

**THE ROLES OF ICT IN EFFECTIVE STORAGE AND RETRIEVAL OF SCHOOL ADMINISTRATIVE DOCUMENT: A  
CASE STUDY OF PUBLIC PRIMARY SCHOOLS IN IMO AND AKWA IBOM STATES**

**ATAKPA, Arit Okonobong, Ph.D**  
**Department of Early Childhood Education**  
**Akwa Ibom State College of Education**  
**Afaha Nsit**

**AMAH, Kanu Ogbonnaya, Ph.D**  
**Department of Curriculum and Instruction**  
**Alvan Ikoku Federal College of Education**  
**Owerri, Imo State**

**AND**

**OBI, Patricia Nneka**  
**Department of Curriculum and Instruction**  
**Alvan Ikoku Federal College of Education**  
**Owerri, Imo State**

**ABSTRACT**

*The aim of this paper was to assess the roles of ICT in the effective storage and retrieval of school administrative documents in public primary schools in Imo and Akwa Ibom States. A descriptive survey design was adopted for the study. The study was conducted in Nigeria. The population of the study consisted of all school administrators in public primary schools in Imo and Akwa Ibom States. A stratified sampling technique was used to select 50 head teachers and 50 deputy head teachers from Imo State and Akwa Ibom State. This gave a total of 100 head teachers and 100 deputy head teachers, making 200 respondents, which constituted the sample size used for the study. The instrument used in this study for data collection was a questionnaire titled "ICT and School Administrative Document Questionnaire (ICTSADQ)." Face and content validation of the instrument was carried out by an expert in testing, measurement, and evaluation to ensure that the instrument has the accuracy, appropriateness, and completeness for the study under consideration. The reliability coefficient obtained was 0.80, and this was high enough to justify the use of the instrument. The researcher subjected the data generated for this study to appropriate statistical techniques such as descriptive analysis to answer the research questions while performing regression analysis. The test for significance was done at 0.05 alpha levels. The study concluded that ICT has become an essential part of our everyday lives. Accordingly, this integration in school improvement is not only for the purpose of teaching and learning but also for educational management use, and it has become one of the most effective factors in school improvement. It also plays a vital role in improving the functional effectiveness of the school system. Finally, the study concluded that there is a significant influence of ICT utilization on the storage and retrieval of school administrative documents in public primary schools in Imo State and Akwa Ibom State. One of the recommendations made in the study was that for primary schools to benefit from ICT adoption in the storage and retrieval of documents, school administrators should provide needed infrastructure and hire skilled ICT personnel to carry out the task.*

**KEYWORDS:** ICT, Storage, Retrieval, Primary School, Imo State and Akwa Ibom State.

## **Introduction**

Information and communication technology (ICT) has brought unprecedented changes and transformations to the academic sector. The rapidly changing environment has led to increased reliance on ICTs to attain and maintain competitiveness, improve profitability, and succeed in today's dynamic world (Shamsuzzoha et al., 2012; Stanimirovic, 2015). From a terminological point of view, information storage and retrieval are simply about storing information and retrieving it. The integrated concept of "information storage and retrieval" is a process or activity that involves storing information and having the ability to easily locate and gain access to it when requested. Information storage and retrieval are enhanced and facilitated with computers. Schools and colleges have adopted the usage of ICT to enhance this purpose effectively.

According to Kusumaningtyasa and Suwartob (2015), ICT adoption is defined as the willingness to take on new innovations related to computers and the internet. Ashrafi (2016) noted that for schools to benefit from ICT adoption, administrators should provide needed infrastructure and hire skilled ICT personnel. Furthermore, the necessary means to make effective use of the adopted ICT should be available for it to contribute positively to institutional performance, especially in the storage and retrieval of relevant information. As rightly observed by Umoh (2016), primary education helps the individual to develop physically, mentally, morally, spiritually, and emotionally by providing a suitable environment and teaching him new knowledge, attitudes, and skills that will enable him to be useful to himself and his society. Education at this level strengthens the learner's feet to climb the educational ladder to the zenith of academic attainment if a good foundation is laid. It is in this regards that this study is carried out to investigate how ICT can boost the administrative performance of primary school with consideration to the storage and retrieval of documents.

