Assessment of Sanitary Facilities in Primary Schools, Mando Afaka, Igabi LGA, Kaduna, Nigeria

[1]Wali Itopa Ibrahim &[2] Peret Patience Danlami

Department of Urban and Regional Planning,
Ahmadu Bello University, Zaria Nigeria
E-mail: waliibrahim86@gmail.com, peretshine@gmail.com

Abstract

Sanitation remains a critical aspect of the Sustainable Development Goal, and its facilities are crucial infrastructure for the health, social well-being, and performance of an individual, institution, city, or nation. This is more important when dealing which children, who are a vulnerable part of the populace and require special attention when sanitary facilities are concerned. Much attention has been given to the expansion of schools to accommodate all school-aged children, but the concern of school hygiene and sanitation remains a challenge. This study assessed the sanitary facilities in primary schools in Mando Afaka, Igabi LGA, Kaduna state. Data for this research were obtained from the field using a checklist across the 25 schools in the study area. Descriptive statistics (percentage and frequency) were used to analyse the data presented in tables. Findings revealed that 72% of the schools had an adequate water supply, 60% had urinal points, 20% had adequate toilet facilities, of which 40% of the toilets had no privacy, and 60% had washing hand basins. Primary schools with no toilet facilities practised open defecation, making the children prone to diseases and poor hygiene. Sanitary facilities are inadequate and substandard in some schools, while others are adequate but lack maintenance. The study recommends a coordinated effort from all stakeholders (the public, school owners, local, state, federal, and international agencies) towards achieving proper sanitation through adequate provision and maintenance.

Keywords: Sanitary facilities, children, sustainable development goals, primary school, Mando Afaka

Introduction

Sanitation refers to disease prevention and hygiene promotion through the access and provision of adequate sanitation facilities, safe water, and good personal hygiene practices (UNICEF & WHO, 2012; Ibanga, 2015). Developing countries have the highest global mortality and morbidity rates from poor sanitation, lack of safe water, and poor personal hygiene. Some diseases attributed to poor sanitation include; diarrhoea, cholera, intestinal worm, trachoma, and schistosomiasis have been documented to occur in low and middle-income countries (WHO, 2016). These diseases caused by poor sanitation kill a million Africans each year (Enoh, 2010; WHO, 2016), with diarrhoea accounting for over 15000 deaths among children under the age of five (Kehinde & Umar, 2018). One-fifth of the world's population (533 million of the 2.6 billion people) without proper sanitary facilities are from sub-Saharan Africa (UNICEF, 2010). In 2013, 41% of Nigeria's population had access to sanitation facilities, and in 2018, an estimated 80 million Nigerians had no or little access to proper sanitation facilities (WHO, 2013; WHO, 2021). In a UNICEF report, 86% of Nigerian schools lack access to water and sanitation services making kids between the ages of 1 and 5 very vulnerable to diseases (Ezeh, 2021).

Primary education is the first level of education and serves as the foundation for higher education (World Bank, 2014). Primary school is the first place where kids obtain formal elementary knowledge. In Nigeria, Primary education is compulsory for children irrespective of caste, creed, class, race, and religion (David & Olabanji, 2008; Nwauzi, 2018). Hall et al. (2008) state that poor sanitation, scarce water, and hygiene conditions may influence children's learning capacity. The academic performance, health, and

standard rates of kids going to school are significantly influenced by the sanitation facility's quality, availability, and accessibility (Hall et al., 2008). Studies reviewed showed that an expected 870 million children have diminished learning capacities due to intestinal worm pervasion (Kwame & Zwane, 2014). Girls from marginalised regions leave school due to the lack or absence of school sanitation facilities (Sswm, 2019).

