Movement of Faith (MOF) Secondary School – Koinadugu BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2010 - 2011 | 21 | 9 | 21 | 7 | 0 | 2 | 93% |
| 2011 - 2012 | 11 | 7 | 8 | 6 | 3 | 1 | 78% |
| 2012 - 2013 | 38 | 22 | 33 | 22 | 5 | 0 | 92% |

## Loma Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2008 - 2009 | 279 | 146 | 184 | 92 | 95 | 54 | 65% |
| 2009 - 2010 | 275 | 195 | 248 | 126 | 27 | 69 | 80% |
| 2010 - 2011 | 282 | 141 | 250 | 123 | 32 | 18 | 88% |
| 2011 - 2012 | 166 | 334 | 146 | 276 | 20 | 58 | 84% |
| 2012 - 2013 | 253 | 258 | 217 | 135 | 36 | 123 | 69% |

## Bambukoro Agricultural Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2011 - 2012 | 6 | 7 | 6 | 7 | 0 | 0 | 100% |
| 2012 - 2013 | 3 | 4 | 3 | 2 | 0 | 2 | 71% |

## Dankawallie Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2011 - 2012 | 6 | 7 | 6 | 7 | 0 | 0 | 100% |
| 2012 - 2013 | 3 | 4 | 3 | 2 | 0 | 2 | 71% |

## UMC Heritage Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2009 - 2010 | 15 | 10 | 14 | 8 | 1 | 2 | 88% |
| 2010 - 2011 | 33 | 17 | 27 | 15 | 6 | 2 | 84% |
| 2011 - 2012 | 18 | 9 | 16 | 8 | 2 | 1 | 89% |
| 2012 - 2013 | 15 | 23 | 12 | 19 | 3 | 4 | 82% |

## Kabala Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2008 - 2009 | 158 | 263 | 145 | 240 | 13 | 23 | 91% |
| 2009 - 2010 | 250 | 355 | 232 | 320 | 18 | 35 | 91% |
| 2010 - 2011 | 348 | 360 | 310 | 330 | 38 | 30 | 90% |
| 2011 - 2012 | 357 | 372 | 330 | 342 | 27 | 30 | 92% |
| 2012 - 2013 | 322 | 343 | 311 | 300 | 11 | 43 | 92% |

## Makakura Junior Secondary School BECE Results

| YEAR | # TOOK EXAM | | # PASSED | | # FAILED | | Pass Rate |
|---|---|---|---|---|---|---|---|
| | BOYS | GIRLS | BOYS | GIRLS | BOYS | GIRLS | |
| 2010 - 2011 | 6 | 2 | 6 | 2 | 0 | 0 | 100% |
| 2011 - 2012 | 24 | 19 | 23 | 17 | 1 | 2 | 93% |

## Appendix C – JSS Teacher Qualifications

Data was not available for Gbefereh JSS, Falaba Government JSS; Kamukeh; Yogomaia JSS and Sinkunia Government JSS.

MA = Master of Arts; MSc – Master of Science; BA = Bachelor of Arts; BSc = Bachelor of Science; BEd = Bachelor of Education; HTC = Higher Teaching Certificate; TC = Teaching Certification.

