School Library Influence on Students' Achievement in Science: A Case of Rural and Urban Areas of Ekiti State, Nigeria

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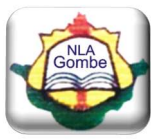kutujacob82@gmail.com
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Abstract

This study investigated the extent of school library influence on students' achievement in science subjects in urban and rural areas of Ekiti State, Nigeria. The significance of this study revolves round the importance attached to science education being a mechanism adopted for achieving national economic growth in Nigeria. Mixed methods was the methodological approach adopted for the study. The study's population comprised school librarians, science teachers and science students in secondary schools. Questionnaires and observation/policy documents were instruments of data collection. Data - West African Examination Councils (WAEC) results, collected were statistically analysed to determine students' academic performance in science subjects in both rural and urban areas of the state, while data collected through the questionnaire were analysed using the Statistical Package for Social Sciences (SPSS). The study revealed that the majority of available science library resources that support students' achievement in science was textbook, and that the location (rural or urban areas) of schools in the state does not make any difference to students' performance in science subjects. The study underscored the anomaly of regarding textbook as part of library resources in Nigeria, and offers some far reaching recommendations that could position school libraries for realizing the government's vision of economic growth.

Keywords: School Library, Students' Achievement, Science Subjects, Rural/Urban Areas, Ekiti State, Nigeria

Introduction

Science is the major mechanism that drives the 21st century. It is in this view that the United Nations Educational, Scientific and Cultural Organization (UNESCO) made its mission to spread not only education, but make a prominent interest in science education wherever it is offered. Through different ways, UNESCO has pushed for curriculum updating where necessary, offered hands-on workshops, provided kits, textbooks and guide books which are made available free of charge for teachers and students, and assists member states to ensure that a sound basis in science education is not just a privilege but a right. In a bid to achieve this laudable project, UNESCO recognizes the importance of libraries and, with joint efforts with Nature Education and Roche, developed the World Library of Science, a free online resource

for science learning discovery (UNESCO, 2005; UNESCO Science Education, n. d.; UNESCO World Library of Science, n. d.). This is to inspire inquisitiveness in science, facilitate collaboration and foster scientific enquiry. Inspiringly, in the mist of this development, Africa has been selected as its priority area.

In Nigeria, secondary school education is the link between primary and tertiary education. It is the foundational basis of science. The government has placed emphasis on science to achieve its economic growth (Economic Transformation Blueprint, 2009). Prominent international organisations such as the International Federation of Library Associations (IFLA) and the UNESCO, have acknowledged the importance of libraries in schools, especially in developing countries such as Nigeria. In 1999, the International Federation of Library Associations and The United Nations Educational, Scientific and Cultural Organization (IFLA/UNESCO) published a School Library Manifesto, which stated that: the school library is essential to every long-term strategy for literacy, education, information provision and economic, social and cultural development. It has been demonstrated that, when school librarians and teachers collaborate, students achieve higher levels of literacy, reading, learning, problem-solving and information and communication technology skills.

Problem Statement
The role of the school library in science curriculum implementation is recognised by the Nigeria National Policy on Education (NNPE) (2013, p. 38) which states that, the school library is one of the most important educational services, hence proprietors of schools should make available well equipped libraries in all their schools in agreement with the laid down standards. Secondary school education serves as a crucial link between basic education and the world of work on the one hand, and further education and training on the other. Secondary school education serves as the bedrock and foundation to equip students to effectively live in the modern age of science and technology (Nigeria Universal Basic Education Commission (NUBEC), 2010). If the government's vision is to adopt science to achieve its economic growth, then there is a need to investigate the efficacy of school libraries in science education in senior secondary schools. Very little is known about if the availability of library resources in rural vs urban areas makes a difference in students' performance in science in Ekiti State, Nigeria. It is against this background that the study investigates: the extent of school library influence on students' achievement in science in urban and rural areas of Ekiti State, Nigeria. In achieving the purpose of the study, the gap in research will be addressed with the following objectives:

- To find out the available library resources in rural/urban areas that support science curriculum delivery
- To investigate if the availability of library resources in rural vs urban areas makes a difference in students' performance in science in Ekiti State, Nigeria.

Reviewed of Related Literature

A review of related literature on impact/influence of school libraries on academic achievement in science and library resource utilisation is conducted.
- **Impact/influence of school libraries on academic achievement in science**
International studies have unequivocally provided evidence to support the positive impact of school libraries on learners' performance. For instance, in more than 60 studies carried out in 19 states in the USA and a Canadian province (Gretes, 2013), the major findings of these studies are that students with access to well-supported school libraries with a full-time certified
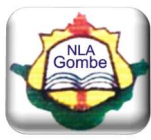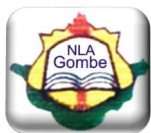
librarian scored higher on reading assessments regardless of their socio-economic status. All things being equal, in most of the international studies, researchers concluded that, students' performance increases when a school library is stocked, staffed and fully-funded (Friend & Cook, 2010; Small, Snyder & Parker, 2009).

In a study conducted by Lance and Hofschire (2012) on change in school librarian staffing associated with change in the Colorado Student Assessment Programme (CSAP) reading performance (from 2005 to 2011) revealed that students at schools with a professional librarian managing the library programme achieved higher scores in the CSAP reading scores and higher improvements in those scores over time than students at schools with library programmes being managed by non-professional librarians. This shows that having somebody managing the school library is not enough but a fulltime professional librarian is what can actually impact positively students' academic performance.