The 4th goal of the sustainable development goals (SDG4) requires "inclusive and equitable quality education" that will provide safe, inclusive, non-violent, and effective learning environments for all" (Sdg4education2030, 2012). Ensuring proper sanitation, access to clean drinking water, and promoting hygiene in schools are crucial but often overlooked aspects vital for children to maintain good health and fulfil their fundamental right to education (Hutton & Chase, 2017). This is under goal 6 of the SDGs, which is to guarantee sanitation and clean water for all. Sanitation and water are fundamental to human and environmental health (SDGS, 2012). The objective of SDG 6 is not limited to resolving issues associated with drinking water, sanitation, and cleanliness (WASH) and the sustainability and quality of the world's water resources. As part of efforts to achieve the Sustainable Development Goals (SDGs), the UN Sustainable Project and the UN Secretary-General identified "Vision 21" as containing provisions for implementation in healthcare facilities and schools (IRC, 2014). The "Vision 21" targets include hygiene education for 80% of schoolchildren and providing every school with sanitation and hand washing facilities by 2015 (UNICEF, 2000; IRC, 2014).

Poor sanitation has a wide range of adverse effects on human and environmental health, including exposure to excreta-related illnesses like cholera, diarrhoea, Hepatitis A, dysentery, and typhoid (WHO, 2016). Poor sanitation is estimated to cause 280,000 diarrhoea-related deaths annually all over the world. About 2800 people die daily in Africa from infections caused by poor sanitary conditions, unsafe water and bad hygiene (Demissie et al., 2021). Children under the age of five in Nigeria have a 38% increased chance of dying due to a lack of proper sanitation and water supplies (Ezeh et al., 2014; Abubakar, 2017; UNICEF, 2020). Similar studies have focused on different aspects of sanitation in developing countries. Ezeh et al. (2014) focused on how improper water and sanitation can increase childhood mortality in Nigeria. At the same time, Yohannes et al. (2014) studied rural communities in southern Ethiopia and how proper sanitation facilities can improve their overall health. Adam et al. (2016) demonstrated that demographics and socio-economic status influenced access to potable water and sanitation in Ghana. Similarly, Abubakar (2017) established the consequences of inadequate sanitation facilities in some Nigerian households. However, few studies have assessed schools' sanitary facilities, especially primary schools, which are vital to protecting the lives of children while trying to achieve SDGs 4 and 6 (Ezeh et al., 2014; Yohannes et al., 2014; Adams et al., 2016; Abubakar, 2017).

WASH facilities (Safe water, decent sanitation, and hygiene) unavailability in schools tends to reduce enrolment and increase low school attendance, limiting students' progress. Achieving SDGs 4 and 6 requires the provision of these basic services. In Nigeria, more than 100 million of its population lack access to basic sanitation facilities, and children remain the most vulnerable population, with over 70,000 deaths annually (UNICEF, 2020). The state of household sanitation facilities has been the focus of most studies, with little emphasis on sanitary facilities for children enrolled in schools. Thus, this paper assesses the availability and condition of water, sanitary facilities, and hygienic practices in Mando Afaka primary schools, Igabi LGA, Kaduna state.

Study Area

Mando Afaka is in the Rigasa ward, Kaduna state, which is one of the largest wards in terms of population in Nigeria and the town was founded by a Borno man from the Kukawa accord (Drpcngr, 2018). Its landmass is about 99km; its geographical location is between latitude 10^0 25' N and 10^0 37' N and between longitude $07^0$24'E and $07^0$31'E of the Greenwich Meridian and North Equator. Igabi local government occupies a central position on the map of Kaduna state.

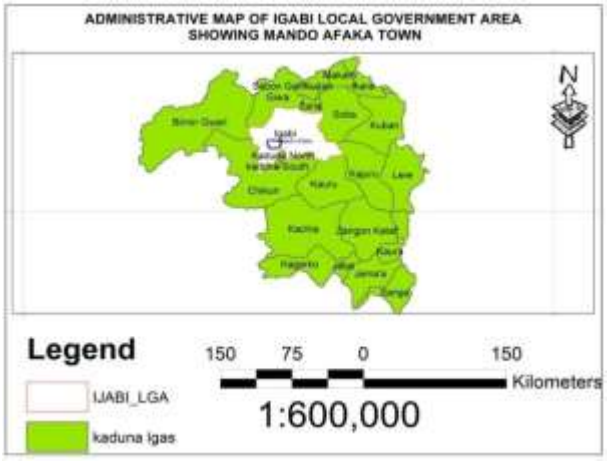

Figure 1: Mando Afaka Town, Igabi Local Government, Kaduna state.