## **Statement of Problem**

Considering the enormous benefits that are experienced in the impact of ICT on education, primary schools in Imo and Akwa Ibom States still experience some obstacles or hindrances in the effective and efficient usage of the ICT resources. Today, ICT acquisition and implementation are facing a lot of problems in primary education. In the two states many primary schools suffer greatly with inadequate numbers of ICT equipment, while most schools have none of the equipment at all. This hinders safe and effective documentation of the school records and information, as well as quick retrieval of the documents. Hence, this study was carried out to assess the extent of the impact of ICT on public primary schools with consideration to the storage and retrieval of administrative documents.

## **Objectives of the Study**

The purpose of this study was to evaluate the roles of ICT in effective storage and retrieval of administrative document. The specific objectives were as follows:

1. To find out the extent of availability of ICT in public primary schools in Imo and Akwa Ibom States.
2. To find out the extent of utilization of ICT in the storage and retrieval of school administrative document in public primary school in Imo and Akwa Ibom States.

## **Research Questions**

The following research questions were formulated to guide the study:

1. To what extent is the availability of ICT in public primary schools in Imo and Akwa Ibom States?

2. What is the extent of utilization of ICT in the storage and retrieval of school administrative document in public primary schools in Imo and Akwa Ibom States?

### Hypotheses

The null hypothesis was tested at 0.05 alpha levels of significance.

1. There is no significant influence of ICT utilization on the storage and retrieval of school administrative document in public primary schools in Imo and Akwa Ibom States.

### Conceptual Review

#### Concept of ICT

Information and communication technology (ICT) is technology that supports activities involving information. Such activities include gathering, processing, storing, and presenting data. Saleem (2013) defines information and communication technology as the application of computers and other technologies to the acquisition, organization, storage, retrieval, and dissemination of information. Increasingly, these activities also involve collaboration and communication. ICT has therefore changed the face of all fields of human endeavour. According to Bukola and Ruth (2019), information and communication technology (ICT) is defined as a diverse set of technological tools and resources used to communicate, create, disseminate, store, manage information, and promote human activities. These technologies include computers, the internet, printers, scanners, photocopy machines, binding machines, laminating machines, broadcasting technologies (radio, public address speakers, and television), projectors, and telephony, among others, and are widely used in today's education field, most especially academic libraries.

Khan (2016) stated that information and communication technology (ICT) has transformed library services globally. Most current information is recorded in electronic format, and ICT has also contributed immensely to the performance of librarians in the discharge of their duties, such as cataloging and classification, reference services, circulation management, serials control, and e-library. This warrants a deeper sense of feeling that information and communication technologies (ICT)-based innovations and applications have become major drivers of enhanced organizational performance, economic growth, and social change.

#### Concept of Primary Schools

According to the Federal Republic of Nigeria (2014), primary education refers to the education given to children aged 6 to 11 plus in primary schools, and that the primary level is the key to the success or failure of the whole system since the rest of the education system is built upon it. This statement confirms the fact that the primary level of education is most crucial to the success of other levels, hence the need for the stakeholders to do everything possible to lay a solid foundation for its sustainability. Education Destination Asia (2022) defined a primary school as an elementary school, junior high school, or grade school where children receive a primary or elementary education. Typically, children enter primary school after completing preschool. A primary education prepares children to transition to secondary school. Primary school education in Nigeria lasts for six years (Primary 1-6).

The primary school delivers the student's first education, creating a strong foundation for learning and improving their educational skills. According to the ISCED (2021) definition, in Teachmint (2022), primary education naturally starts at age 5 and lasts until age 8, and it develops learning among students so that they can understand subjects, write quickly, and learn. It plays a pivotal role in character development. This school comes after preschool and before secondary school. Education occurs in a single phase that develops fundamental skills such as writing, learning, and reading. Primary schools act as a suitable place for learning social practices like friendship, assistance,

participation, empathy, and similar other values that are essential building blocks that shape a child's personality.

