

## **The Role of the Library in Geosciences Education, Petroleum Exploration And Exploitation And Research: A study of the Rivers State University of Science and Technology (RSUST) Library**

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### **Abstract**

**Purpose-** The objective is to examine the sources of, and the need for information to the academic in the fields of geoscience education and petroleum exploitation research, using the geoscience academic staff and students of the Rivers State University of Science and Technology Port (RSUST) Harcourt, Nigeria, as a case study.

**Design/methodology/approach:** The paper presents a case study of the use of the library resources by the study group here. Two sets of questionnaire (one for the lecturers and the other for the students) were used to elicit data for the analysis. The elements in the two questionnaires were the same. This made the analysis and comparisons clearer. Tables and percentages are used in data presentation.

**Finding:** The modern e-library (virtual library, library without walls or digital library) still provides a great opportunity for the geoscience academic to excel. The paper reveals the need for better funding so that the library will be stocked with relevant materials on specific disciplines. Sadly, the study also reveals serious under-utilization of the available library resources, by the group of academics studied. It thus recommends that the professionals themselves should accept that regular visits and use of the library facilities provide the solution to their research information need.

**Research limitation/implications:** It focused only on the use of the university library and its facilities, by the geoscience academic staff and students of the Rivers State University of Science and Technology, Port Harcourt, Nigeria.

**Practical implications:** A striking revelation that an academic might not have visited his/her university library for up to 6 months. It further explains why the students themselves may not see any need to visit the university library to consult the library resources other than reading their lecture notes.

**Originality/value:** Provides insights into the direction of user-orientation programmes and activities for university library managers, especially for libraries in Nigeria.

**Keywords:** Library use. Academic staff. Geosciences education.

**Paper type:** Case study.

## Introduction

In adopting the *structural functionalism* perspective while examining the nature of a phenomenon, it is normal to start by enumerating the functions of the respective aspects of that phenomenon. While accepting that there is nothing wrong with that approach, the approach we are adopting in this paper will go beyond that to discussing the nature of a library, showing the funding, personnel needs and the needs for information in the fields of geosciences education and petroleum exploration and exploitation and the sources available to such a researcher. The meaning of geoscience education research and “petroleum exploration and exploitation shall be highlighted.

### Geosciences Education

Geosciences (also known as earth science) is an all-embracing term for sciences related to the planet earth. However, geoscience in this context is taken to mean those areas of sciences as geology, geophysics, and geochemistry, dealing with the earth (*Merrian-Websteronline Dictionary 2006*). On the other hand, *education* is the activities of educating or instructing; activities that impart/gain knowledge or skills (*Education Definition on web, 2006*).

### Research

Research is an active, diligent and systematic process of inquiry in order to discover, interpret or revise facts, events, behaviours, or theories, or to make practical applications with the help of such facts, laws or theories. The term *research* is thus used to describe the collection of information about a particular subject (*The new Webster's Dictionary of English Language*).

### Petroleum Exploration And Exploitation

The activities here involve the prospecting and the actual production of petroleum, which will require a team that is made up of experienced geologists, geophysicists, engineers, petrophysicists and landmen. In what follows, the role of the library shall be reviewed based on some literature.

### The Role of the Library as A Source of Information

The spread of knowledge and culture as recorded on papyrus, clay tablets and later parchments from the valleys of the Nile, Tigris and Euphrates through Athens to Rome was possible because it was well documented and preserved and disseminated. This preservation and dissemination are thus the primary role of libraries which, not only brought about the renaissance but also subsequently ensured the spread of knowledge and ideas throughout Europe and the then known world (*Gates, 1968*). The fact is incontestable that access (or lack of it) to knowledge and so information has determined the fate of nations and individuals from the earliest times. The more important difference between the developed and developing countries is the fact that the former cultivated great habit of seeking for knowledge and recording and disseminating it than the latter. Similarly, while the former appreciated the value of libraries the latter did not (*Arifayan, 1980*). Libraries by virtue of the types of materials they contain, serve as medium for the transfer of knowledge and know-how in the education and training processed, within a generation and between generations.

In geoscience education, the library provides an organized point of access to materials at all levels of instruction, research and for general information. These materials are created by broad range of collaborating partner institutions including universities, professional organizations, government agencies, national, research laboratories and publishers. These materials can be in the form of books, journals, databases and other non-print forms. For

example, the *Journal of Geoscience Education* published by National Association of Geoscience Teachers of the United States is a premier peer-reviewed publication for geoscience education at under-graduate level. It also serves as an international forum for the publication of research concerning the pedagogy, assessment, and philosophy of teaching and learning about the geosciences.