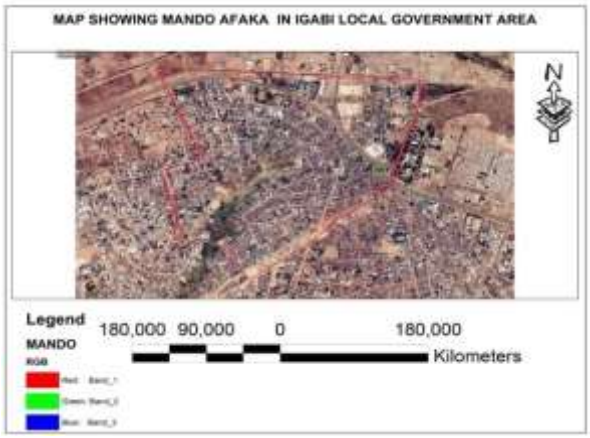

Figure 1: Satellite image and boundary of Mando Afaka town, Igabi LGA, Kaduna state.

Research Methodology

The data for the study was obtained from both primary and secondary data sources. Primary sources include using a checklist, direct observation, and interviews with SUBEB officials in Kaduna state (to acquire information on schools under their supervision). A reconnaissance survey was undertaken to get the total number of primary schools in Mando Afaka town, as the information obtained from the SUBEB office still had to be updated. UTM GEO MAP android application was used to determine the coordinates of each primary school with 2-metre accuracy. This is complemented by secondary data provided by records from SUBEB officials, which helped in knowing registered and government-sponsored schools in Mando Afaka town. The interview with the SUBEB official at the state office provided the requirements and standards needed to establish a school. Twenty-seven primary schools were identified in Mando Afaka town, and 25 were sampled using simple random sampling for the study, as Krejcie and Morgan's (1970) sample size table suggested. A developed checklist was used to assess the primary schools' hygiene, water, and sanitary facilities and compared them to state planning standards (see Table 2). Scores were given based on the condition of each facility adopted by the quality, quantity, and usage sanitation criterion (Reed & Shaw, 2008). Descriptive statistics (Frequency)were used to analyse the data, and the results were displayed in tables.

Table 1: Assessment Scores Description (Reed & Shaw, 2008)

Score	Description
0	Acceptable existing condition or facility. No need for improvement
1	Reasonable existing condition or facility, improvement, or rehabilitation is recommended.
2	Existing condition or facility is bad or poor. Improvement is needed or required urgently.
3	There are no facilities. Provision is urgently required or needed.

Table 2: Planning Standards for Facilities for Children below 11 Years (adopted from Axent Designs)

Facility	Standard
Toilet	1-20
Wash Hand basin	1-20
Urinal Points	1-50

Results and Discussion

A total of 25 schools were sampled in the study area (check appendix for details). The school authorities

gave permission to assess their hygiene, water and sanitary facilities. The results are presented below.