In primary schools, the framework is designed to develop children's intellectual, moral, and emotional aspects. The development of four phases includes a logical model of intellectual development, a sociological model of development, a biological model of intellectual development, the study of theory, and perception. The use of this framework is established to improve the life skills of children.

### Computer as a Storage Facility

Data storage is the collective methods and technologies that capture and retain digital information on electromagnetic, optical, or silicon-based storage media. A storage unit is a part of the computer system that is employed to store the information and instructions to be processed. A storage device is an integral part of the computer hardware that stores information or data to process the result of any computational work. It can also store information and data both temporarily and permanently. Storage devices are used in offices, data centers, edge environments, remote locations, and people's homes. Storage is also an important component in mobile devices such as smart phones and tablets. According to Keshadi (2022), without a storage device, a computer would not be able to run or even boot up.

Storage is frequently used to describe devices that connect to a computer either directly or over a network and that support the transfer of data through input/output (I/O) operations (Robert, Garry, and Dave, 2021). Computer storage is of two types:

1. **Primary Storage Devices:** It is also known as internal memory or main memory. This is a section of the CPU that holds program instructions, input data, and intermediate results. It is generally smaller in size. Examples of primary storage are:
  - (i) **RAM:** It stands for Random Access Memory. It is used to store information that is used immediately, or we can say that it is a temporary memory (Keshadi, 2022). Computers bring the software installed on a hard disk to RAM to process it and to be used by the user. Once the computer is turned off, the data is deleted. With the help of RAM, computers can perform multiple tasks like loading applications, browsing the web, editing a spreadsheet, experiencing the newest game, etc.
  - (ii) **ROM:** It stands for read-only memory. The data written or stored in these devices is non-volatile, i.e., once the data is stored in the memory, it cannot be modified or deleted. The memory from which will only read but cannot write it. This type of memory is non-volatile. The information is stored permanently only once during manufacture. ROM stores instructions that are used to start a computer. This operation is referred to as "bootstrapping." It is also used in other electronic items like washers and microwaves.
2. **Secondary Storage Devices:** Secondary storage is memory that is stored externally to the computer. According to Keshadi (2022), it is mainly used for the permanent and long-term storage of programs and data. Examples of secondary storage are:
  - (i) **Hard Disk:** It is a storage device (HDD) that stores and retrieves data using magnetic storage. It is a non-volatile storage device that can be modified or deleted an unlimited number of times without any problem.
  - (ii) **Floppy Disk:** It is also known as a "floppy diskette." It is generally used on a personal computer to store data externally. A Floppy disk is made up of a plastic cartridge and

secures with a protective case. Nowadays, floppy disks are replaced by new and effective storage devices like USB, etc.

- (iii) **CD:** It is known as a compact disc. This is an optical type of secondary storage device. It contains tracks and sectors on its surface to store data. It is made of polycarbonate plastic and is circular in shape. It is a removable storage device. CDs can store data up to 700 MB. 1.
- (iv) **DVD:** It is known as a "digital versatile disc." DVDs are flat, circular optical discs used to store data. It comes in two different sizes one is 4.7GB single-layer discs and another one is 8.5GB double-layer discs. DVDs look like CDs but the storage capacity of DVDs is more than as compared to CDs.

### ICT and School Administration

Amadi (2007) outlined the importance of ICT to include giving learners the opportunity to apply and develop their ICT capability through the use of ICT tools to support their learning in most subjects, enabling pupils to use these technologies to design, deliver, select, administer, and extend learning, or communicate with experts, colleagues, and peers both in and outside the classroom. According to her, learners have to understand the language of computing in order to carry out basic operations such as processing, checking information through surfing the computer to visit websites, sending and receiving information, storing and retrieving data, buying and selling, playing games, listening to music, and a host of other activities that are now available.