There is also the *Journal of African Earth Science*, which is a primary source of information for all aspects of geological investigations, especially the search for natural resources on African continent and its once surrounding Gondwana fragments. It publishes high quality, peer-reviewed scientific papers on geoscience. Again, a look at the web at

<http://www.uni-mainz.de/fb/geologic/geo.journals.html> will reveal all internationally recognized journals in any field. Such journals can be found in any library that caters for the kinds of subject areas in the community such libraries serve. Even if any of the journals are not available, the library concerned can, under inter-library loan or library network scheme, source for such material elsewhere.

The student or researcher can also access **Open Access Journal** lists at

<http://www.hshsl.umaryland.edu/scholarly/oajournals.html> at the Internet cafe in libraries. In most cases, any user is free to read, download, copy, distribute, print, search or link to the full text of the articles. The articles can be used freely for research, teaching and other purposes as may be determined by the user (Eyitayo, 2006). There are geoscience databases on **CD-ROM** which libraries purchase for the benefit of instruction, research and information for those engaged in petroleum exploration and exploitation. These journals identified here contain vast information for those prospecting for and producing petroleum.

The emphasis here has been placed on journal articles and databases because they contain most current information on any field of learning. That is why articles produced on any given field on daily bases are so numerous that different bodies engage in producing abstracts of these articles for easier retrieval. In the case of geosciences, we have **Geoscience Abstract** that contains abstract of journal articles in geoscience.

The long cherished traditional **book** though takes longer period to produce will continue to enjoy a prime place at any level of learning. In some cases, before the book is published events would have overtaken the content of such a book, thus, making the information contained stale soon after publication. However, the book will remain a good source for background and basic information. Of course, there are several books in geosciences including some of the **reference books** that just a few will be mentioned here.

Of the reference materials, be it Handbooks, Yearbooks, Fact books, Atlases, and so on, the **Encyclopaedia** seems to be the most useful. Consultation of encyclopaedias, especially the subject specialized title, is often an academic strength not a weakness that can be encouraged by their inclusion in instructional programmes (Kawula, 2003). They are invaluable for uncovering ideas for research beyond the currently conceived topics. We have such specialty title in *Encyclopaedia: World of Earth Science* by Serge Fortin. This is in five volumes. There is also the more **general encyclopaedia** like the world renowned *Encyclopedia Britannica*, the *Encyclopaedia Americana*, the *World Book Encyclopedia* and many others. These give background information to any subject.

The other category of books in the library, which are mainly text of individual subject areas, can be accessed through libraries' card catalogues or **on-line public access catalogues**

(OPAC). All that the student, researcher or anyone seeking information on petroleum exploration and exploitation has to do is to search the catalogues through the subject needed. In the case of the discipline under review, the main subject is “geoscience” or “Petroleum” and so, the first step is to search for “petroleum” before moving on to the specifics, which is “petroleum exploration” and then, “exploitation”.

### Types Of Libraries as Sources of Information

Libraries are of different types that are useful source of information to the researcher. **National libraries**, established by national governments to collect and preserve all publications emanating from and about the country is a valuable source as they have direct and faster contact with other national libraries.

The **public library** supports and serves the educational, informational and cultural needs of the citizens irrespective of age, religion, gender, career or interest. Some public libraries have Internet facilities at moderate fees.

**Special libraries** are so called because of the kind of resources, clientele, interests, services and the organization that set them up. Special libraries should be a regular place for the geoscientist. Examples of such special libraries include the International Institute for Tropical Agriculture (IITA), Library, Ibadan, Nigeria; Institute for Policy and Strategic Studies, Kuru, Jos; the Federal Institute for Industrial Research (FIIR) Oshodi and the Nigeria Institute for International Affairs (NIIA), and the British Council Library. Media, House of Assembly, Ministry and Industrial libraries. Special libraries are also found within the University library system. These include the Law, Engineering, Management, Science, RIART libraries and now, the NAPE library.

**Academic libraries** refer to the libraries that are established by institutions of higher learning. It covers university, polytechnic and colleges of education or technology libraries. They are usually found within the premises of their parent bodies. Each has a similar aim, which in general terms, is *to provide a service of reference and lending material appropriate to the needs of the staff and students of the institutions* that established them (Ahiazu 2002). The **school library** serves only the nursery, primary or/and secondary schools and usually located within the school environment. They are sometimes referred to as **instructional materials Centre** or **Media Resources Centre**. The school library is established to develop the information gathering behaviour of the child for adult life.