| SCHOOL | MA /MSc | BA/BSc/BEd | HTC | TC | NQ | TOTAL | % Female | % on payroll |
|---|---|---|---|---|---|---|---|---|
| **Kurubonla Secondary School** | 0 | 2 | 2 | 4 | 2 | 10 | 0% | 0% |
| **Kamaron Community Secondary School** | 0 | 2 | 4 | 1 | 2 | 9 | 0% | 11% |
| **Mongo Agricultural Secondary School** | 0 | 4 | 11 | 1 | 2 | 18 | 5% | 78% |
| **Bafodia Agricultural Secondary School** | 0 | 2 | 9 | 0 | 12 | 23 | 0% | 70% |
| **MOF Secondary School - Gbentu** | 0 | 0 | 2 | 1 | 5 | 8 | 25% | 25% |
| **Musaia Commercial Secondary School** | 0 | 1 | 3 | 0 | 6 | 10 | 10% | 20% |
| **Peter Calza Memorial Agricultural Secondary School** | 0 | 1 | 4 | 0 | 0 | 5 | 0% | 20% |
| **Siradu Agricultural Muslim Seconday School** | 1 | 0 | 2 | 2 | 2 | 7 | 0% | 0% |
| **Firawa Government Secondary School** | 0 | 2 | 3 | 4 | 1 | 10 | 10% | 0% |
| **Alkalia Secondary School** | 0 | 3 | 4 | 0 | 4 | 11 | 9% | 20% |
| **Neini Ballah Memorial Secondary School** | 0 | 0 | 8 | 0 | 2 | 10 | 0% | 50% |
| **St Anthony Secondary School** | 0 | 3 | 6 | 0 | 4 | 13 | 0% | 69% |
| **Kondehbiah Secondary School** | 0 | 0 | 2 | 3 | 1 | 6 | 0% | nd |
| **Lengekoro Agricultural Muslim Secondary School** | 0 | 0 | 1 | 0 | 3 | 4 | 0% | 0% |
| **Kasunko Islamic Secondary School** | 0 | 1 | 5 | 3 | 4 | 13 | 8% | 8% |
| **Fadugu Agricultural Secondary School** | 0 | 2 | 6 | 4 | 10 | 22 | 9% | 55% |
| **Ahmadiyya Muslim Agricultural Secondary School** | 0 | 2 | 18 | 0 | 9 | 29 | 7% | 79% |
| **MOF Secondary School - Koinadugu** | 0 | 0 | 1 | 3 | 3 | 7 | 0% | 14% |
| **Yiraia Agricultural Secondary School** | 0 | 0 | 0 | 2 | 5 | 7 | 0% | 14% |
| **Loma Secondary School** | 0 | 2 | 26 | 2 | 4 | 34 | 3% | 64% |
| **Bambukoro Agricultural Secondary School** | 0 | 1 | 3 | 0 | 2 | 6 | 0% | 17% |
| **Dankawallie Secondary School** | 0 | 1 | 4 | 3 | 1 | 9 | 0% | 38% |
| **UMC Heritage Secondary School** | 0 | 1 | 1 | 5 | 2 | 9 | 11% | 100% |
| **Makakura Secondary School** | 0 | 0 | 2 | 1 | 2 | 5 | 0% | 20% |
| **Kabala Secondary School** | 1 | 4 | 17 | 15 | 10 | 47 | 23% | 57% |
| **TOTAL / AVERAGE** | 2 | 34 | 144 | 54 | 98 | 332 | 5% | 34% |

## Appendix D – JSS Student Study Habits (Survey Responses)

| School | Preference for Study | | | Study at night? (yes) |
|---|---|---|---|---|
| | Morning | Afternoon | Night | |
| Musaia | 0% | 0% | 100% | 100% |
| Sinkunia | 7% | 0% | 93% | 98% |
| Lengekoro | 0% | 0% | 100% | 100% |
| Falaba | 4% | 0% | 96% | 96% |
| Peter Calza | 5% | 0% | 95% | 100% |
| Kabala | 29% | 0% | 71% | 100% |
| Alkalia | 5% | 5% | 90% | 90% |
| Kondebiah | 5% | 5% | 90% | 90% |
| Gberia Alhakro | 2% | 0% | 98% | 100% |
| MOF Gbentu | 0% | 5% | 95% | 95% |
| Kurubonla | 0% | 0% | 100% | 100% |
| Gberefeh | 0% | 0% | 100% | 53% |
| Kamaron | 0% | 0% | 100% | 100% |
| Mongo Ag | 0% | 2% | 98% | 100% |
| AMASS | 10% | 0% | 90% | 100% |
| Bambukoro | 0% | 0% | 100% | 100% |
| Dankawali | 0% | 5% | 95% | 100% |
| MOF- Koinadugu | 0% | 5% | 95% | 100% |
| Loma | 0% | 0% | 100% | 100% |
| UMC Heritage | 0% | 0% | 100% | 100% |
| Yogomaia | 5% | 0% | 95% | 95% |
| Yiraia | 0% | 0% | 100% | 100% |
| Nieni Ballah | 0% | 5% | 95% | 100% |
| Firiwa | 0% | 10% | 90% | 100% |
| St Antony | 0% | 5% | 95% | 100% |
| Sumabria | 0% | 0% | 100% | 76% |
| Makakura | 0% | 0% | 100% | 100% |
| Fadugu | 0% | 0% | 100% | 100% |
| Kasunko islamic | 0% | 0% | 100% | 100% |
| Kamukeh | 10% | 0% | 90% | 95% |
| Bafodia | 10% | 10% | 80% | 100% |