According to Vimalkumar (2010), information and communication technology (ICT)-based educational communication has enormous advantages in the education sector. Most importantly, information and communication technology (ICT) eliminates the barriers of time and place in the learning situation. The selection of Information and Communication Technology (ICT) in education is due to its user-friendliness, speed, accuracy, reliability, high storage capacity, integrity, consistency, logicity, versatility, low failure rate, durability, and probability; above all, it has the special characteristic of interactivity, which gives control to the students (Vimalkumar 2010). With the advancement of ICT, teachers and students could use educational tools like blogging, podcasting, and applets for an effective teaching and learning process. If a teacher needs to evolve into an e-content developer, the teacher could make use of authoring tools, integrating tools, dissemination tools, and on-line storage and preservation tools of the infinitive services available on the internet.

### ICT and Quick Document Retrieval

Information retrieval (IR) is the science of searching for information in documents, whether by searching for the documents themselves, searching for metadata that describes documents, or searching within databases, whether relational stand-alone databases or hypertext networked databases such as those on the Internet, the World Wide Web, or intranets, for text, sound, images, or data. With the help of information and communication technology (ICT), users now use various types of technologies to aid the retrieval of documents and information. Computing technology, communication technology, and mass storage technology are some of the areas in which ICT development reshapes the way users access, retrieve, store, manipulate, and disseminate information. Rana (2019) noted that ICT holds the key to the success of modernizing information services. Applications of ICT are numerous, but it is mainly used in converting the existing paper-print records in the entire process of storage, retrieval, and dissemination.

An information retrieval system is designed to retrieve the documents or information required by the user community. It makes the right information available to the right user. Jansen (2016) asserted that information retrieval deals with the production, representation, organization, storage,

retrieval, use, or evaluation of information, along with the tools and techniques associated with these processes. When using information retrieval systems, users often present search queries made of ad-hoc keywords to obtain a precise representation of the user's information need and the context of the information (Lotfi, 2013). A search engine is an information retrieval system designed to help find information stored on a computer system. With significant advances in computers and communications technologies, people today have interactive access to enormous amounts of user-generated, distributed content on the Web. This has spurred the rapid growth of search engine technology, where search engines are trying to discover different kinds of real-time content found on the Web.

### Challenges of ICT in Document Storage and Retrieval

ICT is a term that describes the whole range of processes involved in the acquisition, storage, transmission, retrieval, and processing of visual, textual, and numeric information. Such a process is mechanical in nature. As a result, most users, especially in public primary schools, now face difficulties and challenges due to new trends in information storage and access. There are a good number of challenges facing the use of ICT for document storage and retrieval in public primary schools. The major challenges are identified as follows:

**Information Overload:** The surging volume of information arising from different sources (including online databases, digital libraries and repositories, web pages, blogs, wikis, and online journals) is a major contributing factor to the challenges faced in information storage and retrieval today. Kanter (2020) attributed the problem of information overload a number of concerns, including: the simplicity of creating, duplicating, and sharing information online; the exponential increase in channels to receive information by; radio, television, print media, websites, e-mail, mobile telephony, RSS feeds, etc.; the lack of clear structure in groups of information and poor clues as to the relationships between those groups; and huge volumes of new information being constantly created. All these contribute to information overload (Kanter 2020).

**Poor Internet Connectivity:** Poor internet connectivity keeps the information seeker frustrated most of the time. In addition to the high cost of internet service, some information service providers have not fully laboured to extend their internet coverage infrastructure to all areas nationwide (especially in remote areas) (World Bank, 2021). As a result, the subscribed user does not fully benefit from their service because of a lack of or poor internet connectivity in his or her area of connection. It is true that while a user tries all avenues and cannot or is consistently disturbed in searching, accessing, retrieving, uploading, or simply storing his or her information over the internet, he or she will certainly be disappointed in his or her internet service provider.

