ACCESS, ATTITUDE AND COMPUTER LITERACY SKILLS AS PREDICTORS OF USE OF DIGITISED DATABASES AMONG ENGINEERING STUDENTS IN FEDERAL POLYTECHNICS IN SOUTHWESTERN NIGERIA

by

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CERTIFICATION

I certify that this work was carried out at the Centre for Educational Media Resource Studies, Faculty of Education, University of Ibadan by **Modupeola Aduke ABOYADE** under my supervision.

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ABSTRACT

Survey into academic activities of engineering technology students in federal polytechnics in Nigeria vis-à-vis the use of digitised databases reveal minimal utilisation arising from some challenges. Studies abound on the use of digitised databases in relation to access, attitude and computer literacy in tertiary institutions, with few of them focusing on polytechnics in Nigeria. This study investigated the extent to which access, attitude and computer literacy skills predicted the use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria.

Uses and gratifications and Information utilisation theories were adopted, while descriptive survey research of correlational type was employed. Total enumeration technique was used to select 770 male and 177 female totalling 947 Higher National Diploma II engineering technology students in four federal polytechnics in Southwestern Nigeria. Access ($\alpha = 0.91$); Attitude ($\alpha = 0.77$); Computer literacy skills ($\alpha = 0.76$); and use of digitised databases ($\alpha = 0.93$) scales were used to collect data. Data were analysed using simple percentages, mean, standard deviation, Pearson's product moment correlation and Multiple regression at 0.05 level of significance.

Respondents' ages ranged from 21-26 years, with Electrical Electronics Engineering Technology 25.3%, Computer Engineering Technology 27.8%, Mechanical Engineering Technology 27.6%, and Civil Engineering Technology 19.3%. The mean score of respondents were 38.01 (Access), 46.82 (Attitude), 75.71 (Computer Literacy Skills), and 46.93 (level of Use of digitised databases). Students' attitude (61.5%), levels of access (72.8%) and computer literacy skills (68.4%) were above average. Use of digitised databases significantly correlated with access ($r = 0.32$), attitude ($r = 0.92$), computer literacy skills ($r = 0.30$). The joint contribution of access, attitude and computer literacy skills on the use of digitised databases was significant ($F_{(3:943)} = 2017.87$, $R = .930$) this accounted for 86.5% (R^2 0.865) of the variation in the use of digitised databases. Their relative contributions to the use of digitised databases were: attitude ($\beta = 0.910$; $t = 70.23$); computer literacy ($\beta = 0.133$; $t = 10.83$) and access ($\beta = -.04$; $t = -3.11$). Attitude had the highest relative contribution to the use of digitised databases among engineering technology students in Nigerian federal polytechnics.

Access, positive attitude and computer literacy skills significantly predicted the use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria. Polytechnics should provide access to related digitised databases, and include computer literacy programme in their curricula.

Keywords: Access and attitude to digitised databases, Computer literacy skills of engineering technology students, Federal polytechnics in Southwestern Nigeria

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Current challenges arising from daily explosion of information resources, constant technological changes, need to use information resources effectively and efficiently, have informed the need for students of higher institutions of learning in Nigeria, especially polytechnics to have preference for digital resources, consequently leading to a change in their information resources use format. With particular reference to polytechnics in Nigeria, the challenges enumerated above have brought about the need for media-mix especially in the field of engineering. There is the need for students from engineering departments to use digital information resources so as to cope with challenges arising from technological change, and also for enhanced academic performance. These challenges can be surmounted through the use of digitised databases in the course of their academic pursuits. This is based on the conviction that, technology is a potent and powerful tool for lifelong learning. Besides, with advances in Information and Communication Technology (ICT), electronic information resources such as electronic books and journals, online public access catalogue, online databases and the Internet have launched the world into an information age tagged 'tsunami' (Isiakpona and Ifijeh, 2012). It means that, no institution or organisation can still rely only, on traditional printed information resources to perform effectively and efficiently. To students, ICT is a significant development that provides tools for managing the avalanche of information generated by modern society.

Consequent upon the identified challenges, and all over the world, students in higher institutions of learning especially those from engineering departments in Nigeria need to use digitised information resources so as to cope with the challenges and improve on their academic performance. According to Marcum and George (2003), engineering technology students are expected to develop new skills, right attitude required to explore and exploit information in electronic resources, conduct research,

learn and accomplish other academic tasks. These can be done through the use of computers connected to the Internet to search and retrieve needed information from electronic catalogues, e-journals, e-books and large databases of digitised scholarly information.

A database by description is an electronic filing system for information. It can be created and stored by a group or individuals, governments or non-governmental organisations, and searched online for retrieval of information. Digitised databases as described by Bar-llan, Peritz and Wolman (2003), are collections of converted computer data, graph or images that are processed, systematically arranged and structured so that, they can be automatically retrieved or manipulated. Again, databases can be described as an organised collection of information of a particular subject or multi-disciplinary subject areas. A database could be full text containing the whole content of an article, or bibliographic with only the citation information of an article such as the author's name, title, volume, issue number, date of publication and page numbers.

Ekwelem, Okafor and Ukwuoma (2009) described digitised databases as information sources that are available and can be accessed electronically through computer-networked facilities such as, on-line library catalogues, the Internet, the World Wide Web (WWW), and digital libraries. A typical example is the African Academic Digital Library (AADL), which provides access to over 1000 well-known published materials. The digital contents cover various educational materials that can meet various knowledge needs. The digital content has the capacity to remove inequality of information access and increase the pace of learning. Furthermore, inputs into digitised databases can be made directly through the computer or by other file transfer mechanisms in a machine readable form. The editorial processing is facilitated by a computer, and their articles are thus made available in electronic form to readers. In a simple terminology, digitised databases are a subset of electronic information resources that are easily accessible online.

According to Rekkedal and Dye (2007), digitised databases consist of book chapters, millions of full-text journal articles, newspapers, theses, dissertations, databases and CD-ROMs, which are likely to be the alternative to the print media. Most materials available on the Internet are pivots to academic achievement capable of aiding the ability to read, comprehend, and communicate at high levels if searched with correct

skills. The Internet is one of the carriers of such ICT resources that could be used in tertiary institutions to achieve the much desired academic advancement.

There is a growing body of authoritative educational materials available in the electronic databases. It is imperative to note that the intellectual content of e-resources acquired into the libraries are classified as reliable and dependable sources of information. The Essential Electronic Agricultural Library (TEEAL), EBSCOHOST, ScienceDirect, Myilibrary, Journal Storage (JSTOR), and the likes, are some of other examples of these online digitised databases. Ordinarily, databases, such as those useful in academics, contain index of records that contain the citation, abstract and a link to a full-text article. The subjects covered are diverse in nature, and they include physical sciences, engineering, life science, social sciences, health sciences and many others. These databases are a part of large collections of machine-readable data that are maintained by commercial agencies, and are accessed through communication lines. Many libraries subscribe to them for easy access and use of current information. This is also predicated on the fact that, their intellectual contents are certified to be highly classified, authentic, educational and suitable for learners. Therefore, it is not an over statement to say that, digitised databases have emerged as one of the vehicles to achieve the desired change in education.

Digitised databases also have the ability to provide access to unlimited information, and they have become an inseparable part of today's engineering educational life. The dependency on the World Wide Web and its services are increasing day-by-day and the users of engineering schools also depend more on the invaluable educational resources for learning activities. On the advantages inherent in digitised databases, they are useful globally for teaching, learning, research and practices that have effect on the way people learn, work and live. Also, digitised databases are advantageous to learners, as they open new avenues for learning and sharing of knowledge among tertiary education students. These important educational materials are flexible, suitable, current, rich in content, voluminous, linkable to other sources, up-to-date, and easy to access and use. Through the combination of search terms with Boolean operators such as (AND, NOT, OR), students can access digitised databases for recent and current information with ease. It also presents users with opportunities to save searches, indicate mode of delivery and make infinite search, once it is accessible. These invaluable educational resources also offer one of the world's

most advanced web delivery systems for scientific, technical, and medical information. For example, ScienceDirect contains over 25% of the world's science, technology and medical, full text and bibliographic information. The collection brings global knowledge into one's fingertip through the provision of information such as abstract, journal title, volume, page number, affiliation, article title, etc.

In Nigeria, some digitised databases that are related to the curriculum of polytechnics are provided for the federal polytechnic students through a foundation known as the Polytechnic and Monotechnic Library Foundation (PMLF). The Foundation is a consortium that consists of all the librarians of polytechnics and monotechnics in Nigeria. The Foundation scouts for funds for subscription to digitised databases at a reduced cost, so as to be able to provide e-resources for students. Some of these databases can be classified as general, while others are specific. The general ones are broad in scope and they include ScienceDirect, EBSCOHOST and E-granary, while the specific ones are subject based, especially those that can be used by engineering technology students. Examples of specific digitised databases are Engineering village, Egnetbase Engineering Handbooks Online, Environmental Engineering Abstracts, Applied Science and Technology, IEEE/IET Electronic Library (IEL), ArticleFirst, EMA (Engineering Materials Abstracts) and Engineering Index, among others. They are trusted, respected, and ranked among the most highly cited instructional materials Also, most educational digitised databases are stored electronically in different websites, either on computers serving the Internet, or on CD-ROMs, or DVD.

Embedded in these different types of information resources are educational information meant to impact positively on pedagogical activities. The use of such technologies facilitates teaching, learning, and improves recreational activities. These digitised databases are designed to offer an organised means for storing, managing and retrieving information. In teaching and learning, especially in higher institutions of learning, access to, use of, and positive disposition to digitised databases are important because, the materials serve as a medium to achieve quality education that promotes academic upliftment and excellence. Also, digitised databases have an edge over traditional print-based ones in that, they contain current and scholarly information that are frequently updated. These electronic resources also offer advanced search

capabilities and flexibility in the storage of the research results, and enable access to information without the restrictions of time and location.