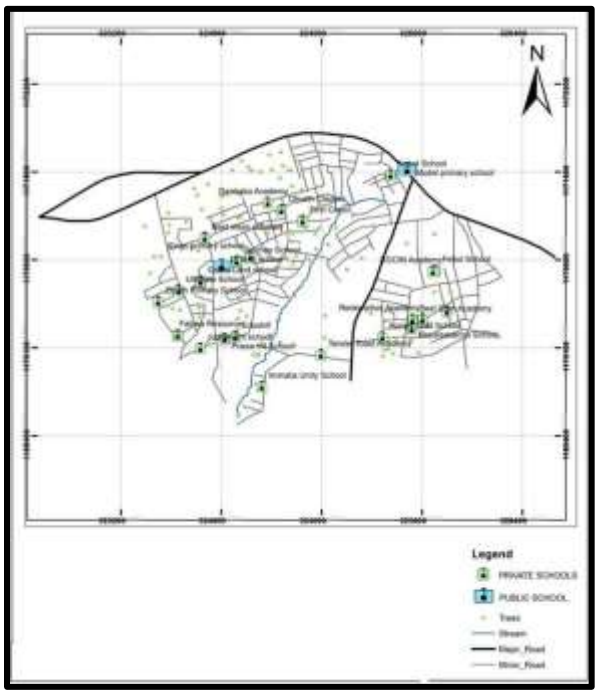

Figure 2: Location of sampled primary schools in Mando Afaka town, Igab LGA, Kaduna

Water Source

The primary schools in Mando Afaka town lacked access to piped water and had to rely on other sources. As shown in Table 3, around 64% of the primary schools sourced their water from wells, while 8% obtained their water from boreholes. Primary schools without wells or boreholes obtained water from water vendors comprised about 28% of the investigated schools. This meant that 72% of the elementary schools in Mando Afaka town had enough potable water to meet the needs of their pupils.

Source of Water

Water source	No of Schools	Percentage
Borehole	2	8
Well	16	64
Water Vendors	7	28
Total	**25**	**100%**

Source: Field Survey, 2021.

Plate 1: Well water source in a school (Source: Field Survey, 2021).

Urinal Facility

The study revealed that approximately 28% of schools had adequate urinals, indicating that urinals were available for both sexes. As shown in Table 4, around sixty% of the respondents had inadequate urinals for both male and female pupils, forcing them to urinate behind some classes or in open areas on school grounds. This increases the likelihood that pupils will contract communicable diseases. About 12% of schools lack urinals, causing students to defecate or urinate in the open or public. Thus, 72% of the students in Mando Afaka's primary institutions are susceptible to infectious diseases due to the shortage of or nonexistent urinal facilities.

Adequacy of Urinal Point

Urinal point Availability	Assessment Score	Respondent	Percentage
Adequate	1	07	28
Inadequate	2	15	60
Not Available	3	03	12
Total		25	100

Source: Field Survey, 2021.

Plate 2: Lack of privacy for urinal points

Plate 3: Lack of privacy for toilet facilities

Toilet Facilities

The study revealed that 20% of schools had adequate toilet facilities, 76% had inadequate toilet facilities, and 4% did not have toilet facilities, as shown in Table 5. The schools with adequate toilet facilities were private schools with a low population. The study also discovered that at least 80% of the schools did not have adequate toilet facilities. Consequently, most pupils practised unhygienic open defecation, thereby promoting the spread of diseases.

Table 5: Availability of Toilet

Adequacy of toilet	Assessment Score	No of Schools	Percentage
Adequate	1	05	20
Inadequate	2	19	76
Not Available	3	01	04
Total		**25**	**100**

Field Survey, 2021.

Washing Hand Basin

The study discovered that 60% of the schools had adequate washing hand basins, 24% had inadequate washing hand basins, and 16% did not have a washing hand basin. The 60% were installed due to the state's regulation during the peak of the COVID-19 pandemic, thus improving hygiene. Further investigation also showed that 40% of the primary schools had none or lacked adequate wash-hand basins necessary for the safe and hygienic environment needed for children.

Table 6: Adequacy of Washing Hand Basin

Item Description	Assessment Score	No of Schools	Percentage
Adequate	1	15	60
Inadequate	2	06	24
Not Available	3	04	16
Total		**25**	**100%**

Field Survey, 2021.

Toilet System

The study revealed that 80% of the schools had water system toilets, 12% had pit toilets, and 8% used alternative means like open defecation. The water system toilet comprised the modern pit latrine and the popular flush toilets. Other practices included open

defecation in designated areas or directly defecating in waste dumps.