**Metadata Challenges or Errors in Entering Resource Metadata Leading to Mismatch in Files (Information Resources) During Retrieval:** Manguinhas et al. (2016) attribute the retrieval issues to a lack of quality in the metadata's contents in most of the cases. Sometimes an information worker or person entering resource metadata may not be well observant or critical about the data they are entering to describe a given information resource. Such reckless actions are what render some information resources unavailable to users seeking them, even when the information worker is sure the materials were uploaded or shared. Sometimes errors arise in scenarios where: an information worker captures all the necessary metadata of a given resource but uploads, shares, or attaches a wrong or different resource; an information worker does not capture all the necessary metadata fields or elements that render the material discoverable when searched; an information worker mistakenly enters mismatched metadata to describe the attached resource.

**Expertise:** There is still a serious need for technical support with respect to the high level of expertise in the use of ICT for data storage and retrieval. The poor maintenance and insufficient skills to identify system problems and swap parts is one of the major problems facing document retrieval and storage.

There are many types of equipment that could be easily repaired and repurposed. The problem of technical expertise is two-fold: 1) There are not enough professionals qualifying for or attaining ICT specialist skills at the speed at which the technologies are adopted, and 2) there is the problem of brain drain, whereby few experts opt for better-paying jobs and living in academic institutions.

**Methodology**

A descriptive survey design was adopted for the study. The study was conducted in Imo and Akwa Ibom States in Nigeria. The population of the study consisted of all public primary school administrators in Imo State and Akwa Ibom State (made up of the head teachers and deputy head teachers academic). A stratified sampling technique was used to select 50 head teachers and 50 deputy head teachers' academic from Imo State and, likewise, 50 head teachers and 50 deputy head teachers' academic from Akwa Ibom State. This gave a total of 100 head teachers and 100 deputy head teachers, which made up the 200 respondents used as the sample size in the study. The instrument used in this study for data collection was a questionnaire titled "ICT and School Administrative Document Questionnaire (ICTSADQ)." Face and content validation of the instrument was carried out by an expert in testing, measurement, and evaluation to ensure that the instrument has the accuracy, appropriateness, and completeness for the study under consideration. The reliability coefficient obtained was 0.80, and this was high enough to justify the use of the instrument. The researcher subjected the data generated for this study to appropriate statistical techniques, such as descriptive analysis to answer the research questions and regression analysis to test the hypothesis. The test for significance was done at 0.05 alpha levels.

**Data Analyses and Results**

**Research Questions One:** The research question sought to find out the extent of the availability of ICT in public primary schools in Imo State and Akwa Ibom State. To answer the research question, percentage analysis was performed on the data, (see table 1).

**Table 1: Percentage analysis of the extent of the availability of ICT in public primary schools in Imo State and Akwa Ibom State**

EXTENTS	FREQUENCY	PERCENTAGE
HIGH EXTENT	8	4*
LOW EXTENT	69	34.5
VERY LOW EXTENT	123	61.5**
<b>TOTAL</b>	<b>200</b>	<b>100%</b>

\*\* The highest percentage frequency

\* The least percentage frequency

**SOURCE:** Field survey

The above Table 1 presents a percentage analysis of the extent of the availability of ICT in public primary schools in Imo State and Akwa Ibom State. From the result of the data analysis, it was observed that the highest percentage (61.5%) of the respondents affirmed that the extent of the availability of ICT in public primary schools in Imo State and Akwa Ibom State is very low, while the least percentage (4%) of the respondents stated that it is high. The result of the data analysis therefore shows that the extent of the availability of ICT in public primary schools in Imo State and Akwa Ibom State is very low.

**Research Questions Two:** The research question sought to find out the extent of utilization of ICT in the storage and retrieval of school administrative document in public primary schools in Imo State and Akwa Ibom State. To answer the research question, percentage analysis was performed on the data, (see table 2).