In Scotland, a study carried out by Williams, Wavell and Morrison (2013) on the influence of school libraries on learning, revealed that school libraries had influence on exam scores resulting in academic attainment; effective curriculum implementation or learning outcomes (academic performance), including IL practice, good project work development, and positive attitudes towards learning. Similarly, in The Netherlands, Nielen and Bus (2015) carried out a study to compare students from schools with an enriched/equipped school library, that is, one with more up-to-date resources with students from schools with a typical (not well equipped) school library. They verified impacts of an equipped school library on reading motivation and academic skills reading frequency. Students in schools with well-equipped libraries scored higher on a standardized reading comprehension test than students in control schools (Nielen & Bus, 2015). With the revelation of studies from Williams, Wavell and Morrison (2013) and Nielen and Bus (2015), one can easily conclude that a well-resourced school library is one of the most important factors that determines students' performance in schools.

Yusuf (2014) investigated the impact of school library services and library utilisation on student performance in Eastern Hararghe, Ethiopia. The study determined that school library utilisation does impact students' academic performance positively. He recommended broadening the range of information sources and services provided in school libraries through equipping them with enough current and relevant information sources and services in addition to employing adequate qualified library staff. In Tanzania, Ida (2016) carried out a study to determine the influence library services have on students' performance in the Certificate of Secondary Education Examination (CSEE) in Mtwara Mikindani Municipality. The students from secondary schools with well-equipped libraries performed better in the CSEE than students from secondary schools without school libraries. The availability of well-equipped school libraries encouraged learning habits and strengthened students' study skills which ultimately resulted in better performance of the students in the CSEE.

In Nigeria, as in other countries around the world, the dissenting opinions that the education standard has fallen has seriously brought about arguments of what could be responsible for the decline (Owate & Iroha, 2013). Various factors responsible for this decline in education standards have been debated by researchers and scholars. However, at the centre of these arguments, school libraries have not been strongly recognised by researchers and scholars as one of the significant and viable educational vehicles for national development. Based on the importance of the library as highlighted by the NNPE, good standard education cannot be achieved in isolation from school libraries (NNPE, 2013).

Adeyemi (2010) studied school library and students' learning outcomes in secondary schools in Ekiti State, Nigeria, and employed an inventory as the instrument of data collection for the study, which contained information about the level of school library development and secondary school students' learning outcomes in the State. The findings showed that the level of development of school libraries in the state was low, while school library conditions were poor. However, with just an inventory as the instrument of data collection, the findings of the study could not be subjected to the parameters of validity since there was no opportunity for data triangulation. Owoeye and Yara (2011) studied school facilities and secondary school academic achievement in agriculture in Ekiti State, Nigeria. The study population was final year students, and the data collection method was the West African Senior School Certificate Examinations (WASSCE) results conducted between the years 1990 and 1997 in some secondary schools in the state. In this study's findings there were no significant differences in the students' performance in agricultural science between rural and urban schools in the state. However, Owoeye and Yara's study may not give true reflection of what was operating in 2011, since the data analysed for the study was WAEC results conducted more than 13 years before the study (1990 and 1997).

Olaojo (2013,p. iv) investigated the "influence of availability and teachers' utilization of library media resources on the cognitive achievement of secondary school students in social science subjects in Oyo State" and reported that providing library resources in the required quantity and quality would influence the students cognitive achievement in social science subjects in senior secondary schools.

- **Library resource utilisation**

An effective educational system depends substantially on the accessibility and utilization of library resources and services (Jamil, Tariq & Jamil, 2013). In this regard, a school library is providing information resources and services for teaching, learning and research. A school library is supporting and encouraging adopting new methods of teaching and learning, for instance, collaborative studies, group projects, group study, inquiry-based learning and team work (Edward & Fisher, 2002). Many studies were carried out on the utilisation of a school library. For example, in a study carried out Agyekum and Filson (2012) on the utilisation of library resources by students in Ghanaian schools revealed that the majority of the students utilise library resources and services to complement their class notes, do their assignments and helped them in the preparation for examinations.

In Nigeria, Moruf and Muhammed (2015) and Olajide and Ariwodola (2009) conducted separate studies on the utilisation of school libraries, and both revealed inadequate funds and materials (that is, materials not in line with curriculum), exclusion of library hours from the school timetable, lack of professional staff to manage the library as the major problems hindering teachers and students from effectively utilising school library resources and services in the country. Both their findings recommended programmes like seminars and on the job in-house training that promotes library use education for librarians; considerable provision of funding for libraries, employment of qualified library personnel, formulation of school library standards with provisions of adequate funds by all concerned stakeholders and encouraging the orientation of teachers about the benefits of better information seeking behaviour with library resources.