Central to this research work is the use of digitised databases by engineering technology students. The issue of the use of digitised databases by students to enhance learning activities was discussed by Maharana, Sethi and Behera (2010). The researchers stressed that, the present age tagged 'Internet age' has a way of revolutionising the way knowledge is transferred to students. They reasoned that, digitised databases are veritable and vital tools needed for sustainable education and quality research these days. The researchers listed five factors among other variables as the purpose of using digitised databases by students. These are communication, recreation, professional research activities, study support and learning. In spite of the fact that, digitised databases are highly efficacious in personal research, many students still do not realise the grave implication associated with their underutilisation in higher institutions of learning. However, there is a noticeable desire of all stakeholders (government, parents, lecturers, organisations, non-governmental organisations and so on) in the educational sector in Nigeria to make a positive impact on polytechnic education.

As a result of this, and in realisation of the impact and power of technology in national development, the Federal Government of Nigeria, in her efforts to join the technologically advanced nations by the year 2020 and beyond, has decided to educate its citizens and encourage students on the use of qualitative information sources and resources to revitalise, reposition, rehabilitate, restore and improve technological education in Nigeria. According to Na'iya (2013), the Federal Government of Nigeria plans to achieve this objective by providing funds for polytechnic libraries through the Tertiary Education Trust Fund (TETFund) to procure instructional and learning materials for polytechnics in Nigeria. This is known as TETFund Intervention in library development in the universities, polytechnics and colleges of education. The vision of TETFund, a world class public sector intervention agency in Nigeria, is to use funds generated from education tax to improve the standard and quality of technological education in Nigeria. This is tagged 'education rebirth'.

Aside the provision of digitised databases in polytechnic libraries by the Federal Government of Nigeria, there are provisions for free online digitised databases through gratis from non-governmental organisations. Thus, one would have thought that, with

abundance of these digital resources, engineering technology students in federal polytechnics in Nigeria would maximally use the databases. On the contrary however, federal polytechnics students in Nigeria are perceived to demonstrate low use of these resources. Low use of digitised databases can portend grave implications to their learning. These include, decrease in academic productivity, inefficiency in academic performance, decrease in technological growth and poor quality training. On the nation, the problem of low use of digital resources can manifest in low level human capacity development, which would in turn lead to national disaster and waste of human, man and material resources. In academic libraries, there would be low patronage of users, waste of human labour and material resources. This gap was equally observed in a Nigerian university by Esse (2014), where gross under-utilisation of digitised databases was established especially by majority of students in the institution investigated. Aside low and inadequate use of digitised databases reported by Esse (2014), there is also a noticeable shortage of instructional print materials in the field of engineering. For instance, at most polytechnic libraries visited, recent and up-to-date literature was few in the libraries. This problem is perceived could hamper appropriate use of digitised databases by engineering technology students in higher institutions in Nigeria. The implication of this is that, there may be lack of skilled manpower, inadequate qualified personnel, poor implementation of training and backward national economic development.

Inherent benefits of use of digitised databases include, academic efficiency, promotion of vocational and technical education, development of marketable skills in students, production of job creators and youths that would become asset to themselves, in particular, and the nation in general. Thus, for Nigerian polytechnic students to appropriately use digitised databases for learning, as well as experience their benefits and gains, they must have unhindered access, possess the right attitude and be computer literate. These factors may determine, to a large extent, the success or failure of digitised databases for teaching, learning and research activities in federal polytechnics in Nigeria. According to Tenopir (2003), variables such as ability to access, positive attitude and computer literacy skills are key factors that could influence the use of digitised databases. This means that for polytechnic students to use digitised databases successfully, they must have the knowledge of what they want, why it is wanted, how to get what they want and be able to navigate the Internet to search for information for

gratifications. These if done, will enable students to use e-resources for learning, research, recreation and scholarship. However, it is pertinent to know that there are so many other factors that could influence appropriate use of digitised databases by students. Among such factors as identified by Chowwdhury (2005) are, availability, awareness, self-concept, self-efficacy, and motivation to mention but a few. It is assumed that, the need to improve higher education should begin with giving greater attention to our students, because students are the leaders of tomorrow, the future of Nigeria and the ones to further develop the society's technological education. Therefore, access, attitude and computer literacy skills could be among factors that could facilitate the use of digitised databases by the students in federal polytechnics in Nigeria.

Access to digitised databases is one of the constructs that are relevant to this study. It refers to ease of locating electronic information resources physically in the library, cybercafés and smart phones, etc. It is important because, except information resources are accessible to users, they cannot be used. Access can be regarded as the degree to which a product, device, service, or environment is available to as many people as possible. The issue of access was also identified by Mabawonku (2003) who indicated that information users will only select and use what is accessible when they are faced with an information need. This signifies that, access is a crucial issue in satisfying the information needs of users as it could change the way students use the traditional library. In a bid to provide and improve access to digitised databases in the polytechnics, some polytechnic librarians have come to realise that, access to electronic databases can enhance the needed learning outcome expected from students in polytechnics in Nigeria hence, the formation of a foundation. The foundation entails cooperation amongst the polytechnics and monotechnics in Nigeria to jointly subscribe to databases to reduce cost so as to provide and make readily available databases to students and other library users in their domain. In realisation of this, and as revealed during an interaction with the Polytechnic Librarian of the Federal Polytechnic, Ado-Ekiti, the polytechnic and monotechnics librarians in Nigeria are working round the clocks to provide unhindered access to library e-resources.

The world is in the era of science and technology hence, it is perceived that, engineering technology students studying courses such as computer engineering technology, electrical and electronic engineering technology, mechanical engineering technology, agricultural engineering technology, civil engineering technology and so

many others, have long suffered some degrees of exclusion in having access to information resources in different types of libraries to satisfy the needs of users. The reason is not far-fetched; as it could be due to the dearth of intellectual materials especially in their field of study.

To cushion the effect of scarcity of print materials in the field of engineering therefore, digitised databases such as ScienceDirect, E-granary, ESCOHOST, Engineering village and other assorted instructional digitised databases should be provided and made available to engineering technology students. The provision, it is believed, will serve not only as a supplement, but also as a relief to the insufficiency and scarcity of digitised resources in their fields of study. The provision, it is also envisioned, will contribute in no small measure to satisfying and meeting engineering technology students' technical and vocational information needs.

Another variable that is germane to this research work is students' attitude towards the use of digitised databases. Students play a vital role in the academic community such as the polytechnics hence, there is the need to study one area that is critical to students, that is, students' attitude to the use of digitised databases. Webster English Dictionary for Advanced Learners (2013) defines attitude as 'disposition or state of mind'. Attitude could also be described as positive or negative and it refers to one's positive or negative judgment about a concrete subject. Kent and Lancour (2013) defined attitude as a learned predisposition to behave in a consistent and evaluative manner towards a person, a group of people, an object, or a group of objects. It could also be said to imply a favourable or unfavourable evaluation which is likely to affect one's responses towards the person or object concerned.

As discussed by Kinniard, Gut and Henning (2010), attitudes are learnt, mouldable and may change with experience of the stimulus objects and with social rules or institutions. Attitude can also be described as someone's manner, disposition, feeling, position, etcetera, towards a certain idea, object, activity or event. Attitude again could also be a predisposition or a tendency to respond positively or negatively to a person or thing. This may however be in contrast with Eagly and Chaiken's (1998) submission that, attitude is a psychological tendency that is expressed by evaluating a particular entity with some degree of favour. In other words, attitudes guide behaviour and refer to the way individuals respond to and are disposed towards an object. In educational context, it also indicates that confidence could lead to positive attitudes,

and this may enhance learning and associated activities. It means that, if students' attitude is positive towards the use of digitised databases, it could therefore be a way to have a sound scholastic standing necessary for technological advancement in Nigerian polytechnics.

However, Aduwa-Ogiegbaen and Iyamu (2005) suggested that, for students to benefit from the huge resources on the Internet, they must have personal conviction of having the ability to effectively carry out the task. Thus, engineering technology students' attitude towards the use of computer and their personal confidence and conviction would assist them educationally to enable them have potentials to alter the traditional ways in which education is being delivered in the nation's higher institutions. One can discern from this that, if students do not respond positively to learning instructions, then the efforts of all concerned (library, lecturers, polytechnic managers, etc) in imparting knowledge, may be in futility.

Therefore, in the context of this research work and in consideration of the importance of engineering as a field of knowledge that deals mostly with construction technologies such as roads, houses, bridges, crafts, tools, and the likes, it is better for engineering technology students in federal polytechnics to cultivate a positive attitude to the use of digitised databases so that they could have a sound scholastic presentation in school. It also implies that, if engineering technology students' attitude is positive towards the use of digitised databases, it could be an indispensable way to have a better understanding of subjects taught in school, this is believed would aid retention in learning and make learning permanent.

Computer literacy skills is another factor that can aid the use of digitised databases among engineering technology students in federal polytechnics in Nigeria. Computer literacy skills is an important component of educational change that students must present in the use of digitised databases. Students should have the ability to successfully and confidently use technology to achieve excellence and survive in the digital environment. This assertion was supported by Scher (2008) when he stated that computer literacy skills is the knowledge and ability to utilise computers and related technology efficiently, with a range of skills covering different levels from elementary use to programming to solving an advanced problem. Computer literacy skills also refers to the level of comfort someone has with using computer system, computer programs and other related applications that are associated with computers. Scher

(2008) further described computer literacy skills as appropriate familiarity with technology to enable a person live and cope in the modern world. Thus, one can assume that computer literacy skills is the ability to use digital technology, communication tools, and/or networks appropriately to solve information problems in order to function in an information society.

Similarly, Hunter (2009) described computer literacy skills as the skills and knowledge needed by a citizen to survive and thrive in a society that is dependent on technology for handling information and solving complex problems. Furthermore, Simonson, Maurer, Montag-Torardi and Whitaker (2007) stated that computer literacy skills is an understanding of computer characteristics, capabilities and applications, as well as an ability to implement this knowledge in the skilful and productive use of computer applications suitable to the individual roles in society. For the purpose of this study however, the contemporary views of computer literacy skills as the set of skills and understanding required by students to enable meaningful use of Information and Communication Technology (ICT) appropriate to their needs shall be embraced. In this setting, computer literacy skills of a student is a relative measure of a student's capacity to make an appropriate use of technology for educational and recreational purposes. Hence, computer literacy skills could be a factor that influences learners' use of scholarly digitised databases for research purposes.