**Table 2: Percentage analysis of the extent of utilization of ICT in the storage and retrieval of school administrative document in public primary schools in Imo State and Akwa Ibom State**

EXTENTS	FREQUENCY	PERCENTAGE
HIGH EXTENT	2	1*
LOW EXTENT	66	33
VERY LOW EXTENT	132	66**
<b>TOTAL</b>	<b>200</b>	<b>100%</b>

\*\* The highest percentage frequency

\* The least percentage frequency

SOURCE: Field survey

The above Table 2 presents a percentage analysis of the extent of ICT utilization in the storage and retrieval of school administrative documents in public primary schools in Imo State and Akwa Ibom State. From the result of the data analysis, it was observed that the highest percentage (66%) of the respondents affirmed that the extent of ICT utilization in the storage and retrieval of school administrative documents in public primary schools in Imo State and Akwa Ibom State is very low, while the least percentage (1%) of the respondents affirmed that it is high. The result of the data analysis clearly states that the extent of ICT utilization in the storage and retrieval of school administrative documents in public primary schools in Imo and Akwa Ibom States is very minimal.

### Testing of Hypothesis

**Hypothesis One:** The null hypothesis states that there is significant influence of ICT utilization on the storage and retrieval of school administrative document in public primary schools in Imo State and Akwa Ibom State. In order to answer the hypothesis, simple regression analysis was performed on the data (see table 3)

**Table 3: Simple Regression Analysis of the influence of ICT utilization on the storage and retrieval of school administrative document in public primary schools in Imo State and Akwa Ibom State**

Model	R	R-Square	Adjusted R Square	Std. error of the Estimate	R Square Change
1	0.89 <sub>a</sub>	0.80	0.80	0.02	0.80

\*Significant at 0.05 level; df= 198; N= 200; critical R-value = 0.197

The above Table 3 shows that the calculated R-value (0.89) was greater than the critical R-value of 0.195 at 0.5 alpha levels with 198 degrees of freedom. The R-Square value of 0.80 predicts 80% of the influence of ICT utilization on the storage and retrieval of school administrative documents in public primary schools in Imo State and Akwa Ibom State. This rate of percentage is highly positive and therefore means that there is a significant influence of ICT utilization on the storage and retrieval of school administrative documents in public primary schools in Imo State and Akwa Ibom State. It was also deemed necessary to find out the influence of the variance of each class of independent variable as reported by each respondent (see table 4).

**TABLE 4: Analysis of variance of the influence of ICT utilization on the storage and retrieval of school administrative document in public primary schools in Imo State and Akwa Ibom State**

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	832.69	1	832.69	795.29	.000b
Residual	207.31	198	1.047		
Total	1040.00	199			



**a. Dependent Variable: Storage and Retrieval**  
**b. Predictors: ICT Utilization**

The calculated F-value (795.29) and the P-value as (.000b). Being that the P-value (.000b) is below the probability level of 0.05, the result therefore means that there is significant influence exerted by the independent variables, i.e., ICT utilization, on the dependent variable, which is storage and retrieval of administrative documents. The result therefore means that there is significant influence of ICT utilization on the storage and retrieval of school administrative document in public primary schools in Imo State and Akwa Ibom State. The result is therefore in agreement with the research findings of Jansen (2016), who asserted that information storage and retrieval deals with the production, representation, organization, storage, retrieval, use, or evaluation of information along with the tools and techniques associated with these processes. This means that ICT serves as a tool that is capable of handling these processes because it has the features that can enhance them properly. The significance of the result caused the null hypotheses to be rejected while the alternative was accepted.

**Conclusion**

ICT has become an essential part of our everyday lives. Accordingly, this integration in school improvement is not only for the purpose of teaching and learning, but also for educational management use. It has become one of the most effective factors in school improvement. It also plays a vital role in improving the functional effectiveness of the school system. Even nowadays, ICT has demonstrated varying impacts on learning. ICT provides newer and more effective ways of mitigating some of the challenges being faced by the educational system of the country. In this regard, ICT becomes the vital means to facilitate this task. Finally, the study concludes that there is a significant influence of ICT utilization on the storage and retrieval of school administrative documents in public primary schools in Imo State and Akwa Ibom State. Besides, the extent of the availability of ICT and its utilization for storage and retrieval of documents in public primary schools in Imo State and Akwa Ibom State is very low. The study also concludes that with the advent of big data, advanced analytics, and the profusion of Internet of Things (IoT) devices, storage and retrieval of information are more important than ever to handle the growing amounts of data in educational institutions. Hence, there is significant influence of ICT utilization on the storage and retrieval of school administrative document in public primary schools in Imo State and Akwa Ibom State.