Omah and Urhiewhu (2016) conducted a study on a strategy for the effective utilisation of school library resources in Karim Lamido Local Government Area of Taraba State, Nigeria, and revealed that textbooks were the major resource utilised to a high extent in secondary
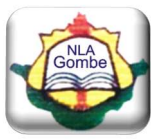
schools in the local government, while televisions and computers were utilized to a low extent. The low level of utilisation could be attributed to either inadequate or unavailable resources. The study recommended seminars and programmes to enlighten students on the relevance of the utilisation of school library resources and services as this would help in enhancing the library resources utilization level; and school authorities should look inward to internally generate funds for equipping the school libraries by engaging the communities they serve through the Parent Teachers Association (PTA). Therefore, to achieve successful implementation of curriculum content in any school, a functioning library needs to be in place.
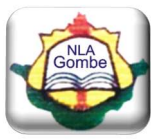
The review revealed that many studies, most especially from Australia, the USA (Gretes, 2013; Lance, Hamilton-Pennell & Rodney, 2005; Lance & Hofschire 2012; Small, Snyder & Parker, 2009), UK (Williams, Wavell & Morrison, 2013), Netherlands (Nielen & Bus, 2015) and some African (Adeyemi, 2010; Ida, 2016; Olaojo, 2013; Yusuf, 2014) have examined the influence of the school library on academic performance as well as predictors of science students' performance in secondary schools. Countries such as the USA, UK and Australia have long understood that textbook is no longer library resources but classroom necessity and that utilization of school libraries have a positive impact/influence on the academic performance of students in secondary schools. However, it seems some of African countries, in theory, tend to agree with this but in practice they are far behind. There seems to be varied factors predicting academic performance in secondary schools. This could be as a result school library standard in various secondary schools in the nations of the world. From the literature emanating from Nigeria, it could be deduced that school libraries have not been strongly considered as one of the predictors of academic performance of science students in secondary schools. However, it is glaring that school libraries in Nigeria have not been well funded, which has resulted to their poor condition (Ajegbomogun & Salaam, 2011; Eghosa, 2011; Uzuegbu & Ibiyemi, 2013).

Methodology

A mixed-methods approach was chosen for the study which combined elements of quantitative and qualitative approaches for the purposes of breadth and depth of understanding and corroboration. The study site for the research was Ekiti State, one of Nigeria's 36 states. Ekiti State comprises 16 Local Government Areas which is politically divided into three senatorial districts – north, central and south (Ekiti Yellow Pages 2005). The Nigerian educational system is predominantly British oriented, and the 6-3-3-4 educational system was adopted, which makes provision for six years of primary education, three years of junior and three years of senior secondary school (SSS) education and four years for tertiary education.

The population of this study comprises school librarians, science students and science teachers in 187 public senior secondary schools in Ekiti State. Twenty seven schools offerings science subjects were randomly selected to represent the three senatorial districts in the state, that is, nine schools from each of the district. Thirteen participants (one school librarian, four science teachers teaching mathematics, physics, chemistry and biology and nine SSS 3 science students) were purposively selected (because they teach science subjects in senior classes) to respond to a questionnaire. They were from each of 27 schools from three selected local governments (Ado, Ikere and Ido/Osi) which represent the three senatorial districts of the state. The total sample size for the study was 351 participants. Further, observation (of all the 27 school library resources) was employed to elicit information for the study.

Discussion of Findings

The research findings are presented and discussed under the headings: location (urban or rural) of the schools and library location within the school, availability of library resources that support academic performance in science subjects and relationship between availability of library resources and students' performance in science subjects in urban and rural areas.

Location (urban or rural) of the schools and library location within the school
Findings confirmed that the majority (63%) of schools are located in urban areas whereas 37% of schools are in rural areas (see Table1). Since Nigeria's rural-urban population ratio is 52:48 (World Population Review, 2019), ordinarily, one expected schools in rural areas to be more than that of urban areas. However, the rapidly growing population of inhabitants in Ekiti State urban areas could be attributed to why they had many schools in the areas. For instance, the rapid population growth in urban areas informed the reason the present administration in Ekiti State recently established four additional schools, which were all located in Ado-Ekiti, the state capital to decongest the public schools in the capital city in view of its growing population (Nejo, 2019).

Further, most of the school librarians (66.7%) said their school libraries were in separated/purpose-built buildings, while 29.6% said classrooms were being used as a library. Less than 5% used store house/rooms as their libraries. Also, the selected schools cut across both rural and urban areas in the state, with the majority of respondents (63%) locating their schools in urban areas, while 37% located their schools in rural areas (as revealed in Table 1). The 27 schools were selected from all the three local governments of the three senatorial districts in the Ekiti State, that is, nine schools each were selected from Ado, Ido/Osi and Ikere local governments respectively.
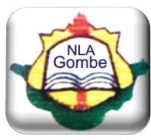
Table 1: Location (urban or rural) of the schools and library location within the school
N = 27

Locations	Frequency	Percentage (%)
Location of the school libraries:		
Classrooms	8	29.6
Separate /Purpose-built building	18	66.7
Store House/Room	1	3.7
Location of schools:		
Urban	17	63
Rural	10	37

Availability of library resources that support academic performance in science subjects
In a bid to know the available resources in school libraries that that support academic performance in science, respondents were requested to mention the resources that were available in their library. Table 2 revealed that 236 (98.3%) students were aware of science textbooks in their school libraries followed by 80.8% who were aware of dictionaries. Only 24.2% were aware of internet facilities. This results is contrary to international perceptions of school library resources to include 3D printers, robotics, craft and software and hardware supplies (Burke, 2015; Howell & O'Donnell, 2017) and not textbook as part of library resources but a classroom necessity.

Further, researcher observed that all the school libraries had science books, although mainly textbooks. Some libraries did not have appreciable numbers of texts on physics. Some school libraries were still holding on to obsolete textbooks. From the accession registers, the researcher could obtain the total number of science resources in each subject of all the schools.

Worthy of mention is three schools (SCHL#12, SCHL#14 and SCHL#24) which could not produce their accession registers during the first visit (March, 2018) to schools due to a lack of proper record keeping on the part of the library staff were able to organize within the period the researcher went back for the second visit in February, 2019.