Esse (2014) supporting this assertion submitted that, digitised resources cannot be utilised without adequate computer literacy skills. Equally, she noted that, users need skills to make comparisons between paper, CD-ROM and electronic resources. There is therefore the need to equip students with computer literacy and information retrieval skills among others as strategies to promote effective use of digitised databases. Consequently, one may deduce from the above analysis that, computer literacy skills remains one of the basic factors students need to utilise electronic publications for learning. It means that, students' computer literacy skills is inevitable in the ability to use digitised databases in the quest for satisfaction of their information needs. This was discussed by Tenopir (2003) where he opined that, for users to utilise databases, an in-depth knowledge of Information Communication Technology is compulsory. To him, ICT use refers to the 'how' and 'where' users' access digitised databases. Again to Tenopir (2003), an increased access points may increase the use of digitised databases by the polytechnic students.

At this juncture, it is pertinent to re-emphasise the need for engineering technology students to acquire computer literacy skills to be able to access digitised databases. In view of the present challenges posed by both the information resources explosion and the complexities of ICT that can help to manage theses explosions, it is clear that engineering technology students will need to use ICT effectively to achieve excellence in their academic endeavours in school. According to Krissoff and Konrad (1998), for staff and students to consider themselves truly information literate, it is essential that they develop both traditional literacy and fundamental computer literacy skills. This is believed, would increase access to digitised databases and promote their use for academic prospect. It must also be recognised that, when implemented successfully, being computer literate has the potential to liberate users and enable them to have access to a vast array of useful online library resources for meaningful educational progress and advancement.

This is also evident in a study carried out by Togia and Tsigilis (2009) on the use of electronic information resources by graduate students at the Aristotle University of Thessaloniki. The main problem associated with the non-use of digitised information resources as reported by the researchers, was lack of adequate computer literacy skills. The situation above may be a common scenario in African countries like Nigeria because, the conditions that prevail in these nations are similar in that respects. Also, Omona and Ikoja-Odonga (2015) assessed the ICT competence of a representative sample of fourth year students in a Tanzanian Medical School. The study specified that, half of the students did not have the necessary computer literacy skills to enable them access, disseminate and use health information for their day-to-day studies. Zeszotarski (2000) identified students' lack of basic computer literacy skills as a barrier to the successful integration of computer assisted instruction. Zin, Zaman, Judi, Mukti, Amin, Sahran, Ahmad, Ayob, Abdulla, and Abdullah (2003) are of the opinion that computer literacy skills has resulted in a need for the learning of new skills, abilities, and competences to effectively and efficiently handle job related tasks in electronic environment.

Therefore, computer literacy skills, knowledge, access, right attitude and competence in computer technology are now vital assets for all engineering technology students in higher institutions. This connotes that, engineering technology students with adequate computer literacy skills may be able to access, retrieve and use digitised

resources. Therefore, the study considered computer literacy skills, attitude, and ease of access as potent factors in the use of digitised databases among engineering technology students in Nigeria.

1.2 Statement of the problem

Initial survey and observation into the academic activities of the engineering technology students in federal polytechnics in Nigeria revealed noticeable manifestations of some challenges arising from dearth of engineering literature and inadequate use of digitised databases. The challenges arising from the insufficient use of digitised databases include: students' inability to locate and evaluate information resources, incapability to carry out practical work with ease and in ability to fit into the current trends of events in the engineering schools. All these are believed, could lead to general poor performance in their educational pursuit as well as lack of creativity among engineering technology students. Other challenges that could impede academic performance among students could be traceable to poor computer literacy skills, poor campus networking for internet browsing, over-dependence on print materials, poor attitude, inadequate Internet access points on campuses, and defects in the use of learning resources, among others. These challenges have been observed to be precursor of problems of low use of digitised databases among engineering technology students in polytechnics. Also, it was discovered that, there were inadequate literature on the studies of access, attitude and computer-literacy as they relate to the use of digitised databases among the engineering technology students in federal polytechnics across Nigeria.

Again, observation and preliminary investigation through library users' statistics have shown that, some digitised databases such as EBSCOHOST, E-Granary, ScienceDirect, and Engineering Village that are available in federal polytechnic libraries in Nigeria are grossly underutilised by engineering technology students. This is in spite of regular sensitisation, conduct of regular orientation and user education programmes for students by polytechnic library managers and personal communication with students on regular basis. It is against this backdrop that this research work was conducted to investigate whether access, attitude and computer literacy skills could predict the use of digitised databases among engineering technology students in federal polytechnics in Nigeria.

1.3 Objectives of the study

The broad objective of the study was to investigate whether access, attitude and computer literacy skills could determine the use of digitised databases among engineering technology students in Southwestern Nigeria, while the specific objectives were to:

i. find out the level of use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria;

ii. establish the level of access to digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria;

iii. find out attitudes of engineering technology students to digitised databases in federal polytechnics in Southwestern Nigeria;

iv. examine the level of computer literacy skills possessed by engineering students in federal polytechnics in Southwestern Nigeria;

v. find out the relative contributions of access, attitude and computer literacy skills to the use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria.

vi. establish relationship between access and use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria;

vii. ascertain relationship between attitude and use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria;

viii find out relationship between computer literacy skills and use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria;

ix. establish the joint contribution of access, attitude and computer literacy skills on the use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria.

1.4 Research questions

The study focussed essentially on the following research questions.

i. What is the level of use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria?

ii. What is the level of access to digitised databases among engineering students in federal polytechnics in Southwestern Nigeria?

iii. What is the attitude of engineering technology students to digitised databases in federal polytechnics in Southwestern Nigeria?

iv. What is the level of computer literacy skills possessed by engineering students in federal polytechnics in Southwestern Nigeria?

v. What is the relative contribution of access, attitude and computer literacy skills to the use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria?

1.5 Hypotheses

The following null hypotheses were tested in the study at 0.05 level of significance.

Ho_1: There is no significant relationship between access and use of digitised databases by engineering technology students in the federal polytechnics in Southwestern Nigeria.

Ho_2: There is no significant relationship between attitude and use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria.

Ho_3: There is no significant relationship between computer literacy skills and use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria.

Ho_4: The combination of access, attitude, and computer literacy skills does not have significant joint contribution to the use of digitised databases among engineering technology students of federal polytechnics in Southwestern Nigeria.

1.6 Significance of the study

The study is significant in that, it would reveal the factors that could contribute to the use of digitised databases among students of federal polytechnics in Southwestern Nigeria. In the current dispensation, it is also widely believed that the desired change from students' overdependence on prints media to electronic media would be achieved.

This in turn, is expected to re-awaken the fast declining standard of education in polytechnics in Nigeria.

As a corollary, this study is also expected to create incentives to invest in scholarly electronic publications by polytechnic funding bodies, polytechnic managements, external donors and individual students. This would also provide information that will enable the Federal Government of Nigeria, National Board for Technical Education, Polytechnic Administrators, Polytechnic Librarians and Media Specialists to make provision for, and formulate appropriate policies on scholarly digitised databases necessary for the use of the students in higher institutions. This would have impact on improving students' academic performance and reduce the rate of failure in examinations due to wrong and inadequate use of instructional and learning materials.

Also, the research would enable publishers of digitised databases to know the degree to which students find their products and services easy to navigate and use. The result would also be beneficial to polytechnic libraries in particular because, there would be an increased procurement of digitised databases and ICT infrastructures with sufficient networked computers with fast Internet connectivity.

This study is equally significant in that, it would improve full-text delivery of e-resources, electronic document delivery and the use of search engines. As a result of this, the findings tends to enable the Polytechnic Librarians to play their role more than ever before in academic attainment of their parent institutions. In line with global trends to design and package of new information products, librarians concerned would be able to evaluate their collections from time to time, create awareness for users, formulate relevant educational polices on e-resources and improve their services for students in the polytechnics.

From the perspective of researches on educational management and decision-making, this study would contribute to the body of literature on the relationship between access, attitude and computer literacy skills as predictors of the use of digitised databases among engineering technology students in the study population.

1.7 Scope of the study

This research study was limited to four federal polytechnics in Southwestern geo-political zone of Nigeria covering essentially those offering engineering

technology courses. Those covered included: Yaba College of Technology, Yaba, Lagos, Federal Polytechnics at Ilaro, Ede and Ado-Ekiti. Federal polytechnics were focussed in this study because they possess some characteristics in common. These included being established, controlled and funded by the Federal Government of Nigeria. Furthermore, they all conform to the regulations of the National Board for Technical Education with respect to staffing, students' enrolment, provision of e-resources, and some others criteria. In addition, federal polytechnics like other higher institutions in Nigeria, enjoy funding of e-resources by the Tertiary Education Trust Fund (TETFund).

The subject scope of this study dwelled on the three independent variables (access, attitude and computer literacy skills) that were likely to predict the use of dependent variable (use of digitised databases) among engineering technology students in federal polytechnics in Southwestern Nigeria. In terms of the respondents for the study, the searchlight was beamed on the HND II polytechnic students studying engineering technology courses such as Computer Engineering Technology, Electrical and Electronic Engineering Technology, Mechanical Engineering Technology and Civil Engineering Technology. Essentially, engineering technology students were focussed because they were found suitable to respond to items on the questionnaire that are skewed to engineering fields.

1.8 Operational definition of terms

The following terms were defined as used in the study.

Access to digitised databases: This refers to the degree of ease of location of needed digitised databases in the polytechnic library by engineering technology students in the federal polytechnics in Southwestern Nigeria.

Attitude to the use of digitised databases: This has to do with polytechnic engineering technology students' general disposition, or general feeling towards the use of digitised databases. The disposition or general feeling could be negative or positive.

Computer literacy skills: They refer to the skill or ability of engineering technology students in the federal polytechnics in Southwestern Nigeria to make use of computer and related technology for educational purposes.

Digitised databases: This refers to organised collection of structured data in digital format that are specifically designed for educational purposes which are particularly useful and available for engineering technology students in federal polytechnics in Nigeria. Examples include: ScienceDirect, Ebscohost, E-Granary, etc.