Each of these libraries has a central role to play in geosciences education, research, petroleum exploration and exploitation, as indeed in all sciences. As information is ruling the world, libraries are the dynamic engines for such knowledge and information age and are well positioned to carry out this responsibility. Without the right information there is bound to be failure in decision-making and implementation in an organization. No wonder Ifidon (2006) argued that *planning without information (is) the bane of national development*.

Agnola (1983) once remarked that *the academic health; intellectual vitality and effectiveness of any university depend largely upon the state of health and excellence of its library, which is its lifeblood*. Realizing the importance of the University library to the quality of its products, and the funding difficulties, as we shall show below, the National Universities Commission in the early 1990s adopted a policy of allocating 10% of University recurrent budgets to the University libraries.

### **The Modern Library**

The terms *Digital Library*, *Virtual Library* and **Library without walls** have begun to be used to refer to the vast collection of information to which people gain access over the Internet, cable television or some other type of remote electronic connection. (*Britannica, 2004*). Mulla (2006) summed the change that have occurred in libraries thus:

*Libraries have witnessed a great metamorphosis in recent years both in their collection development and in their service structure. Over the last several years, a significant transformation has been noticed in collection development policies and practices.*

### **Why We Need Information**

The need for libraries and information in the developmental effort of any society is basically the need for survival. According to *Ifidon and Ahiauzu (2006)*, information and knowledge help to maintain attitudes of collaborative and cooperative intent and change the dynamics of negotiation from mistrust to trust. Just to mention a few, (*Ahiauzu 2002*) identified the role of a library in human development to include the acquisition of new knowledge that can foster access to new opportunities and increased awareness. In other words, the quality and quantity of information available to national and state governments account for the level of their economic, social, educational, science and technological development (*Arosanyin, 1978*). A former British Minister for technology, also (as in *Arosanyin: ibid*) observed that::

*It is only by good information services that we can use what has been discovered... no society (or subject discipline) will be able to organize itself or prosper unless it can lay hands on the sort of information that it needs, when it needs it and in the form in which it is equipped to use it.*

The need for libraries and information in the developmental effort of any society is basically the need for survival. This is even more so in geosciences education, petroleum exploration and exploitation research. No educator in these fields will be able to organize himself or succeed unless he has access to the kind of information he need, when he needs it and in the form in which he is equipped to use it. The modern university library whether more or less virtual or digital therefore, provides a great opportunity for the researcher to excel. However, the library can only be as good a source of information as its' funding can allow. This assertion informs the next line of our discussion.

### **The Study**

The paper reports on a study, which set out to investigate the level of patronage of the University Library by the geosciences educators and students. The results of which should indicate the role of the Library in geosciences education, petroleum exploration and exploitation research. The Rivers State University of Science and Technology (RSUST) has a total student population of 23,000, out of which 150 are studying geosciences and space technology. There are 17 lecturers in that Department.

The RSUST is a second generation University, though Nigeria's premises University of science and technology having been established in 1981. it acquired the assets and liabilities of a college of science and technology which was established in 1971. The college provided it with a solid foundation on which to take off as a University.



The study is significant in that its findings should enable stakeholders to know the current state of University Library patronage by the geosciences educators and students. It reveals why there is low patronage and points the direction of future user orientation programmes of University Library managers. Though the study setting is RSUST and geosciences discipline, its findings could be generalized to other University Libraries and subject disciplines in Nigeria that share similar experiences of inadequate Library resources and under utilization of even what is available.

One of the instruments for collecting data for this study was the questionnaire, which was designed to obtain data on the use of the Library by the geosciences lecturers and students of RSUST, Nigeria. Copies of the questionnaire were distributed to each of the lecturers and students through their head of Department. Other copies of the same questionnaire were given to them as they visited the University Library. Observational and interview techniques were also employed to obtain additional information frequency counts and percentages were used to analyse the data generated.

### **Finding and Discussion**

A cursory look at Tables i, and ii reveal the level of funding that would be required to provide core textbooks, core journals and core reference books in the RSUST Library System. As in Table i, a minimum of **Seventeen Million** naira (N17,000,000) or £72,663,3 pounds sterling or US \$144,518.5 per annum would be required just for the Faculties' core books and journals needs (i. e N15.18m for book and N2.52m for journals). This does not include the needs of the Institutes and Centres. A total of N13.56m and 876m (£55,667.7 pounds sterling or US \$110,716) and N876,000 (£3,596.23 pounds sterling or US \$7,152.44) for books and journals respective would be required to up-grade the RSUST Library. The figures sound ridiculous, but that is the true position as the prices are derived from prevailing publishers' catalogues. The needs, indeed, require multi-sectoral approach to meet this requirement. It is our considered opinion that every stakeholder in education must participate in solving the problems.