Table 2: Availability of library resources that support academic performance in science subjects

N = 240

What types of resources are you aware of in your school library that support your academic performance in science subjects?	Ido Osi/EKiti North Senatorial District	Ado Ekiti/Ekiti Central Senatorial District	Ikere/Ekiti South Senatorial District	Total
	Local Government Area/Senatorial Districts			
Science textbooks	77 (96.3%)	80 (100%)	79 (98.8%)	236 (98.3%)
Fiction science books	33 (41.8%)	38 (46.9%)	37 (46.3%)	108 (45.0%)
References	24 (30.4%)	43 (53.1%)	37 (46.3%)	104 (43.3%)
Encyclopaedias	30 (38.0%)	33 (40.7%)	41 (51.3%)	104 (43.3%)
Dictionaries	73 (92.4%)	61 (75.3%)	60 (75.0%)	194 (80.8%)
Magazine	27 (34.2%)	32 (39.5%)	30 (37.5%)	89 (37.1%)
Newspapers	22 (27.8%)	20 (24.7%)	24 (30.0%)	66 (27.5%)
Journals	16 (20.3%)	18 (22.2%)	19 (23.8%)	53 (22.1%)
Yearbooks	15 (19.0%)	30 (37.0%)	20 (25.0%)	65 (27.1%)
Internets services	15 (19.0%)	23 (28.4%)	20 (25.0%)	58 (24.2%)
CD/DVD-ROMs	20 (25.3%)	15 (18.5%)	10 (12.5%)	45 (18.8%)
Computer games	10 (12.7%)	11 (13.6%)	12 (15.0%)	33 (13.8%)
Documentaries	30 (38.0%)	36 (44.4%)	31 (38.8%)	97 (40.4%)
Charts & pictorials	20 (25.3%)	15 (18.5%)	29 (36.3%)	64 (26.7%)
Pictures	24 (30.4%)	18 (22.2%)	20 (25.0%)	62 (25.8%)
Wall charts	37 (46.8%)	15 (18.5%)	30 (37.5%)	82 (34.2%)
Flip charts	9 (11.4%)	9 (11.1%)	14 (17.5%)	32 (13.3%)
Real objects/samples	12 (15.2%)	17 (21.0%)	24 (30.0%)	53 (22.1%)
Television	9 (11.4%)	12 (14.8%)	7 (8.8%)	28 (11.7%)
microscopic slides	23 (29.1%)	14 (17.3%)	17 (21.3%)	54 (22.5%)
Article topics collections (e.g. newspapers and magazines cuttings)	9 (11.4%)	14 (17.3%)	16 (20.0%)	39 (16.3%)

Relationship between availability of library resources and students' performance in science subjects in urban and rural areas

An investigation to know if the available library resources makes a difference in students' performance in science subjects between rural and urban areas constituted the main research objective of the study. Data for answering this research objective were gathered through a quantitative analysis of the questionnaire (Table 2) and qualitative analysis of past WAEC results, as revealed in Table 3.

Table 3: Summary of 2015 to 2017 WAEC results of students in 27 selected secondary schools in the three selected local government areas of Ekiti State

Subjects	Total number of registered students	Students' marks/scores		
		60% and above (A1, B2, B3, C4)	From 50% to 59% (C5 & C6)	Less than 50% (D7, E8, F9)
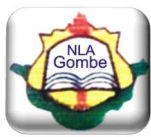
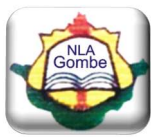|		(Good)	(Average)	(Below average)
Ado local government				
Mathematics	2823	1104 (39.1%)	1140 (40.4%)	579 (20.5%)
Physics	1382	98 (7.1%)	479 (34.6%)	805 (58.3%)
Chemistry	1384	605 (43.7%)	631 (45.6%)	148 (10.7%)
Biology	1380	227 (16.4%)	695 (50.4%)	458 (33.2%)
Ido/Osi local government				
Mathematics	1328	207 (15.6%)	603 (45.4%)	518 (39%)
Physics	599	55 (9.2%)	252 (42.1%)	292 (48.7%)
Chemistry	630	213 (33.8%)	314 (49.8%)	103 (16.4%)
Biology	624	143 (22.9%)	338 (54.2%)	143 (22.9%)
Ikere local government				
Mathematics	2179	637 (29.2%)	706 (32.4%)	836 (38.4%)
Physics	1158	161 (13.9%)	588 (50.8%)	409 (35.3%)
Chemistry	1068	466 (43.6%)	429 (40.2%)	173 (16.2%)
Biology	1078	292 (27.1%)	521 (48.3%)	265 (24.6%)

Source: Planning, Research and Statistics Department (2018). Ekiti State Ministry of Education, Science & Technology, Ado-Ekiti

The relationship between students' performance in science subjects (mathematics, physics, chemistry and biology) in WAEC results from 2015 to 2017 and availability of library resources are presented in Table 3. The results reveal that 78.4% of students in schools with few or no library resources managed to score average marks in the WAEC examination (X^2=8.014, p=0.018 (p-value<0.05)), while less than 11% of students in schools in urban areas with library resources of mainly textbooks could only manage to score good marks in the same external examination. In the same development, the majority (70%) of students in schools in rural areas with few or no library resources could only manage to score average marks in the WAEC examination (X2=4.253, p=0.119 (p-value>0.05)), while only 10% of students in schools in rural areas with library resources of mainly textbooks) could score good marks in the same external examination. It can be inferred from these results that location (urban or rural) of schools does not make any difference on students' performance in science subjects but the availability of library resources (textbooks).