Engineering technology students: These are students in the schools of engineering in the federal polytechnics in Southwestern Nigeria, learning about the scientific principles of how to design, develop structures, construct and operate machines, produce tools, conduct research and in most cases offer supervisory roles.

Southwestern Nigeria: It refers to the Southwestern geo-political zone of Nigeria. The zone comprises six states namely: Ekiti, Lagos, Ogun, Ondo, Osun and Oyo.

Use of digitised databases: This refers to the ability of the engineering technology students in the federal polytechnics to make use of relevant databases for the advancement of their studies. Such digitised resources include: Engineering village, Engineering Material Index, Ebscohost, ScienceDirect and E-Granary, etc.

CHAPTER TWO

LITERATURE REVIEW

2.1 This chapter deals with review of existing literature on the various variables of access, attitude and computer literacy skills in relation to the use of digitised databases as they apply to engineering technology students of federal polytechnics in Nigeria in particular. The review covers the following headings:

2.2 Reforms in polytechnic ICT education in Nigeria;

2.3 Information and Communication Technology (ICT) development in the Federal Polytechnic libraries in Nigeria;

2.4 Use of digitised databases by students in polytechnics in Nigeria;

2.5 Current trends in ICT and engineering in Nigeria and the challenges;

2.6 Access to digitised databases by polytechnic engineering technology students in Nigeria

2.7 Attitude to digitised databases by polytechnic engineering technology students in Nigeria

2.8 Computer literacy skills of polytechnic engineering technology students in Nigeria

2.9 Access and use of digitised databases by students in Nigeria;

2.10 Attitude and use of digitised databases by students in Nigeria;

2.11 Computer literacy skills and use of digitised databases by students;

2.12 Theoretical framework;

2.12.1 Information Utilisation Theory;

2.12.2 Uses and Gratifications/Dependency Theory;

2.13 Conceptual model;

2.14 Appraisal of the literature reviewed.

2.2 Reforms in polytechnic ICT education in Nigeria

In view of the fact that the world today is experiencing unprecedented changes spurred by the revolution in the information technology, rapidly increasing international trade, the newly emerging global economy envisages the need for trained manpower through higher and professional education. As career competition grows ever fiercer in the working world, the importance of students performing well in school has caught the attention of all stakeholders in education industry, that is, parents, teachers, religious bodies, legislators, governments and education departments alike. This has also caught the attention of the Federal Government of Nigeria and has made the Federal Executive Council (FEC) to express its commitment to promote education in a planned manner. According to Eze (2009), the task is however daunting as larger percentage of the country's population does not enjoy access to basic education. The situation is really pathetic. Whereas, the acquisition of technological values, requisite knowledge, desirable work attitudes, development and adaptation of essential techniques relevant to the needs of people have been identified as the hallmark of technological development. This realisation made some developing economies like Nigeria and Mexico to make deliberate efforts to introduce new systems of education designed to promote functional and practical acquisition of techniques aimed at accelerating technological development, thereby leading to economic development.

Nigeria, after independence, soon recognised the important role that technical education could play in the technological development of a nation, but in spite of Nigeria's claim to independence, the huge natural and human resources that abound in the country have remained untapped due to lack of manpower in many vital areas. Also, the technical education which forms the vehicle for moving any nation towards technological advancement has been regrettably neglected. The country's claim to independence then became a ruse as Nigeria had to import virtually all her machines, and recruit expatriates to design and establish industries, construct her roads and bridges, repair her machines and so on. Nigerian Government soon came to the realisation that, for her independence to be meaningful, she had to be self-reliant to a certain degree and minimise dependence upon other countries for any assistance.

This realisation brought about the setting up of a committee headed by Sir Eric Ashby in April 1959. The Ashby commission hinged on the fact that, economic development would not be possible without universal basic education and the best way

to actualise this development was to strengthen manpower at the intermediate level. Therefore, Ashby's Committee Report of September, 1960 recommended an increased attention to technical education and gave useful projections for the higher and middle-level manpower requirements for Nigerian economy. The Federal Government's observation, coupled with Ashby's admonition, triggered off the processes for the establishment of various types of vocational/technical schools and the Department of Vocational Technical Education at the University of Nigeria, Nsukka (Eze, 2009). That means, Ashby Commission's report strengthened the establishment of polytechnics in Nigeria, thereby promoting vocational and technological education.

In 1993, federal polytechnics in Nigeria were established by Decree 33 of 1979 and amended Decree 5 of 1993. Among the goals of polytechnic education in Nigeria is the desire to drive the nation towards technological development. Since then, Nigeria has witnessed an increase in the number of vocational/technical and technological institutions. The polytechnic is a post-secondary technical institution of higher learning created mainly to provide a wide range of intermediate and higher level technology and technologists. It is also considered as the third category of tertiary education in Nigeria which dates back to early 1948 with the establishment of Yaba College of Technology (1946); Kaduna Polytechnic (1956), and Institute of Management and Technology (IMT) Enugu (1958). Subsequently, the Federal Polytechnic, Ado-Ekiti was established in the year 1977, the Federal Polytechnic, Ilaro 1979, and the Federal Polytechnic, Ede in 1992.

The main function of the established polytechnics was to centralise and improve the training of technical officers, originally done by the departmental in-service training centres, such as Nigerian Railways (1901); and the Survey Department (1908). The Polytechnic is a centre of excellence, whose objectives are to teach, conduct research, as well as provide services to the people. Like any other institution, the polytechnic also have a lead in the production of 'headline' knowledge in shaping of vocational and technological education.

Polytechnics today are therefore regarded as one of the institutions that provide tertiary education sometimes known collectively as higher institutions of learning. Okpeodua (2007) revealed that, the decision of the Federal Government to set up polytechnic education was predicated on the decision to revolutionize the society technologically. This government's decision copiously spelt out the objectives of

Technical and Vocational Education (TVE) in the National Policy on Education (Federal Government of Nigeria, 2004). These objectives are: (i) to provide trained manpower in applied sciences, technology, commerce and industry; and (ii) to provide technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic emancipation and development. The polytechnic is therefore one of the avenues through which government attempts to propagate technical and vocational education training. From one technical college in 1948, the country now has over 21 federal, 40 state and 22 private accredited polytechnics (National Board for Technical Education, 2016).

However, the polytechnics that were supposed to provide the tertiary education to yearning citizens in areas of middle level human capital development are confronted with numerous problems such as low level information technology development, poor infrastructure and equipment, and declining financial support. Other identified problems include the attitude of learners towards their studies, non-availability and inaccessibility to information sources/resources, and poor use of digitised information resources provided by the institutions. All these problems it is believed could affect, the quality of graduates produced by the polytechnics in Nigeria.

In the realisation of this, Nok (2006) pointed out that, in 1989, the World Bank provided funds to higher institutions in Nigeria for the acquisition of different educational media resources. This is expected to encourage those institutions to open their doors to academic advancement and better performance, but little significant progress was recorded in the field of education. As pointed out by Adeiza (2012), despite the efficacy and potentials of digitised information resources in keeping abreast with rapid changing technologies, the inclusion of digitised information resources in Nigerian technological educational system has not yielded much result when compared to similar investments made in communication.

There is no gainsaying the fact that, education is known to be the greatest instrument a nation can use to develop its economic, political, sociological, technological and human resources. It also remains critical transformation tool and a formidable instrument for socio-economic empowerment. It is obvious that qualitative change is required in this industry therefore, achieving Nigeria's aspiration of becoming one of the major economic players in the year 2020 is largely dependent on the quality of the nation's human capital/intellectual development and the capacity to improve

productivity and efficiency at individual and corporate levels. In educational institutions, especially higher institutions like the polytechnic, the mode of delivery of knowledge and curriculum are not yet ICT enhanced, even with the development of a national policy on ICT in education. In realisation of the importance of education in Nigeria, a National Policy on Education (NPE) was formulated. Relevant portion states that "education in Nigeria is an instrument *par excellence* for effecting national development". The policy also seeks "the inculcation of national consciousness and national unity, the inculcation of right type of values and attitudes in individuals and the society, the training of the human mind in understanding of the world and acquisition of appropriate skills, abilities and competencies, both mental and physical as equipment for an individual to live in and contribute to the development of her society" (National Policy on Education; Federal Government of Nigeria, 2004).

In corroboration of the National Policy on Education and in consonance with the vision and mission of Tertiary Education Trust Fund, Peters (2004) saw education as an instrument that develops someone in value, knowledge and understanding. Also, the importance of education is obviously reflected in the objectives of Millennium Development Goals (MDGS) and vision 20:2020 which envisages the country to be among the first 20 countries in terms of industrialisation, democracy and human resources in the next few years. The statement reads thus:

> By 2020, Nigeria will be one of the 20 largest economies in the world, able to consolidate its leadership role in Africa and establish itself as a significant player in the global economic and political arena. The effort is to give special attention to core economic, political and social variables to speed up development of backward African nations. P 6

However, it is evident that the vision is far from being achieved. For instance, Avre (2011) while commenting on the persistent decline in the quality of education in the country stipulated that "education, which is a very critical factor in realising vision 20:2020 and a transformation tool, is yet to get to the top of the ladder of socio-economic empowerment needed by all citizenry". Similarly, Avre (2011) as reported by Waheed (2011), states that, the Nigerian Government has been warned that "without an improvement in the Nigerian education sector, the dream and desire of the country becoming one of the 20 world leading economies by the year 2020 may be a mirage if

the Federal Government fails to pay attention to the mass failure in public examinations, empty laboratories and libraries". In line with the observations, Alabi (2011) advised that, "if Nigeria will join the first 20 economically viable countries in 2020, she must improve on the current state of her educational system". This led Nengia (2012) to affirm that, "education in Nigeria has not gotten enough attention it deserves".

To this end, the National Planning Commission has challenged the nation to raise her quality and standard of education to international comparative level, if it hopes to actualise the aspiration of becoming a major economic player by the year 2020. From the policy statements and peoples' observations, it is evident that, the importance of quality education in nation building cannot be over emphasised. As stated by the Federal Government of Nigeria (2004) in the National Policy on Education, the vision and goals of education is "to establish a modern and vibrant education system that ensures the maximum development of the potentials of individuals and promotes a knowledge-driven society that propels the nation's development".