Table ii (4) shows that the geosciences and space technology programme would require at least N2.16m (£8,898.50 pounds sterling US \$17647.1 and N156.000 (£642.669 pounds sterling or US \$1,274.51) for books and journals respectively. The total number of students cover levels 1 (one) to 5 (five) as the geosciences programme is a five –year degree programme in RSUST. The present 150 students thus, cut across all the levels.

These are average estimates based on prevailing publisher' prices derived from their catalogues at the time of carrying out the study.

Apart from the Education Tax Fund, which is a federal government intervention programme that allocates some N3.5m (£14,418.9) pounds sterling or US \$28,514.8) to each Nigerian universities and, for which RSUST is a beneficiary for the past 10 years, RSUST Library has not been able to receive any financial support up to 1/3 of the total financial requirement. The implication is that the volume of new acquisitions also dropped drastically. The library patrons being aware of this concluded that the University Library was incapable of meeting their research need and so the frequency of their visit to the Library gradually but steadily dropped to the level the present study now reveals in table v.

Table iii shows the total number of academic staff and students of geosciences in RSUST. The table shows that there 17 lecturer and 150 students in that Department.

Table iv shows the number of the lecturers and students that are registered with the University Library. The Table shows that 82.4% of the lecturers are not registered while 40% is the case for the students. In trying to find out from the users the reason for the low patronage. Table vi, revealed their reason is that they could either not get the exact material needed or that what they saw in the library was insufficient to merit their repeat visit to the university library.

Table v determines how frequently the lecturers and students visit the library. For the lecturers, 11.8% visited once in 12 months, while 35.3% never visited in 2 years. 52.9% did not respond.

Table VI sought to know the reasons for their various visits to the library. The results show that while the majority of the students (42.67%) came to read their own materials, only 7.3% came to consult library materials. 20.67% only visited just to register.

The present study reveals that while under-funding remains a universal problem, there is a serious under-utilization of the available resources by the geoscience, petroleum exploration and exploitation professionals in RSUST. The statistics also show that only 3 out of the 17 staff lecturers in geosciences are registered readers with the university library once in the last two (2) years. A few of them 11.80% visited the library in the last one (1) year. With special reference to the geoscience students, only 5.4% visited the more than once a week while 6.7% visited the library once a week in the last 2 years. This is very pathetic for researchers. The requirement of the RSUST library system was used to illustrate and reiterate the capital-intensive nature of a university library.

**Table i: Minimum Funding Requirement by Faculties in RSUST to Up-Grade the Library's Holding**

S/N	FACULTY	BOOKS & REF.MATS. NEED (In VOLUMES)	AVERAGE UNIT COST OF BOOK (N)*	TOTAL AMOUNT REQUIRED (N)	NO. OF JOURNAL TITLES NEEDED BY FAC.	AVERAGE UNIT COST OF JRNL TITLES (N)*	TOTAL COST /AMOUNT NEEDED FOR JRNL TITLES BY FAC. (N)
1	Agriculture. (All Depts)	315	12,000	3.780m	20	6.000	120,000
2	Env. Sci. (All Depts)	250	12,000	3.0m	60	6,000	360,000
3	MGT Science. (All Depts)	200	12,000	2.4m	100	6,000	600,000
4	Engineering. (All Depts)	150	12,000	1.8m	200	6,000	120,000
5	Tech. & Science Edu. (All Depts)	150	12,000	1.8m	100	6,000	600,000
6	Science. (All Depts)	200	12,000	2.4m	120	6,000	720,000
	<b>TOTAL</b>	1265 vols		<b>N15.18m</b>	600 titles		<b>N2.52m</b>

**At publishers current prices**

**Source: 2006 RSUST University Library Budget proposal**

**Table ii: Minimum Funding Requirement by Institutes in RSUST**

S/N	FACULTY	BOOKS & REF.MATS. NEED (In VOLUMES)	AVERAGE UNIT COST OF BOOKS	TOTAL AMOUNT REQUIRED	NO. OF JOURNAL TITLES NEEDED BY FAC.	AVERAGE UNIT COST OF JRNL TITLES	TOTAL COST /AMOUNT NEEDED FOR JRNL TITLES BY FAC.
1	Foundation Studies	250 Vols	12,000*	3 m	30 Titles	6,000*	180,000
2	Pollutions Studies	150	12,000	1.8 m	25	6,000	150,000
3	RIART	250	12,000	3 m	25	6,000	150,000
4	Geo Science & Space Tech.	180	12,000	2.16m	26	6,000	156,000
5	Education	300	12,000	3.6m	40	6,000	240,000
<b>TOTAL</b>		1130 vols		<b>N13.56m</b>	146 titles		<b>N.876m</b>