This confirms Owoeye and Yara's (2011) study on "school facilities and academic achievement of secondary school agriculture in Ekiti State, Nigeria", which revealed that there were no significant differences in the students' performance in agricultural science between rural and urban schools. However, this study is in contrast with Odumbe, Enose and Ayodo's (2015) study on factors influencing student performance in day-secondary schools in Kenya, which revealed location of schools in urban/rural poor environments respectively as the factors influencing student academic performance. This contradiction could be attributed to the nature of Kenyan curriculum which emphasises more of practical sessions as opposed to oral teaching, and evaluation through continuous assessment tests (CATs) on the skills acquired as against memorizing for examination (Wanjala, 2017), unlike the Nigerian curriculum which is content driven and examination oriented with school library resources being mainly textbooks.

Table 4: Influence of available library resources on science subjects' curricula delivery N=240

Location	Performance of students in science subjects

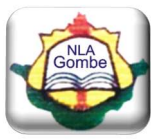|	Availability of library resources that support/influence science curriculum delivery	Below average	Average	Good
Urban	Available	10.8%	78.4%	10.8%
	Not Available	66.7%	33.3%	0.0%
	Pearson Chi-Square	**X^2=8.014, p=0.018 (p-value<0.05)**		
Rural	Available	20.0%	70.0%	10.0%
	Not Available	50.0%	0.0%	50.0%
	Pearson Chi-Square	**$X2$=4.253, p=0.119 (p-value>0.05)**		
		Available 12.8%	76.6%	10.6%
		Not Available 60.0%	20.0%	20.0%
Pooled (average) percentage		**Pearson Chi-Square** **$X2$=9.427, p=0.009 (p-value<0.05)**		

Implications of this Research

This research is worthwhile in providing a platform for school principals, teachers and education stakeholders as well as curriculum developers in Nigeria to engage in and determine appropriate pedagogical methods of implementing inquiry-based learning. This is imperative given that government has adopted science in actualizing its economic growth and the opportunity science offers by productively positioning the country in the wake of Fourth Industrial Revolution (Industry 4.0). Besides, secondary school education serves as the foundation to equip students to effectively live in the digital age of science and technology and for more knowledge in tertiary institutions and world of work. In addition, this study would empower teachers and school librarians in Nigeria to reconsider traditional approaches to teaching and library orientation and instead lay more emphasis on the constructivist approaches and acquisition of 3D objects, non-fiction science books; science board games; robotics; charts; craft; models and ICT software.
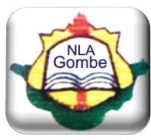
Conclusions and Recommendations

The aim of this study is to investigate extent of school library influence on students' achievement in science in urban and rural areas of Ekiti State, Nigeria. In view of the findings, it is concluded that the majority of available science library resources that support students' achievement in science was textbook. This underscores the anomaly of regarding textbooks as part of library resources in Nigeria. Though, the available textbooks in school libraries made a slight positive difference in students' performance in science subjects in WAEC but the location (urban or rural) of schools does not.

Based on the findings and conclusion, it is, therefore, recommended that government and all concerned stakeholders should equip the school libraries in all the state and equally employ qualified personnel to manage them. Further, school library resources should go beyond just textbooks to include resources such as: 3D objects, non-fiction science books; science board games; robotics; charts; craft; models and ICT software. These resources revitalize teaching and learning, and go a long way in achieving independent and lifelong learning necessary to achieve Nigeria's economic growth.
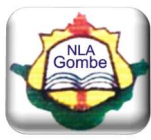
References

Adeyemi, T. O. (2010). The school library and students' learning outcomes in secondary schools in Ekiti State, Nigeria. *Asian Journal of Business Management volume* 2(1): 1-8. Retrieved from http://fieldmarshamfoundation.org/wpcontent/uploads/tumblr/References/Nigeria%20Case%20study%20school%20library%20learning%20outcomes.pdf

Ajegbomogun, F. O. & Salaam, M. O. (2011). The state of school libraries in Nigeria. *PNLA Quarterly: The official Publication of Pacific Northwest Library Association* 75(3): 1-8. Retrieved from https://pnla.org/wp-content/uploads/2018/03/volume-76-3.pdf

Agyekum B. O. & Filson, C. K. (2012). The challenges of school libraries after the implementation of the new educational reforms in Ghana. *Library Philosophy and Practice (e-journal)*. 932. Retrieved from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2282&context=libphilprac

Burke, J. (2015). Making sense: can makerspaces work in academic libraries? ACRL 2015, Portland, OR, 25-28 March, pp. 497-504. Retrieved from http://www.ala.org/acrl/sites/ala.org.acrl/files/content/conferences/confsandpreconfs/2015/Burke.pdf

Economic Transformation Blueprint (2009). Nigeria Vision 20:2020. Retrieved from http://www.nationalplanning.gov.ng/images/docs/NationalPlans/nigeria-vision-20-20-20.pdf

Edward, B. & Fisher B. (2002). *Libraries and Learning Resource Centers*. Boston: Architectural Press.

Eghosa, B. L. (2011). *Perception of the library by secondary school students in enhancing success in their examinations: myth or reality?* Proceedings of the 2011 International Conference on Teaching, Learning and Change, International Association for Teaching and Learning (IATEL) pp. 573-580. Retrieved from http://www.hrmars.com/admin/pics/165.pdf

Ekiti Yellow Pages (2005). *A comprehensive directory of organisations and institutions in Ekiti State of Nigeria, Ado-Ekiti.* KELDA investment Ltd in collaboration Ekiti State Ministry of Commerce, Industries and Cooperative.

Friend, M. P. & Cook, L. (2010). *Interactions: Collaboration skills for school professionals.* Boston, MA: Prentice Hall.