To realise this vision therefore, there have been several calls on the educational managers by spirited individuals and organisations, both at home and in diaspora, on how to make the Nigerian educational system more vibrant in the quality of its products. These, over the years, have generated a lot of debate and argument among Nigerians on the newspapers, radio and television programmes. The problem has also been noticed by stakeholders such as the parents, religious bodies and non-governmental organisations. These concerned bodies have often expressed worry about the manner in which educational system is losing its confidence as regards the effective and efficient nature of the system. Nigeria today, is in the era where change is inevitable as there is no end to the volume of information that we need to possess. Each new day drives learners a step further into a system where knowledge is a commodity. Where there is progress on all aspects, the needs of the masses in the area of education, especially at higher education level, should not be over-emphasised.

How else can we transmit all these information needs, if not through education? Until recently, the education sector has been playing its formal roles of transmitting knowledge while completing school or obtaining qualifications for the sake of 'mere passing' has been the primary focus of the society. Most citizens have lost sight of the main purpose of education which is to develop innovative, creative and probing minds. While the education of yesteryears was built around the needs, ideas and resources of

the past, today, effective education is the focus (Waheed, 2011). All over the world, a major task of education programmes is to come up with guidelines and tools to enable students learn effectively. This is to ensure that, students are able to acquire skills necessary to carry out their academic and problem solving tasks and the more reason why lecturers try to adopt different techniques to help students to learn (Adebule, 2004).

With the coming of multimedia today, learners are pleased to succumb to the delights of virtual education that brings learning into our homes, study at our own convenience and earn a qualification that holds in store a better future. It implies that, learners can then study and learn anywhere, any time and anyhow. To this end, an indispensable way to realise the above vision and reap the fruit of higher education is through good access to and proper use of electronic media resources. Also, the advent of digitised databases is expected to lead to rapid changes in the education industry as well as it is expected to make the bulk of information more relevant to be searched and retrieved at the first instance. In this 21st Century, students' academic attainment appears to be one key criterion for judging educational standard and quality. To this effect, the United Nations Educational Scientific and Cultural Organisation (UNESCO) (1998) acknowledges that:

> On the eve of a new century, there is an unprecedented demand for and a great diversification in … education, and for building the future, for which the younger generations will need to be equipped with new skills, knowledge, and ideals (UNESCO, 1998). P 65

This statement from UNESCO was borne out of the realisation that, for people to be fully engaged in life, whatever their age or profession, learning plays a central role and it only makes sense that people learn in the most effective way. Traditionally, schools in the developing countries have not taught us how to learn; it is almost paradoxical. In recent times, Information and Communication Technologies (ICTs) have been generally accepted as modern instrumental tools that enables the educators to modify the teaching methods being used in order to increase students' interest (World Bank, 2002). The advancement in technology has created so many ICT tools that are necessary and useful in the development process. These new technologies, especially those that are digital are central to contemporary societies and therefore referred to this age as information technology age driven by knowledge economy.

The assertion was corroborated by Wang, Liu, Chou, Liang, Chan, and Yang (2003) that, the education community is not left out in the trend to encourage the use of technology to power education in schools. This is so because, there have been considerable investments towards teaching and learning methods that necessitated the quest to measure the impact of these investments on students' academic activities as a return on investment in education. However, interest has been on making digitised databases accessible and usable by students in order to enhance learning and serve as motivation to students as well as teachers. Hence, there is the need for one to look at both direct and indirect effects of the use of digitised databases on students' academic output.

2.3 Information and Communication Technology (ICT) development in federal polytechnic libraries in Nigeria

The Federal Government of Nigeria in year 2000 gradually began to develop infrastructure in federal polytechnics in Nigeria in relation to the new Information and Communication Technology. Prior to 2001, there had not been internet facilities or services in most polytechnics. Consequently, to implement the Federal Government's policy on information technology, the management of some federal polytechnics in 2003 launched their websites to promote research activities among academic staff and students of the institutions. As part of efforts to improve internet access within the polytechnic community, the authorities of the federal polytechnics in Nigeria also opened cyber cafés and e-libraries to complement the private internet cafés that were operating within the polytechnics. Apart from the cyber cafés that belonged to the polytechnics, private internet operators were also encouraged to set up cyber cafés within the institution to promote internet access and use of e-resources among the members of the polytechnic community. Internet facilities are indispensable to both staff and students. For instance both lecturers and students in federal polytechnics consider the Internet as a tool for their studies and researches. It enables students to get more information about any topic from the World Wide Web (WWW) when compared to their text books and also helps them to explore more about their subjects thereby promoting academic advancement, creativity, innovation and research development.

Recently, most federal polytechnics embarked on several structural and curricular changes. Notable among these are the introduction of general computer

studies and implementation of e-learning platform as part of key reform aimed at assisting the polytechnics to become leading academic centres of excellence and technical education in Nigeria (Buhari, 2013). The general computer studies were introduced to provide students with choices and flexibility of academic programmes. It generally addresses cross-cutting issues such as employers' expectation, competencies in communication skills, computer and information skills, retrieval skills, etc. The implementation of e-learning in the polytechnic was to fulfil the polytechnic responsibility to prepare both academic staff and students for effective participation in the wider information society.

Among the objectives of the initiators of the programme was to use ICT to increase the success rate of students, provide opportunity for polytechnics to enhance the success rates of students, and enhance flexible learning anytime and anywhere and at students' own pace. It is also expected that through e-resources, access to relevant national and international resources would be facilitated and better ways of handling education would be achieved.

2.4 Use of digitised databases by students in polytechnics in Nigeria

The introduction of digitised databases into academic environments particularly polytechnic libraries is almost predictably followed by rapid growth in awareness by students and academic staff (Peled and Rasty, 1999). Ekwelem, Okafor and Ukwoma (2009) described digitised databases as information sources that are available and can be accessed electronically through such computer networked facilities as Online Library Catalogues (OLC), the Internet, the World Wide Web and digital libraries. Rekkedal and Dye (2007) opined that, digitised databases consist of e-books, full text e-journals articles, newspapers, theses, dissertations, databases and CD-ROMs, which are likely to be the alternative to the print media. Emerald, EBSCOHOST, Scopus, MYilibrary, Compendex are some of the examples of online digitised databases.

Similarly, digitised databases are resources which input text may be entered directly by a computer or by other file transfer mechanisms in a machine readable form. The editorial processing is facilitated by a computer and the articles are thus made available in electronic form to readers. The familiarity and use of these electronic information resources by learners in higher institutions of learning are necessary and

important. This was confirmed by Omotayo (2010) in a study she carried out. According to the researcher, e-resources are one of the most valued information communication channels for researchers, globally. Electronic journals and books form the largest part of the digitised collection of a library for providing web based services. Today, many journals are available electronically, some are full text and some contain only bibliographic information with abstract. Major advantage of electronic resources is that they are constantly updated and easy to access and use once a person possesses the necessary skills.

Their production, Omotayo (2010) stated, dates back to the 17th Century, but their importance has not diminished. Even with the advent of the Internet and electronic publishing, e-journals, e-books and other electronic materials have become more easily accessible. The use of these online educational resources, as emphasised by Omotayo (2010), is very important for any meaningful educational enlargement. This is obvious and with the advent of the Internet, researchers and academics have recognised the capabilities of the information and communication technologies as efficient and effective means to share results and to get around barriers by full transfer of intellectual property rights from the author to the publisher. It is also a means of improving the slow turn-over of traditional publishing (Correia and Neto, 2006). Electronic journals relatively provide efficient access to information and thus, they are easy to distribute to library patrons than traditional print. In the financially stringent environment of higher education system, electronic journals have become a medium which is cheaper than the traditional printed journals (Ellis and Oldman, 2005).

According to Rowley (2006), electronic materials take two different forms. One, resources in printed form and are also available in digital form and two, electronic materials which do not have the print version but can be managed by an editor and the scholarly community. The inference that can be drawn here is that, electronic information resources, being a simple electronic representation of educational materials, replicate exactly the printed version of the materials, but occasionally include additional information (such as interactive graphs of external link). In some cases, there is no parallel print source as the materials were born digital. For instance, any available journal on the Internet can be called an 'electronic journal'. It may or may not have print equivalent. Both types may have a significant impact on scholarly communication and in the way knowledge is created and disseminated. Both versions can be conveniently

used by researchers for academic growth and development. According to Shuling (2007), electronic information has gradually become a major resource in every academic library. Being a unit of electronic resources, Aramide and Bello (2009) noted that, databases can be used as an invaluable asset in education, research, teaching and learning.

The emergence of electronic information resources, simply referred to as e-resources, has tremendously transformed information handling and management in academic environments. Ellis and Oldman (2005) opined that, through the use of electronic resources, researchers and students now have access to global information resources, particularly the Internet, for their scholarly intercourse. There is no standard definition available for these electronic resources. As a result of this, they are called by various names, such as e-journals, e-books, virtual journals, virtual library, paperless journals, online books, scholarly electronic theses, e-encyclopaedia and CD-ROM journals or books.

Ellis and Oldman (2005) ascertained that, the use and inclusion of databases generally have transformed the conduct of research and teaching in polytechnics and universities by allowing students especially those in technology a wide range of opportunities for accessing accurate and timely information on various subjects. The researchers also emphasized the fact that, the use of databases enable learners to effectively and efficiently access digitised information to assist with investigating issues, solving problems, making decisions, to support learning and develop new understanding in all areas of their academic lives. Corroborating the running assertion, Chisenga (2007) maintained that, the Internet facilities which are the transmission channel of digitised databases give the learners a wide range of opportunities in the creation, processing, transmission and dissemination of information.

Access to digitised databases is therefore, not only an issue of reaching the databases needed, but a combination of reach and ability to use them efficiently by engineering technology students in the quest for satisfaction of their information needs. Oduwole and Akpati (2003) carried out a research on access and retrieval of digitised databases at Nimbe Adedipe Library, University of Agriculture Abeokuta, Nigeria. The study ascertained that, access and use of digitised databases cut across all members of the academic community which led to increase in library use in the institution's environment. Equally, the study noticed that, additional success recorded in students'

academic output in the institution was probably as a result of the introduction of some subject based databases like ScienceDirect, African Journal On-line (AJOL), Journal Storage (JSTOR), EBSCOHOST and a host of other relevant journal titles, e-books, e-technical reports and some other ones on CD-ROM.