## Appendix E – JSS Student Lighting Use (Survey Responses)

| School | Lighting Used for Study | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Kerosene | Candle | Torch | LED | SHS | nothing | other | generator |
| Musaia | 0% | 38% | 63% | 0% | 0% | 0% | 0% | 0% |
| Sinkunia | 0% | 67% | 22% | 0% | 7% | 0% | 0% | 4% |
| Lengekoro | 0% | 33% | 57% | 0% | 0% | 0% | 0% | 10% |
| Falaba | 0% | 44% | 51% | 0% | 0% | 4% | 0% | 0% |
| Peter Calza | 0% | 50% | 50% | 0% | 0% | 0% | 0% | 0% |
| Kabala | 0% | 14% | 29% | 0% | 19% | 0% | 0% | 38% |
| Alkalia | 24% | 43% | 24% | 0% | 0% | 10% | 0% | 0% |
| Kondebiah | 0% | 81% | 10% | 0% | 0% | 10% | 0% | 0% |
| Gberia Alhakro | 0% | 54% | 46% | 0% | 0% | 0% | 0% | 0% |
| MOF Gbentu | 24% | 14% | 57% | 0% | 0% | 5% | 0% | 0% |
| Kurubonla | 0% | 0% | 100% | 0% | 0% | 0% | 0% | 0% |
| Gberefeh | 0% | 7% | 47% | 0% | 0% | 47% | 0% | 0% |
| Kamaron | 0% | 10% | 90% | 0% | 0% | 0% | 0% | 0% |
| Mongo Ag | 0% | 78% | 22% | 0% | 0% | 0% | 0% | 0% |
| AMASS | 14% | 19% | 57% | 0% | 5% | 0% | 0% | 5% |
| Bambukoro | 0% | 57% | 43% | 0% | 0% | 0% | 0% | 0% |
| Dankawali | 10% | 57% | 33% | 0% | 0% | 0% | 0% | 0% |
| MOF- Koinadugu | 5% | 33% | 48% | 0% | 0% | 0% | 14% | 0% |
| Loma | 5% | 40% | 50% | 0% | 5% | 0% | 0% | 0% |
| UMC Heritage | 19% | 76% | 5% | 0% | 0% | 0% | 0% | 0% |
| Yogomaia | 10% | 19% | 67% | 0% | 0% | 0% | 5% | 0% |
| Yiraia | 5% | 85% | 10% | 0% | 0% | 0% | 0% | 0% |
| Nieni Ballah | 0% | 38% | 62% | 0% | 0% | 0% | 0% | 0% |
| Firiwa | 0% | 0% | 100% | 0% | 0% | 0% | 0% | 0% |
| St Antony | 5% | 38% | 48% | 0% | 0% | 0% | 0% | 10% |
| Sumabria | 12% | 33% | 29% | 0% | 0% | 24% | 0% | 0% |
| Makakura | 0% | 48% | 52% | 0% | 0% | 0% | 0% | 0% |
| Fadugu | 5% | 38% | 57% | 0% | 0% | 0% | 0% | 0% |
| Kasunko islamic | 5% | 29% | 62% | 0% | 0% | 0% | 0% | 5% |
| Kamukeh | 14% | 0% | 76% | 0% | 0% | 10% | 0% | 0% |
| Bafodia | 0% | 48% | 52% | 0% | 0% | 0% | 0% | 0% |

## Appendix F – SSS Student Survey Data

| School: | | AMASS | Bafodia | Kabala | Loma | Mongo |
|---|---|---|---|---|---|---|
| Best time to study | Morning | 25% | 70% | 19% | 15% | 19% |
| | Afternoon | 0% | 0% | 5% | 0% | 4% |
| | Night | 75% | 30% | 76% | 85% | 77% |
| Hours of Night time study | High | 5 | 3 | 6 | 5 | 3.5 |
| | Low | 1 | 0.5 | 1 | 1 | 1 |
| | Average | 2.25 | 1.5 | 2.2 | 2 | 2 |
| Study at school at night | | 0% | 25% | 14% | 45% | 19% |
| It is unsafe to study at night | | 94% | 70% | 57% | 10% | 85% |
| Do you study at home at night? (Y/N) | | 100% | 95% | 100% | 100% | 100% |
| Source of Lighting at home (used for studying) | Kerosene | 0% | 30% | 0% | 0% | 0% |
| | Candles | 65% | 45% | 48% | 75% | 88% |
| | Torch | 30% | 0% | 43% | 15% | 12% |
| | LED | 0% | 0% | 0% | 0% | 0% |
| | SHS | 0% | 0% | 0% | 0% | 0% |
| | Nothing | 0% | 0% | 0% | 0% | 0% |
| | Other | 5% | 25% | 0% | 5% | 0% |
| | Generator | 0 | 0% | 9% | 5% | 0% |
| Cost prevent study time | | 95% | 95% | 90% | 90% | 100% |
| Computer used? | | 10% | 0% | 19% | 15% | 12% |
| mobile phone | | 100% | 15% | 100% | 100% | 19% |
| Internet on phone | | 35% | 10% | 67% | 65% | 4% |
| Phone for study | | 35% | 0% | 52% | 45% | 4% |