Gretes, F. (2013). *School library impact studies: A review of findings and guide to sources*. Harry & Jeanette Weinberg Foundation. Retrieved from https://www.baltimorelibraryproject.org/wpcontent/uploads/downloads/2013/09/Library-Impact-Studies.pdf

Howell, S. & O'Donnell, B. (2017). Digital trends and initiatives in education: The changing landscape for Canadian content. Ontario: The Association of Canadian Publishers (ACP). Retrieved from http://www.ontariocreates.ca/Assets/Research/Research+Reports/Digital+Trends+and+Initiatives+in+Education/Digital+Trends+and+Initiatives+in+Education.pdf

Ida, L. (2016). *Influence of library services on students' academic performance in an ordinary certificate of secondary education examination in Mtwara Mikindani Municipality, Tanzania.* (Master Dissertation). Retrieved from http://repository.out.ac.tz/1822/1/DISSERTATION_-_LEO_IDA_FINAL.pdf

IFLA/UNESCO (1999) School Library Manifesto. Retrieved from https://www.ifla.org/publications/iflaunesco-school-library-manifesto-1999

Jamil, M., Tariq, R. & Jamil, S. (2013). Library resources: Utilization by teachers and students. *Bulletin of Education and Research* 35(2): 19-35.

Lance, K. C., Hamilton-Pennell, C. & Rodney, M. (2005). Information empowered: The school librarian as an agent of academic achievement in Alaska schools. *Illinois School*

Library Media Association. Retrieved from https://archive.org/stream/ERIC_ED443445/ERIC_ED443445_djvu.txt

Lance, K. C. & Hofschire, L. (2012). *Change in school librarian staffing linked with change in CSAP reading performance, 2005 to 2011*. University of Denver, Morgridge College of Education. Retrieved from https://www.lrs.org/documents/closer_look/CO4_2012_Closer_Look_Report.pdf

Moruf, H. A. & Muhammed, J. O. (2015). The use of library resources by teachers in Oyo State: a study of selected secondary schools in Akinyele L. G. A., Nigeria. *IOSR Journal of Research & Method in Education* 5(3): 49-54.

Nielen, T. M. J. & Bus, A. G. (2015). Enriched school libraries: A boost to academic achievement. *AERA Open*, 1(4): 1–11. Retrieved from http://journals.sagepub.com/doi/pdf/10.1177/2332858415619417

NNPE (2013). 6th edition. Lagos: *Nigerian Educational Research and Development Council (NERDC)*. Retrieved from https://educatetolead.files.wordpress.com/2016/02/national-education-policy-2013.pdf

NUBEC (2010). *Minimum Standards for Basic Education in Nigeria*. Abuja: Universal Basic Education Commission. Retrieved from http://wbgfiles.worldbank.org/documents/hdn/ed/saber/supporting_doc/AFR/Nigeria/TCH/Minimum%20Standards%20for%20Basic%20Education.pdf

Olajide, O. & Ariwodola, M. B. (2009). Utilisation of school libraries by teachers: a case study of public secondary school teachers in Ado-Local Government Area of Ekiti State, Nigeria. *Fountain of knowledge: Journal of Library and Information Science* 1(1): 104-115.

Olaojo, P. O. (2013). *Influence of availability and teachers' utilisation of library media resources on students' cognitive achievement in secondary school social science subjects in Oyo State, Nigeria*. PhD thesis, University of Ibadan, Ibadan, Nigeria.

Omah, J. E. & Urhiewhu, L. O. (2016). Strategy for an effective utilization of school library resources in Karim Lamido Local Government Area of Taraba State. *International Journal of Scholarly Research (ASPL Journal Series)* 11(1): 1-10. Retrieved from https://oer.unimed.edu.ng/JOURNALS/8/1/Lucky-Oghenetega-Urhiewhu-Strategy-for-an-Effective-Utilization-of-School-Library-Resources-in-Karim-Lamido-Local-Government-Area-of-Taraba-State.pdf

Owate, C. N. & Iroha, O. (2013). The availability and utilisation of school library resources in some selected secondary schools (high schools) in Rivers State. *Educational Research Review* 8(16): 1449-1460.

Owoeye, J. S. & Yara, P. O. (2011). School facilities and academic achievement of secondary school agricultural science in Ekiti State, Nigeria. *Asian Social Science,* 7(7): 64-74.

Small, R. V., Snyder, J. & Parker, K. (2009). The impact of New York's school libraries on student achievement and motivation: Phase I. *American Association of School Librarians*. Retrieved from http://files.eric.ed.gov/fulltext/EJ859484.pdf

UNESCO (2005). *Guidelines for inclusion: Ensuring access to education for all.* Retrieved from www.unesco.org/education/inclusive

UNESCO Science Education, (n. d.). Science education. Retrieved from http://www.unesco.org/new/en/natural-sciences/special-themes/science-education/

UNESCO world library of science (n. d.). Natural Sciences. Retrieved from http://www.unesco.org/new/en/natural-sciences/resources/unesco-world-library-of-science/

Uzuegbu, C. P. & Ibiyemi, O. T. (2013). Item community high school library: a reflection of school libraries in Nigeria. *Library Philosophy and Practice (e-journal)*. Retrieved

from
http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2581&context=libphilprac

Williams, D., Wavell, C. & Morrison, K. (2013). *Impact of school libraries on learning: critical review of published evidence to inform the Scottish education community.* Aberdeen: Robert Gordon University. Retrieved from https://scottishlibraries.org/media/1211/impact-of-school-libraries-on-learning-2013.pdf