This is a pointer to the need for media-mix or blended learning in the nation's higher institutions. In line with Oduwole and Akpati's (2003) finding, Akewukereke and Aboyade (2012) are of the opinion that, access to digitised databases promotes blended learning, while blended learning in turn promotes educational achievement. Blended learning is the blend of conventional and e-mediated instructional methods from two instructionally separate models of teaching and learning. The researchers opined that, the material object of blended learning is e-learning which is learning mediated by technology. It is the use of electronic technology which includes computer, computer network, communication and mobile technologies to enhance and extend learning, deliver and access education and information. Akewukereke and Aboyade (2012) submitted that, e-learning encompasses other components of learning based on electronic technology of which the use of digitised database is a significant part. Blended learning was introduced here in order to achieve media-mix (hybrid education) and excellence in pedagogical activities in higher institutions. It is generally believed that, access to information resources could be a motivating factor for learners especially young adults such as those in the polytechnics in Nigeria to change their perception to learning and use appropriate digitised databases.

In the developed world, an increased use of electronic information databases among students was recorded by Oliver (2003). He observed in the third world that, inaccessibility to digitised databases is a major hindrance to use of databases by students. To ameliorate this problem and to solve the problem of digital divide between the developed and the underdeveloped countries, the Federal Government of Nigeria indirectly through the Tertiary Education Trust Fund (TETFund 2014), sponsored the provision of varieties of databases for the Federal Polytechnics under its control. This is based on the premise that, academic promotion will be achieved only when information is accessible and usable for research, social, scientific and technological development. Also, some non-governmental organisations like the United Nations Educational, Scientific and Cultural Organization (UNESCO, 1998) have database producers and publishers that are responding to the issue of inaccessibility to databases

and use difficulties by providing free databases that are very useful for technological advancement and growth. Programmes are being developed so as to bridge the digital divide between low and high income countries with little success being recorded.

Several studies have been conducted to assess the acceptance and use of digitised databases by students in higher institutions of learning globally. For instance, in a study conducted by Esse (2014) on students' attitude to the use of e-resources in a Nigerian university, she reported that students from the Faculties of Social Science, Arts, Science, Technology and Engineering at the university recorded low use of digitised databases due to a number of factors such as lack of awareness on the efficacy of digitised databases in learning, lack of awareness of their availability, lack of awareness of their relevance and value to their studies, lack of time to access the resources online and too many passwords to remember among others. Owolabi, Ajiboye, Lawal, and Okpeh (2012) studied the use of electronic resources in Tanzania. It was revealed that, there was low use of resources due to inadequate end-user training, slow connectivity, limited access to personal computers, poor search skills, and budget cuts leading to irregular internet subscription. Smith (2007) carried out a study in South Africa and revealed that, lack of sufficient bandwidth was a major problem hindering appropriate use of digitised databases and the range of electronic journals in the respondents' field of interest were limited.

A study conducted by Toner (2008) affirmed that higher education is changing rapidly as students have access to global information through the use of digitised databases for their scholarly communication and research. Firstly, it is moving away from a teaching to a learning culture and secondly, the revolution in information technology is changing delivery of education. Therefore, higher institutions of learning should take these two shifts into account while planning their services. For instance, Okello-Obura and Magara (2008) stressed that, in recent years, there have been a number of changes in the higher education sector. They gave an example of Makerere University in Uganda where there has been a dramatic change in the way information is provided and used in the community. The university has embraced the electronic provision of information and enforcement of the use of databases to facilitate teaching, learning, research and community services. With the integration of digitised databases and online information services like full text online journals, electronic books, electronic document delivery services and digital libraries in its library systems,

Makerere University is attempting to disseminate information by means of an Electronic Hybrid Online Systems (EHOS).

Also, Tsakonas and Papatheodorou (2006) pointed out that advances in technology and transformation in the information landscape have altered the way learners use and interact with such information systems. The transition from print to electronic medium, apart from resulting in a growth of electronic information, has provided users with new tools and applications for information seeking and retrieval that take their idiosyncrasy into account, rather than obliging them to adapt to their own characteristics. Okello-Obura and Magara (2008) stated that, the major objectives of the use of digitised databases by students in higher institutions are to facilitate access to a wide range of both national and international information resources via the Internet as well as the timely dissemination of both local and international research output. This could result in efficient, valuable, useful and effective use by enabling access to up-to-date international literature as soon as it is published thereby ensuring satisfaction of users' needs.

Still on the study conducted by Okello-Obura and Magara (2008), the objective of the study was to determine the use of digitised database by Library and Information Science (LIS) undergraduate and postgraduate students. The need for this study was prompted after discovering that the list of references of course work and assignments submitted by most postgraduate students did not include e-resources despite the fact that the institution's library was subscribing to a number of electronic databases. Secondly, it was assumed that students in the LIS discipline should be knowledgeable and comfortable with electronic resources' use. This prompted a number of questions including: what computer skills LIS postgraduate students have? What are their attitudes towards e-resources? What suggestions do they have to help improve on e-resources, etc.? When learners were left on their own to choose what they liked to apply in their studies, Okello-Obura and Magara (2008) noticed that LIS students made use of different digitised databases.

To add impetus to Okello-Obura and Magara's (2008) suggestions, Makerere University Library, through a number of donor initiatives, subscribed to a number of digitised databases that give access to full text articles in different journals, indexed by Emerald and EBSCOHOST and provided useful literature in Library and Information Science. The research result showed that Emerald, Blackwell Synergy and

EBSCOHOST are the digitised databases used by the majority of Library and Information Science (LIS) students. When a comparison of the use of Emerald and EBSCOHOST was made, an overwhelming majority averred that Emerald's digitised database met their information needs. When researchers inquired from the learners about the benefits of the use of digitised databases in their study activities, respondents opined that fast and easy access to a wide range of up-to-date and current information in databases constituted the benefits of accessing and use of digitised databases. They therefore suggested compulsory use of e-resources for assignments and examinations in library education. This is believed, can improve, develop, advance and empower students to use digitised databases. The resultant effect would in turn be positive academic shift upwards.

In the same vein, Maharana, Sethi, and Behera (2010) in their discussion on the use of digitised databases by students to enhance and improve learning activities stressed that, the present age called "Internet age" has a way of revolutionalising the way knowledge is being transferred to students. Its use, the trio posited, has a positive effect on the way people live and learn. To Maharana, Sethi, and Behera (2010), digital resources are vital tools needed for education and research nowadays. Their research work listed five factors among other variables, as the purpose of using digitised databases by students, especially students of technology which include: communication; recreation; professional research activities; practical, study support and; personal research. Similarly, Chisenga (2007) gave a bird's-eye-view of how different types of electronic media can be used in teaching and learning to bring about desired result. He identified four media that are of great importance to educational up-lift of students as listed by Rumble (1995). Among the media identified are print, audio, television and computer. This is premised on the fact that, digitised databases are valuable tools for study, learning and research. It is also believed by members of academia that digitised databases provide many advantages over traditional print-based resources as they contain current information because the databases are updated frequently.

Furthermore, electronic resources also offer advanced search capabilities and flexibility in the storage of results, and enable access to information without restrictions of time and location. The use of each of these media as agreed by all the researchers has a chance of accommodating different learning styles. It is not an overstatement to

say that, the use of digitised databases for teaching students in higher institutions of learning help to extend education to every learner in the community, even to the extreme rural areas, thereby contributing to the positive academic turn around and excellence of students. In the same vein, Iskander, Jameson, Rodriguez-Balcells, Nielsen, Pronk, and Catten (2009) discussed about the effective use of digitised databases by students in learning, as it combines the benefits of independent study by allowing students to control the rate at which information is presented while still proceeding through a lesson.

This programme presents learners with structured activities that encourage learning of the materials, but provide enough flexibility to allow students to experiment, explore and learn more. While discussing guided use of simulation software in digitised form, Iskanda et al (2009) emphasised that, the use of computers as a pedagogical tool in science, mathematics, and engineering for simulations and scientific visualization is the most prevalent. They however concluded that, integrating software tools into technical curricula is very important for science and technical education, especially for engineering technology students, so as to be able to use the programmes to solve problems in engineering designs which they may encounter in future, either in their education or in their chosen profession.

To corroborate Iskander, et al (2009), Khan (2012) presented a study that seeks to examine the use of e-journals by the research students at Aligarh Muslim University (AMU). The survey revealed that all the researchers were aware of the use of e-journals in AMU. E-journal is a brand of digitised databases useful not only for research purposes but also to update users' knowledge. In another development, Raza and Ashok (2006) carried out a survey on the use of electronic journals by researchers at Aligarh Muslim University. They found an increased use of ScienceDirect that was provided by Elsevier Science at the Japan Atomic Energy Agency (JAEA). Moreover, in Japan, enormous titles on various fields such as Chemistry, Engineering, Medicine, Physics, and Social Sciences were accessed by users within a short period.

Owolabi, Ajiboye, Lawal and Okpeh (2012) studied the use of electronic information resources in Nigerian universities and then highlighted the need to access and use digitised databases to support students in their academic work domain. One of the findings of the study was that, majority of the students used digitised databases in their academics and research works. The researchers also discovered that the main

objective of students' interest in using databases was to complete tasks in their assignments, project works and to contribute to knowledge through innovation and research. This is in line with the submissions of Aramide and Bello (2009), Rosenberg (2010) that, electronic instructional materials are good instruments that provide helping hands in conducting acceptable researches particularly for the learners who wish to be relevant in academic environment.

Furthermore, Egberongbe (2011) in a research into the use and impact of electronic resources at the University of Lagos remarked that, the importance and wide ranging scope of electronic databases for general communication, information retrieval and instructional delivery to support teaching, learning and research activities in tertiary educational institutions is acknowledged worldwide. According to the researcher, a number of relevant studies have been carried out on the use of e-resources by lecturers, research scholars and students worldwide. General learners' opinion towards the use of digitised databases, in particular CD-ROM, has been positive, with students enjoying the use of these sources and finding relatively few problems while using them. Research on students' satisfaction with CD-ROMs was carried out by Ray and Day (1998) and thus concluded that, 83% of students surveyed felt that using this source saved them time as it was found to be relatively easy to use than prints. Two thirds of those surveyed stated that, if the CD-ROM was busy, they would wait for it to become free rather than use the print materials.