Table 7: Toilet System Types

Item Description	No of Schools	Percentage
Water System	20	80
Pit	03	12
Others	02	08
Total	**25**	**100%**

Field Survey, 2021.

Separation of Sanitary Facilities for Gender, Staff and Pupils

The study revealed that 52% of schools separated sanitary facilities for both staff and pupils, while 48% of schools do not have separate sanitary facilities for both staff and pupils. This is necessary to protect the children and have fewer cases of child abuse from adults using the same facility and could take advantage of them.

Table 8: Separation of Sanitary Facility for Staff and Pupil

Sanitary facility	No of Schools	Percentage
Separated facility	13	52
Not separated facility	12	48
Total	**25**	**100%**

Field Survey, 2021.

The study also indicated that 60% of the schools had separate sanitary facilities for males and females. In comparison, 40% of the primary schools did not have separate sanitary facilities for both males and females, as shown in Table 9. This finding reflected the inadequacy of sanitary facilities, which portrayed the need to separate the facility for both genders and the need for privacy as the students grew older.

Table 9 : Separation of Sanitary Facilities for both Genders

Item Description	No of Schools	Percentage
Yes	15	60
No	10	40
Total	**25**	**100%**

Field Survey, 2021.

Plate 4: Separation of sanitary facilities for both genders

Implications of Findings

The study findings showed that most primary schools in Mando Afaka town had a water source, with about 64% of them relying on wells to cater to the water needs of their pupils. A total of 15 primary schools (60%) had inadequate urinal facilities, while three primary schools (12%) had no urinal facilities. The pupils use open spaces to urinate within the school premises to avoid waiting, making them susceptible to infectious diseases. About 76% (19) of the primary schools had inadequate toilet facilities, making most pupils practice open defecation instead of waiting long before accessing the toilet facility. Like the urinal facilities, the use of open school grounds makes the environment unhygienic and aids the promotion of infectious diseases to everyone within the school. The hand wash basin facility for the pupils was adequate in about 60% (15) of the schools, which will aid in the reduction of disease spread, especially after using the toilet or urinal facility. About 40% of primary schools have separate facilities for both males and females, which is essential when they have attained the age of 8 (Thorm, 2017).

Conclusion

This study has shed light on the availability and adequacy of sanitary facilities, which is crucial, particularly in educational institutions and primary schools. It requires the collective effort of individuals, school owners, the government, and other stakeholders to achieve the goal of proper sanitation in our environment. The study has shown that most primary school sanitary facilities are inadequate and require urgent attention to improve or provide new ones. Also, the sanitary facilities in primary schools are not to the state agency's standards, which are in charge of primary schools, which include; toilets, urinals, portable water, and wash-hand basing facilities in the school.

Recommendations

Based on the study findings, the following recommendations were suggested:

1. There is an urgent need to improve these facilities both from the agencies and the proprietors in charge of the schools to improve the children's health, hygiene and learning environment as they attain quality education.
2. School owners should ensure adequate provision of sanitary facilities to meet the number of pupils to avoid pressure on the existing facilities.
3. There should be an awareness program for staff and pupils to maintain the facilities so they can serve effectively, efficiently, and for a longer time.

References

Abubakar, I.R. (2017). Access to sanitation facilities among Nigerian households: determinants and sustainability implications. *Sustainability*, 9(4), 547.

Adams, E. A., Boateng, G. O., & Amoyaw, J. A. (2016). Socio-economic and demographic predictors of potable water and sanitation access in Ghana. *Social Indicators Research*, *pp. 126*, 673–687.