**Recommendations**

1. For primary schools to benefit from ICT adoption in the storage and retrieval of documents, the school administrators should provide needed infrastructure and hire skilled ICT personnel to carry the task.
2. Since ICT can provide both administrators and students with more opportunities for adapting learning, teaching, and managing individual needs, it is very pertinent and fundamental for schools to integrate the utility of information and communication technology into the school curriculum.
3. For primary school to be the bedrock of educational system, administrators should bring to the learners elementary and general knowledge of science, by teaching them to use and operate scientific objects and gadgets so that they may be conversant with foundational ICT knowledge as they advance to other levels.

REFERENCES

- Amadi, M. N. (2007). Management and Integration of Information and Communication Technology in Distance Learning in Nigeria. *Journal of Education Management*, 6(1), 233-240.
- Ashrafi O., & Rita, N. (2016). The Place of ICT (Information and Communication Technology) in the Administration of Secondary Schools in South Easterns States of Nigeria. *Creative Education* 7 (11), 2016.
- Bukola, A. & Ruth, S. (2019). *Impact of ICT on Information Retrieval System in Academic Libraries: The Experience of Federal University Gashua Library, Yobe State, Nigeria*. Retrieved from: <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=5765&context=libphilprac>
- Education Destination Asia (2022). *Primary School Education System in Singapore*. Retrieved from: <https://educationdestinationasia.com/essential-guide/singapore/primary-school-education-system-in-singapore>
- Federal Republic of Nigeria. (2014). *National Policy on Education*. Yaba: NERDC
- Jansen, J. (2016). Information processing and management; HBKU, Qatar Computing Research Institute: An Online Clarivate Analytics. *International Journal of Elsevier*. Pp1-14.
- Kanter, B, (2020). *Information overload, why it matters and how to combat it*. Retrieved from <https://www.interaction-design.org/literature/article/information-overload-why-it-matters-and-how-to-combat-it> accessed on 02 May 2021.
- Keshadi E. D. (2022). *What is a Storage Device? Definition, Types, and Examples*. Retrieved from <https://www.geeksforgeeks.org/what-is-a-storage-device-definition-types-examples/>
- Lotfi, Z., Sahran, S., Mukhtar, M., & Zadeh, A., (2013). *Information Sharing in Supply Chain Management, Procedia Technology*. 11, 298 - 304 [https://www.researchgate.net/publication/274517389\\_Information\\_Sharing\\_in\\_Supply\\_Chain\\_Management](https://www.researchgate.net/publication/274517389_Information_Sharing_in_Supply_Chain_Management).
- Rana, H. K. (2019): *Impact of Information and Communication Technology on Academic Libraries in Punjab*. Source: <http://www.goarticles.com/cgi-bin/showa.cgi? =1239032> Retrieved 28/08/2009.
- Robert, S., Garry, K., & Dave, R. (2021). *Computer Storage: Definition*. Available at: <https://www.techtarget.com/searchstorage/definition/storage>
- Teachmint (2022). *Primary School*. Available at: <https://www.teachmint.com/glossary/p/primary-school/>
- Vimalkumar, P. (2010). *Effectiveness of blog based learning in Physics at Higher secondary level*. Retrieved from: <https://sg.inflibnet.ac.in/handle/10603/205647>
- World Bank (2021). *Connecting for Inclusion: Broadband Access for All*. Accessed Tuesday, 04 May 2021. <https://www.worldbank.org/en/topic/dig>