Yusuf, N. (2014). *Impact of high school library service and library usage on student performance: the case of Eastern Hararghe.* Master dissertation, Haramaya University, Dire Dawa, Ethiopia. Retrieved from https://docplayer.net/19775364-Impact-of-high-school-library-service-and-library-usage-on-student-performace-the-case-of-eastren-hararghe-m-sc-thesis-nejaha-yusuf.html
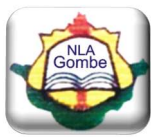
APPENDIX

2015 to 2017 WAEC results of students in 27 selected secondary schools in Ekiti State

Subjects	Total number of registered students	Students' marks/scores		
		60% and above (A1, B2, B3 & C4) (Good)	From 50% to 59% (C4, C5 & C6) (Average)	Less than 50% (D7, E8, F9) (Below average)
1. SCHL#1 students' performance				
Mathematics	376	129 ((34.3%))	44 (11.7%)	203 (54%)
Physics	376	44 (31.7%)	38 (27.3%)	57 (41%)
Chemistry	134	75 (56%)	53 (39.5%)	6 (4.5%)
Biology	139	33 (23.7%)	76 (54.7%)	30 (21.6%)
2. SCHL#2 students' performance				
Mathematics	405	294 (72.6%)	102 (25.2%)	9 (2.2%)
Physics	201	4 (2%)	157 (78.1%)	40 (19.9%)
Chemistry	203	84 (41%)	114 (56.6%)	5 (2.4%)
Biology	201	62 (30.8%)	124 (61.7%)	15 (7.5%)
3. SCHL#3 students' performance				
Mathematics	292	117 (40%)	162 (55.5%)	13 (4.5%)
Physics	103	11 (10.7%)	12 (11.6%)	80 (77.7%)
Chemistry	103	47 (45.6%)	29 (28.2%)	27 (26.2%)
Biology	103	25 (24.3%)	63 (61.2%)	15 (14.5%)
4. SCHL#4 students' performance				
Mathematics	269	54 (20.1%)	82 (30.5%)	133 (49.4%)
Physics	138	2 (1.5%)	40 (29%)	96 (69.5%)
Chemistry	138	45 (32.6%)	80 (58%)	13 (9.4%)
Biology	130	0 (0%)	73 (56.2%)	57 (43.8%)
5. SCHL#5 students' performance				
Mathematics	344	121 (35.2%)	199 (57.8%)	24 (7%)
Physics	168	1 (0.6%)	34 (20.2%)	133 (79.2%)
Chemistry	168	41 (24.4%)	98 (58.3%)	29 (17.3%)
Biology	167	9 (5.4%)	88 (52.7%)	70 (41.9%)
6. SCHL#6 students' performance				
Mathematics	467	162 (34.7%)	222 (47.5%)	83 (17.8%)
Physics	306	23 (7.5%)	109 (35.6%)	174 (56.9%)
Chemistry	310	173 (55.8%)	92 (29.7%)	45 (14.5%)
Biology	310	56 (18%)	127 (41%)	127 (41%)
7. SCHL#7 students' performance				
Mathematics	154	50 (32.5%)	76 (49.4%)	28 (18.2%)
Physics	71	0 (0%)	12 (16.9%)	59 (83%)
Chemistry	71	33 (46.5%)	33 (46.5%)	5 (7%)
Biology	71	2 (2.8%)	29 (40.9%)	40 (56.3%)
8. SCHL#8 students' performance				
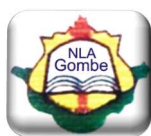
Mathematics	209	87 (41.6%)	104 (49.8%)	18 (8.6%)
Physics	122	2 (1.6%)	49 (40.2%)	71 (58.2%)
Chemistry	122	24 (19.7%)	87 (71.3%)	11 (9%)
Biology	128	16 (12.5%)	59 (46.1%)	53 (41.4%)
9. SCHL#9 students' performance				
Mathematics	307	90 (29.3%)	149 (48.5%)	68 (22.2%)
Physics	134	11 (8.2%)	28 (20.9%)	95 (70.9%)
Chemistry	135	83 (61.5%)	45 (33.3%)	7 (5.2%)
Biology	131	24 (18.3%)	56 (42.8%)	51 (38.9%)
10. SCHL#10 students' performance				
Mathematics	147	14 (9.5%)	50 (34%)	83 (56.5%)
Physics	84	6 (7.1%)	30 (35.7%)	48 (57.1%)
Chemistry	83	30 (36.1%)	41 (49.4%)	12 (14.5%)
Biology	79	16 (20.3%)	31 (39.2%)	32 (40.5%)
11. SCHL#11 students' performance				
Mathematics	168	18 (10.7%)	141 (83.9%)	9 (5.4%)
Physics	68	0 (0%)	15 (22.1%)	53 (77.9%)
Chemistry	68	24 (35.3%)	38 (55.9%)	6 (8.8%)
Biology	68	2 (2.9%)	47 (69.1%)	19 (27.9%)
12. SCHL#12 students' performance				
Mathematics	122	9 (7.4%)	22 (18%)	91 (74.6%)
Physics	53	6 (11.3%)	46 (86.8%)	1 (1.9%)
Chemistry	75	3 (4%)	55 (73.3%)	17 (22.7%)
Biology	75	20 (26.7%)	54 (72%)	1 (1.3%)
13. SCHL#13 students' performance				
Mathematics	154	27 (17.5%)	124 (80.5%)	3 (2%)
Physics	68	8 (11.8%)	25 (36.8%)	35 (51.4%)
Chemistry	68	28 (41.2%)	38 (55.9%)	2 (2.9%)
Biology	68	30 (44.1%)	13 (19.1%)	25 (36.8%)
14. SCHL#14 students' performance				
Mathematics	227	23 (10.1%)	70 (30.8%)	134 (59%)
Physics	90	30 (33.3%)	36 (40%)	24 (26.7%)
Chemistry	90	37 (41.1%)	12 (13.3%)	41 (45.6%)
Biology	90	35 (38.9%)	42 (46.7%)	13 (14.4%)
15. SCHL#15 students' performance				
Mathematics	208	82 (39.4%)	36 (17.3%)	90 (43.3%)
Physics	108	1 (0.9%)	41 (38%)	66 (61.1%)
Chemistry	108	55 (50.9%)	52 (48.2%)	1 (0.9%)
Biology	108	25 (23.1%)	80 (74.1%)	3 (2.8%)
16. SCHL#16 students' performance				
Mathematics	103	18 (17.5%)	65 (63.1%)	20 (19.4%)
Physics	53	2 (3.8%)	20 (37.7%)	31 (58.5%)
Chemistry	53	12 (22.6%)	38 (71.7%)	3 (5.7%)
Biology	57	2 (3.5%)	34 (59.7%)	21 (36.8%)
17. SCHL#17 students' performance				
Mathematics	107	12 (11.2%)	65 (60.8%)	30 (28%)
Physics	43	2 (4.6%)	30 (69.8%)	11 (25.6%)
Chemistry	43	11 (25.6%)	27 (62.8%)	5 (11.6%)
Biology	43	0 (0%)	31 (72.1%)	12 (27.9%)
18. SCHL#18 students' performance				
Mathematics	92	4 (4.4%)	30 (32.6%)	58 (63%)
Physics	32	0 (0%)	9 (28.1%)	23 (71.9%)
Chemistry	42	13 (31%)	13 (31%)	16 (38%)
Biology	36	13 (36.1%)	6 (16.7%)	17 (47.2%)
19. SCHL#19 students' performance				
Mathematics	285	73 (25.6%)	88 (30.9%)	124 (43.5%)
Physics	120	1 (0.8%)	49 (40.8%)	70 (58.3%)