Adams, E.A., Boateng, G.O. & Amoyaw, J.A (2016). Socio-economic and Demographic Predictors of Potable Water and Sanitation Access in Ghana. Soc Indic Res 126, 673–687https://doi.org/10.1007/s11205-015-0912-y

Demissie G.D, Yeshaw Y, Aleminew W, &Akalu Y (2021). Diarrhoea and associated factors among under-five children in sub-Saharan Africa: Evidence from demographic and health surveys of 34 sub-Saharan countries. PLOS ONE 16(9): e0257522 .https://doi.org/10.1371/journal.pone.0257522

Drpcngr (2018). Open Access to Primary and Secondary Data on Knowledge, Attitudes and Practices on Early Marriage in Northern Nigeria for Researchers – dRPC.Drpcngr.org. Retrieved 19 November 2021, from https://drpcngr.org/open-access-toprimary-and-secondary-data-onknowledge-attitudes-and-practices-on-early-marriage-innorthern-nigeria-for-researchers-2/.

Ezeh Fred (2021). "UNICEF: 86% of Nigerian schools lack of access to water, Sanitations services. Sunnewsoline.com.

Ezeh, O. K., Agho, K. E., Dibley, M. J., Hall, J., & Page, A. N. (2014). The impact of water and sanitation on childhood mortality in Nigeria: evidence from demographic and health surveys, 2003-2013. International Journal of Environmental Research and Public Health, 11(9), 9256–9272. https://doi.org/10.3390/ijerph110909256

Hall, A. (2008). 'A Review and Meta-Analysis of the Impact of Intestinal Worms on Child Growth and Nutrition', Maternal & Child Nutrition, vol. 4, no. s1, 14 February 2008, pp 118–236.

Hutton G., & Chase C. (2017). Water Supply, Sanitation, and Hygiene. In: Mock CN, Nugent R, Kobusingye O, et al., editors. Injury Prevention and Environmental Health. 3rd edition. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2017 Oct 27. Chapter 9. Available from: https://www.ncbi.nlm.nih.gov/books/NBK525207/doi: 10.1596/978-1-4648-0522-6_ch9

Ibanga, E. (2015). An assessment of environmental sanitation in an urban community in Southern Nigeria. African Journal of Environmental Science and Technology, 9(7), 592–599.https://doi.org/10.5897/ajest2015.1882

I.R.C International Water and Sanitation Centre (2005) 'Adolescent Girls and School Hygiene, Sanitation and Water', School Sanitation and Hygiene Education Notes and News, IRC, Delft, Netherlands, May 2005, pp1-8.

IRC(2014). School Sanitation & Hygiene Education. Washinschoolsindex.com. Retrieved 8 December 2021, from https://washinschoolsindex.com/storage/documents/October2018/dy9D0BoyH3nSoZD nPt.pdf.

Kehinde Peter, A., & Umar, U. (2018). Combating diarrhoea in Nigeria: the way forward. Journal Of Microbiology & Experimentation, 6(4). https://doi.org/10.15406/jmen.2018.06.00213

Kremer, M. &Zwane, A (2014). Deworming the world for better schools, brighter futures.https://www.weforum.org/agenda/2014/12/deworm-the-world-schools-programme-kremer-zwane/

Nwauzi, L. (2018). The Right of Children to Free and Compulsory Education; Nigerian and International Perspectives. 10. 367–377.

Olaniyan A. David and E. Obadara Olabanji, 2008.A critical review of management of primary Education in Nigeria. The Social Sciences, 3:411-419.

Protos Uganda (2005). Preliminary literature study to a School Sanitation and Hygiene Education (SSHE) Strategy, Bushenyi.

Pruss J. (2002). Environmental Health Perspectives, Volume 110, Number 5, May. Pruss-Ustun, Annette (2008) Safer Water, Better Health: Costs, benefits and sustainability of interventions to protect and promote health, World Health Organization, Geneva, p.8.

Reed, R. A. and. Shaw, R. J (2008). Sanitation for Primary Schools in Africa. Water, Engineering and Development Centre (WEDC), Loughborough University, UK.

Sdg4education (2012). Sustainable Development Goal 4 (SDG 4): Education within the 2030 Agenda for Sustainable Development. Retrieved 11 December 2021, from https://sdg4education 2030. org/the-goal.