**NOTE:**\* At current Publishers' prices.

N13,560.00=£55,66.7.7 or US \$110,716

N876,00=£3,596.23 pounds sterling or US \$7,152.44

Currency Conversion rate as at 11.05.2007

**Source: 2006 RSUST University Library Budget proposal**

**Table iii: Total number of Academic Staff and Students of Geosciences in RSUST**

Item	Number of Lecturers	Number of Students
<b>Total</b>	<b>17</b>	<b>150</b>

**Source: Exams and Records Office RSUST and the Head of Department**

**Table IV: Those Registered with the University Library**

S/N	Item	Number of Lecturers	Number of Students
		<b>N = 17</b>	<b>N = 150</b>
1	Yes	3 (17.6%)	90 (60%)
2	No	14 (82.4%)	60(40%)
	<b>Total</b>	17 (100%)	150 (100%)

**Source: RSUST Library Statistics – February 2007**



**Table v: Number of Visits to the Library by Geosciences Lecturers and Students of RSUST**

S/N	Item	Number of Lecturers N = 17	Number of Students N = 150
1	More than once a week	- (0%)	8(5.4%)
2	Once a week	- (0%)	10 (6.7%)
3	Once in 2 weeks	- (0%)	15(10%)
4	Once in 4 weeks	- (0%)	16(10.6%)
5	Less than once in 8 weeks	- (0%)	16(10.6%)
6	Once in 6 months	(0%)	20(13.3 %)
7	Once in 12 months	2(11.80%)	45(30%)
8	Never visited in 2 years	6 (35.20%)	10(6.7%)
9	No response	9(52.94%)	10(6.7%)

Source: Survey conducted between October 2006 and February 2007

**Table vi: Why did you visit the Central Library?**

S/N	Item	Number of Lecturers N = 17	Number of Students N = 150
1	To see someone	- (0%)	4 (2.67%)
2	To consult library materials	- (0%)	11 (7.33%)
3	To read my own books	- (0%)	64 (42.67%)
4	To borrow library books	1 (5.88%)	17 (11.33%)
5	To be away from friends	0 (0%)	11 (7.3%)
6	To Register with the library	2 (11.77%)	31 (20.67%)
7	No response	14 (82.35%)	12 (8%)

Source: Survey conducted between October 2006 and February 2007

**Table vii: Were you satisfied with what you Met?**

S/N	Item	Number of Lecturers N = 17%	Number of Students N = 150 %
1	Yes	2 (11.7%)	77 (51.3%)
2	No	1 (5.9%)	20 (13.3%)
3	No response	14 (82.4%)	53 (35.33%)
	<b>Total</b>	<b>17 (100%)</b>	<b>150 (100%)</b>

Source: Survey conducted between October 2006 and February 2007

**Table viii: Reason for not being Satisfied**

S/N	Item	Number of Lecturers N = 17	Number of Students N = 150
1	Could not get exact	- (0%)	23 (15.3%)

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	materials		
2	Insufficient materials	3 (17.6%)	84 (56%)
3	Library staff behaviour	- (0%)	84 (56%)
4	Library environment	- (0%)	1 (0.7%)
5	No response	14 (82.4%)	42 (28%)

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**Source:** Survey conducted between October 2006 and February 2007.

### Conclusion and Recommendations

The paper attempted to bring into focus the sources and the importance of information in the geosciences research. Without information, no nation, organization, institution of learning or researcher can progress. Since the libraries are in the business of information, their role in any establishment and subject discipline where they are recognized cannot be quantified. The library is better positioned to make available any information needed and when such information is not immediately available physically in a particular location, the library knows where to go to get such information. The paper further reveals the capital-intensive nature of a science and technology university library service provision, which seems to overwhelm some of such universities in Nigeria. The difficult financial situation makes it difficult for such university libraries to provide relevant current books; journals and conducive reading environment to attract and retain their readership patronage. The geosciences lecturers and students do not therefore find the university library worth regular visit.

The paper concludes by calling on government at all levels, the private sector and individuals to come in and assist the Universities in the provision of adequate university and research library service delivery since the results of researches benefit all in the society. This, they could do by:

- Paying for the annual subscriptions for the core journals in their areas of specialization.
- Donating current and well-researched books, technical reports, and ICT resources to the University library.
- Immortalizing their organizations, families and ideologies in a section of the university library and purchasing most of the materials for that library.
- Academics must see regular visits to the library as a *sine-qau-non* in their research endeavours.
- Libraries, when established, should be properly funded and appreciated so that they can adequately fulfill their role in the society as the library remains a force and a source for educational excellence.

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