Chemistry	120	70 (58.3%)	44 (36.7%)	6 (5%)
Biology	120	18 (15%)	63 (52.5%)	39 (32.5%)
20. SCHL#20 students' performance				
Mathematics	166	13 (7.8%)	48 (28.9%)	105 (63.3%)
Physics	80	6 (7.5%)	58 (72.5%)	16 (20%)
Chemistry	71	6 (8.4%)	35 (49.3%)	30 (42.3%)
Biology	80	9 (11.3%)	53 (66.2%)	18 (22.5%)
21. SCHL#21 students' performance				
Mathematics	220	52 (23.6%)	117 (53.2%)	51 (23.2%)
Physics	97	1 (1%)	15 (15.5%)	81 (83.5%)
Chemistry	97	30 (30.9%)	44 (45.3%)	23 (23.7%)
Biology	98	5 (5.1%)	59 (60.2%)	34 (34.7%)
22. SCHL#22 students' performance				
Mathematics	217	120 (55.3%)	41 (18.9%)	56 (25.8%)
Physics	104	0 (0%)	35 (33.7%)	69 (66.3%)
Chemistry	105	47 (44.8%)	57 (54.3%)	1 (0.9%)
Biology	97	12 (12.4%)	75 (77.3%)	10 (10.3%)
23. SCHL#23 students' performance				
Mathematics	219	19 (8.7%)	170 (77.6%)	30 (13.7%)
Physics	107	2 (1.9%)	77 (72%)	28 (26.1%)
Chemistry	107	80 (74.8%)	18 (16.8%)	9 (8.4%)
Biology	108	42 (38.9%)	37 (34.2%)	29 (26.9%)
24. SCHL#24 students' performance				
Mathematics	295	128 (43.4%)	107 (36.3%)	60 (20.3%)
Physics	147	23 (15.6%)	77 (52.4%)	47 (32%)
Chemistry	147	76 (51.7%)	48 (32.7%)	23 (15.6%)
Biology	147	5 (3.4%)	87 (58.8%)	56 (37.8%)
25. SCHL#25 students' performance				
Mathematics	128	19 (14.8%)	33 (25.8%)	76 (59.4%)
Physics	48	0 (0%)	0 (0%)	48 (100%)
Chemistry	48	15 (31.3%)	4 (8.3%)	29 (60.4%)
Biology	48	11 (%)	8 (%)	26 (%)
26. SCHL#26 students' performance				
Mathematics	66	11 (16.7%)	48 (72.7%)	7 (10.6%)
Physics	32	2 (6.3%)	23 (71.9%)	7 (21.9%)
Chemistry	32	16 (50%)	15 (46.9%)	1 (3.1%)
Biology	32	16 (45.7%)	14 (40%)	5 (14.3%)
27. SCHL#27 students' performance				
Mathematics	583	202 (34.6%)	54 (9.3%)	327 (56.1%)
Physics	423	126 (29.8%)	254 (60%)	43 (10.2%)
Chemistry	341	126 (37%)	164 (48%)	51 (15%)
Biology	347	174 (50.1%)	125 (36%)	48 (13.8%)

Source: Planning, Research and Statistics Department (2018). Ekiti State Ministry of Education, Science & Technology, Ado-Ekiti