Sdgs (2012). Goal 6 | Department of Economic and Social Affairs. Sdgs.un.org. Retrieved 11December 2021, from https://sdgs.un.org/goals/goal6.

Sswm (2019). Water, Sanitation and Gender: Find tools for sustainable sanitation and water management. Retrieved 10 December 2021, from https://sswm.info/arctic-wash/module-1introduction/further-resources-sustainability-relation-water-sanitation/water %2Csanitation and-gender.

Thorm, P. (2017). School toilets: Guidance and regulations. SecEd. Accessed on 14 November 2021, from sec-ed.co.uk/best-practice/school-toilets-guidance-and-regulations/

UBEC, (2010). Minimum standards for Basic Education in Nigeria: Education for all is the responsibility of all. Retrieved from. http://wbgfiles.Worldbank.org/documents/ hdn/ed/saber/supporting_doc/AFR/Nigeria/TCH/Minimum%20Standards%20for%20Basic%20Education.pdf

UNICEF (2021). Water, Sanitation and Hygiene. Available at:https://www.unicef.org/Nigeria/water-sanitation-and-hygiene> [Accessed 31 November2021]

United Nations (2021). Sanitation Fact Sheet Nigeria. http://esa.un.org/iys/review09/countries/nigeria/pdfs/Nigeria-SanitationFactsheet NigeriaType1.pdf.

WHO (2010). Developing guidelines for water, sanitation and hygiene promotion in schools World Health Organization India, [Cited Oct 2012]; Available from http://www.searo. Who.int/ LinkFiles/SDE_EH-566.pdf

WHO (2016). Sanitation: Fact Sheet; World Health Organization Media Center,2016.Available online:http://www.who.int/mediacentre/factsheets/fs392/en/(accessed on 11December 2021).

World Bank (2014). Education is fundamental to development and growth. "The First 7": Conference on Early Childhood.

Yohannes, T.; Workicho, A.; Asefa, H.A. (2014). Cross-Sectional Study: Availability of Improved Sanitation Facilities and Associated Factors among Rural Communities in Lemo Woreda, Hadiya Zone, Southern Ethiopia. Open Access Libr. J. 2014, 1, e1020.

Appendix

Table 10: Sampled Primary schools in Mando Afaka town, Igabi LGA

S/N	NAMESOFSCHOOLS	Ownership	NORTHING	EASTING
1	BestStartAcademySchool	Private	10345891	724189
2	BestStepsScholars	Private	10351977	7234075
3	COCINAcademy	Private	1035115	7242419
4	DominatorsAcademy	Private	1035107	7242784
5	EduskillSchool	Private	10345431	7233241
6	FebolSchool	Private	10351168	7242485
7	FatimaIntellectualResource	Private	10345462	7231738
8	FirstClass Academy	Private	10352432	7234995
9	GraceLandSchool	Private	103586	723233
10	HoneyGoldModelSchool	Private	10345444	7241105
11	ImmaliaUnitySchool	Private	1034414	7233942
12	JudeenInternationalSchool	Private	10345123	7232327
13	KingsComprehensiveCollege	Private	10351494	723362
14	ModelPrimarySchool	Public	10353781	7241732
15	NobelPrimarySchool	Private	10353638	7241297
16	OlivethClassesSchool	Private	10352714	723444
17	PraiseInternationalSchool	Private	10345372	7232966
18	RedemptionAcademy	Private	10345909	7242147
19	RenaissancePrimarySchool	Private	10345654	7241105
20	TenderToastAcademy	Private	1034497	7235498
21	TerchasInternationalSchool	Private	10351378	723328
22	UltimateLearnersHub	Private	1035611	7231762
23	UniversalBasicEducation	Public	10351261	7232884
24	UsmanDanbabaAcademy	Private	10352904	7234075
25	ZenithPrimarySchool	Private	1035326	7231217