Also, Mulla (2011) in a related study, found out reasons for the use of digitised databases by engineering technology students. He discovered that, most engineering technology students use digitised databases to find relevant information in their area of specialisation and learning purposes. This shows that, the use of digitised databases plays a significant and vital role in all fields of human endeavours. It also signifies that, digitised databases have rapidly changed the way students seek and disseminate information among them. It is clear from the studies that the speed of availability and the ease of access of information could make learners use digitised databases more frequently for educational gains.

Gakibayo, Ikoja-Odongo and Okello-Obura (2013) in a correlated study, assessed the use of electronic information resources in Mbarara University Library, by students. The study addresses some specific issues which include: identifying the availability of e-resources in Mbarara University library; determining the extent of use

and the relevance of e-resources in Mbarara University Library; and proposing strategies to promote the use of e-resources by students. Both quantitative and qualitative methods were employed to elicit data from library staff and undergraduate students from four faculties of the Mbarara University. The study revealed that, the use of e-resources was not only affected by lack of computer skills and information literacy skills but also, lack of enough computers and slow Internet connectivity. The frequency of use of these resources indicated that a lot needed to be done to increase the use of e-resources.

According to Brophy (2003), an increase in the use of digitised databases is beneficial for quicker delivery of information that users need from the appropriate sources. Furthermore, the issue of their advantage in solving the problems faced by educational establishment was also discussed in detailed by Brophy (2003). He noted that, the use of digitised database is highly significant in that it gives a rewarding service to the volume of works students of higher institutions have to cope with today, especially, in third countries like Nigeria. He also described it as facility that a user can use to meet his or her needs dynamically. Moreover, using digitised databases enables information to be obtained when it is wanted as users select only the information needed to answer specific questions. Other advantages enumerated include, faster consulting than print indexes especially when searching retrospectively, and straight forward use of combination of keywords.

The use of digitised databases is known to open up the possibility of searching multiple files at a time, a feat accomplished more easily than when using printed equivalents. One notable advantage the use poses to learners and those with limited time to access the library is their availability to reach users even at remote locations. Also, digitised databases have the value of simplifying information and knowledge for students and users thereby helping them to manage information efficiently and effectively so as to derive value from the information sources they presents to users. (Ray and Day, 1998).

Substantiating the running discussion, Ahmad (2008) stated that, the use of electronic engineering information resources offer many advantages to engineering technicians. The following being particularly noteworthy: are the in-depth searches of computer-held files can be carried out at a speed which no human can hope to match, electronic databases can easily be re-searched using new clues and the user has easy

access to an extremely wide range of indexes and databases many of which may not be available locally. Again, databases search online often offer a far greater number of access points than the corresponding printed indexes and there is almost no need for the irksome note-taking typical of many conventional searches.

Today, digitised databases have become widely acceptable in technical education and practice. Their acceptability and use are also growing as they have exploded in popularity among students. Invariably, the use of digital technology has led to migration of engineer's instrument of trade to electronic formats. Considering the above benefits of electronic engineering information resources, it can be concluded that the resources' availability, access and its use by students could reduce time needed to access print resources, monotony, and stress associated with them. Therefore, engineering information resources in electronic formats should be accessible to Engineering technology students in Federal polytechnics when they are available. Digitised databases are available in virtually all disciplines including Engineering. In the field of Engineering, digitised databases are referred to as Electronic Engineering Information Resources. Technical reports, journals, textbooks, and theses are now available in electronic formats and available online. Mafix Digital (2010) emphasised the usefulness of electronic engineering information resources and the need for their use by engineering schools in Nigeria when he stated thus:

> Electronic engineering information resources are designed specifically for engineering professionals and lecturers. They make research work fast, save time and also enhance efficiency due to powerful searching and cross-referencing technology. A combination of electronic engineering resources is a formidable information powerhouse for any institution. P. 89.

Considering the quotation above, digitised databases, being user friendly, are capable of expanding students' educational vision through its frequently updated information, sometime at no extra cost to the users. Several electronic products are available worldwide, some of them are available in the Nigerian market through vendors. These resources are being subscribed to, for use by many institutions in Nigeria, necessitating their availability for use by engineering lecturers and students. Several electronic engineering information products are available today. Few examples are: Journal Storage (JSTOR); Engineering, Scientific and Technical Databases (ESTD); Academic Search Complete (ASC); Asm Handbook Online (AHO);

ScienceDirect (SD); E-granary (E-granary), Engineering Village 2 (EV2); EBSCOHOST; Engnetbase Engineering Handbooks Online; - IEEE/IEE Electronic Library Online (IEEE XPLORE); Inspec; Knovel; Applied Science and Technology Full text; Wiley Online Library.

From the above discussion, it is pertinent to note that, digitised databases are products of information technology, they are invaluable research tools which complement print based resources in any traditional library. These electronic resources provide access to information that might be restricted to users because of geographical location or finances as well as being a medium to provide access to current information as these are often updated frequently. Through their various search techniques, digitised databases also provide extensive links to explore additional resources or related content. In addition, they are convenient to use as users are able to access information from the comfort of their homes at any time of the day. It is for these reasons that digitised databases are considered as an important resource of teaching, learning, research and training.

Thus, most libraries as well as polytechnics of the present day provide electronic resources for higher education and research. In a recent exhaustive review of the literature on the subject, Tenopir (2003) analysed the results of over 200 studies of the use of electronic/digitised resources in libraries published between 1995 and 2003. The main conclusion of this review is that, electronic resources have been rapidly adopted in academic spheres, though the behaviour varies according to the discipline. It is therefore imperative that, polytechnic students in Nigeria take advantage inherent in the use of these digitised databases in their institutions of learning to get the desired academic performance.

2.5 Current trends in ICT and engineering in Nigeria and the challenges

The use of ICT has recently embraced all endeavours of education today. The field of engineering is benefitting more because it belongs to the first category where powerful computers are required to carry out operations, modelling and solve mathematical problems. Also, there is the need for application of ICT tools in engineering as it is an area basically dominated by technology. Today, almost all the students of engineering are at least computer literate in the use of technology owing to

the need to use electronic calculators, phones, stand-alone computers, palm tops, e-banking, Internet, World Wide Web (WWW), social networks, social sites and so on. Even for the layman in the contemporary society, technology is not totally strange due to the need to socialize, search and pay for goods and services using electronics resources and the likes.

As good as these technologies are in education, and the familiarity of engineering technology students to them, there are so many problems associated with its use especially in Nigeria. Problems such as underutilisation of ICT for finding of information and writing of assignments, students rarely use the technology for presentation and activities that offer opportunities for practice and feedback which are necessary for comprehending engineering subjects (Ali, 2013). Again, another problem area identified included the nature of the engineering discipline and lack of awareness and general ICT usage policies.

In another related research work carried out by Idowu and Esere (2013), the paper discussed the integration of technology in higher institutions in Nigeria. The paper highlighted the challenges of ICT-driven education and found out that, there are at least nine 'ICT–for–education' initiatives at different stages of development by different educational agencies. One out these agencies is the polytechnic network (PolyNet) project. The two researchers however pointed out that, despite the relevance of ICT in education, challenges such as, resistant to change, lack of skilled manpower, absence of necessary infrastructural facilities, inadequate computer hard and software, under funding, over reliance of educational institutions on government for everything, are militating against the use of ICT in education. They therefore recommended that, there should be adequate funding of ICT-driven initiatives in education sector and sound policy environment, which would permit investment in information and communication technology. These and many other challenges are the major draw backs in the engineering sector and engineering schools in polytechnics in Nigeria are not an exception.

However, expressing his own views, Ali (2013) commented that, there are many available opportunities for e-learning in engineering education, and these challenges can be turned to opportunities and advantages at once. Such opportunities include: availability of highly capable learning and content management systems; availability of relatively high speed internet; emerging sophisticated virtual and remotely-controlled

laboratories; general ICT know how among students, availability of free as well as commercial simulation software, etcetera. The opportunities are highly required in engineering education as the world is entering into digital period, and its economy is highly dependent on ICT. Thus, engineers are expected to play a major role in this vast transformation of the world's economy.

2.6 Access to digitised databases by polytechnic engineering technology students in Nigeria

Access to scholarly electronic information resources is of fundamental importance and it is becoming more and more relevant to learners if they must excel in their academic activities. In their ability to achieve and advance learning and research objectives, Mackie-Mason, Bonn, Riveros, and Longee, (2009) stated that, electronic access to scholarly materials has become a significant and commonly accepted tool for learners. When used efficiently, scholarly electronic resources and electronic libraries can be beneficial to both staff and students by providing quick and easy access to both research findings and other relevant information (Rudner, 2013). Waldman (2003); Torma and Vakkari, (2014); and Atilgan and Bayram (2016), in their studies, have shown varieties of channels of access to digitised databases available particularly to students in higher institutions. For instance, libraries can provide access to digitised databases that would enable learners lead gainful lives as they are skilled at acquiring, organizing and presenting the materials for use and publicly preserving online materials regardless of the form in which it is packaged and in such a way that when it is needed it can be found and put to use.

Ray and Day (1998) in another study found out that, depending on individual institution subscriptions, students have a number of online databases available to them. Additionally, they noted that, in conjunction with these technological advances, many stand-alone (CD-ROMs) are being increasingly networked, thus, providing access to network computer terminals in the institution not solely within the library itself hence, improving user accessibility. Each of the electronic access channels has its own policies and techniques for the identification and retrieval of information resources and these not only influence researchers' usability of these services but, also the outcome of users' search on them. The advent of information and communication technologies (ICT) has had a wonderful effect on access to information and therefore, has offered

scholars new opportunities to create and extract value from scholarly electronic databases. To support this assertion, Chowdhury (2005) postulated that,

> Internet has made it possible to get access to virtually any type of information located anywhere in the world. The web has facilitated the creation and or redesigned of many information access channels including the online journals, e-books, digital libraries, online databases and search services. Sophisticated web search interfaces to e-journals, databases and digital libraries are now common features. P5

Therefore, access can be viewed as the right to use and the ability to benefit from some systems or entities. In the opinion of Ruffin, Cogdill, Kutty and Hudson-Ochillo (2005), access to digitised databases is important while considering the process of information collection and use. Also, Oyelaran-Oyeyinka and Adeya (2004) opine that, access is about being able to use what is available when it is required hence, access is much more than availability. This means that, an information resource may be available but not accessible. To the two researchers, ease of access to information sources is the most important criterion determining whether an important information source is used or not. They concluded that, once users become aware of information resources, and the sources are accessible, users may tend to use it. It is believed that, when the polytechnic engineering technology students locate sources of digitised databases, and are able to access them with ease, the use of the resources will have positive and long lasting impact on their academic activities.

2.7 Attitude to digitised databases by polytechnic engineering technology students in Nigeria

Attitude is one of the factors in predicting people's behaviour; it affects what people do and reflects what they are; it is a dispositional act of expressing inner feeling. Attitude according to Ushida (2005) determines people's behaviour. Also, attitude could be described as the overall pattern of individual behaviour towards a phenomenon. Attitude is a behaviour learned predisposition to respond positively or negatively to a specific object, situation, institution, or person. For example, a student's attitude towards the use of digital instructional materials has the possibility of predicting whether such particular student will make use of resources online or not.

Attitude can thus be said to reflect feelings, disposition, state of mind, emotional state, mood and response of favourable or unfavourableness toward using digital resources. Therefore, peoples' attitude can be predicted from the individual behavioural pattern. Attitude guides behaviour this in turn reflect the way individual responds to and is disposed towards an object which may be positive or negative (Ajzen and Fishbein, 1980, Keengwe, and Onchwari 2008). Positive attitude towards digitised database could draw the students to use computer more and computer related task will not be a barrier to the use of Internet. Negative attitude on the other hand, would draw the students away from the Internet. In other words, attitudes, whether positive or negative, affect how students react to the use of the Internet and internet related resources, which, in turn could affect students' learning environment. Attitudes therefore represents the conceptual value of these technologies in the minds of the students, not the values of the technologies themselves. According to Spacey and Murray (2012), positive attitudes are fundamental in implementing new technologies. It could be concluded that, training and knowledge are the *sine qua non* of a positive attitude toward ICT. In this era, where new and emerging technologies are springing up almost daily, it is essential for learners to keep up with ICT developments so as to excel in their academic endeavours. Based on this reasoning, attitudes play important role in affecting behaviour and must therefore, be taken into consideration in managing students' academic lives.

2.8 Computer literacy skills of polytechnic engineering technology students in Nigeria

Refers to skill or ability of students in higher institutions of learning to make use of computer and related technology for educational purposes. The explosion of information in electronic format is forcing students to learn how to navigate and use a wide variety of resources. Higher education students must therefore develop certain skills, in order to produce qualified individuals, engaged in the lifelong pursuit of knowledge for personal and professional growth. Skills such as computer literacy skills are therefore essential. For higher education students in particular, the ability to effectively utilize electronic information resources is a key issue, since it may help them to enhance the quality of their learning so as to become professionals after schooling. Again, computer literacy skills is the ability to create self-confidence and consequently

use of ICT for research by students. Therefore, users who have a high level of confidence in ICT for example might not necessarily have a high self-efficacy but high self-confidence which can lead to ICT use. Accordingly, O' Brien (2000) argued that, users' with high level computer literacy skills for example are more likely to adopt and use digital databases. Igbaria, Livari and Maragahh (2005) postulated that "previous expertise has an indirect influence on the use and adoption of ICT." This means that, individuals are able to use their existing computer literacy skills to perform tasks. Also, the researchers concluded that, computer experience is likely to improve students' educational lives by improving their beliefs in their ability to master the challenge and reduce any fear or phobia. Bjork (2002) in a related study also disclosed that, different users' attitude and skills have different influence on the use, adoption of online document and online information retrieval management systems.

In another study on application of information and communication technology in health information access and dissemination in Uganda, Omona and Ikoja-Odongo (2006) found that, most of the respondents rated themselves as well versed with ICT while only few reported that they lacked the essential computer literacy skills and competences. At this point therefore, it means that, the ability to navigate, source and find useful information resources online is dependent on the computer literacy skills of the individual students. It is believed that when students are familiar with web environment and architecture, they are more likely to use the web resources for academic gains and benefits.

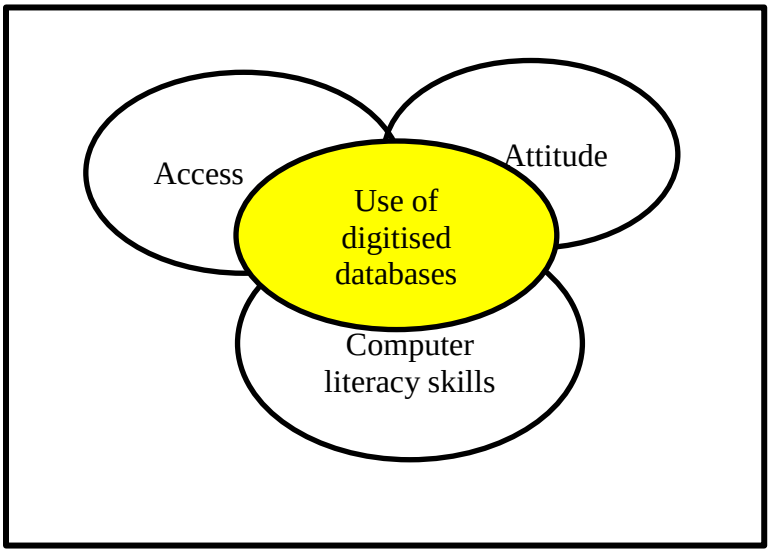

Fig. 1. Access, attitude and computer literacy interacting to bring about use of digitised databases by polytechnic engineering technology students

2.9 Access and use of digitised databases by students in Nigeria

With the development of digitised databases, access to relevant information has become a major factor in improving technological education in developing countries. Despite the availability of extensive amount of digital resources on the web, access to this information is not always uniform. The fact that a resource is physically present does not necessarily mean it is accessible, while its access does not signify use. Curley, Connelly and Eugene (1990) while discussing access to an information resource state that, access means more than physical presence, it includes elements of familiarity and usability. According to Curley et al (1990), there are various methods of access to digital resources, but the two major ones are institutional and personal. Omojuwa (1993) rightly stated that, the academic library is the first and the most prominent in provision of access to digitised databases for the higher education students. Since provision of information in electronic form is increasingly recognised as vital, more so that provision of information is the core of the library's role in society, the polytechnic libraries should provide access to electronic information, services and networks. Omojuwa (1993) reiterated that, the iconographic power of a college or university library expresses a purpose not just to collect, but also to organise, preserve, and make knowledge accessible for use.

Today. on the campus of virtually every higher education institution, the library occupies a central position both in its placement and prominence in provision of access to educational resources. For instance, the principal role of an academic library is to enable its users to identify, locate, gain access to and use the information they require; then, the library whether traditional, electronic or hybrid, may be identified and characterised by a series of functions. Functions such as; provision of tools which enables users to view the electronic information landscape, provision of tools which enable users to gain access to the information; and provision of tools which enables users to discover the information content to which they have been given access.

Libraries of all sizes and types are embracing and giving access to digital collections so as to continue to offer both print and digital collections to users for many years to come. New purchases of journals, magazines, abstracting and indexing services are heavily weighted towards digital, while digital books (e-books) are only beginning to become a presence in library collections. Libraries prefer digital collections for many reasons. It could be for: the ability to link digital journals with indexes and abstracts in

databases; accessibility from the user's home, office or dormitory whether or not the physical library is open; the library's ability to get users statistics that are not available for print collections and digital collections; space saving and relatively easy of use and maintenance. Equally, dramatic switch from print collections to digital collections for users' use has an impact on library users and users' perception of the library.

The academic library conveys its integral role in supporting higher education's core mission of research and education therefore, education cannot exist alone in the absence of library and library has no meaning if it cannot impart education. Although, learners acquire education through certain institutions like the schools, agencies, welfare bodies, museums and organisations, it is not too much to say that, the library is the most outstanding of such institutions. A school, a club, and an enterprise of a society can never alone impart education rather each of them is dependent upon a library-a centre of wholesome education and the quencher of thirst for concrete, fathomless and ultimate knowledge especially at the tertiary level.

In the interest of this research work and according to Adio and Olasina (2010), access can be provided to different sources of digital databases through digital libraries or e-libraries that are collections of documents in organised electronic form or are available on the Internet or on CD-ROM disks. The Association of Research Libraries (ARL) in a publication on 23 October 1995, described digital collections as unlimited access to document surrogates, as well as digital artefacts that cannot be represented or distributed in printed formats. Further development from the digital library is the advent of Virtual Library (VL).

Virtual library is a very important meaningful source of access to electronic media resources in that, it exists solely in electronic form and not on paper. According to Gabiyako, Ikoja-Odongo and Okello-Obura (2013), the most effective way to provide access to electronic books/journals in libraries is through subscription to online databases which can be accessed through the Internet. Online databases are a collection of electronic information sources (e-journals/e-books) by publishers from various fields and disciplines (Afolabi**,** 2007). Some of these databases are provided free of charge to libraries in developing countries by their publishers or vendors. Some of these include: AGORA and HINARI. HINARI was set up by the World Health Organization and major publishers to enable developing countries to access collections of literature on

biomedical, health and agriculture. Others that require subscription fee include the likes of Emerald database and Blackwell Synergy among others.

EBSCOHOST is a database that provides a list of all databases available through its interface and also provides links to individual databases. EBSCOHOST is a product of EBSCO which offers library resources to customers in academic, medical, K-12, public library, law, corporate, and government markets. EBSCOHOST supplies a fee-based online research service with 375 full-text databases, a collection of more than 600,000 e-books, subject indexes, point-of-care medical references, and an array of historical digital archives. According to Thaddeus (2015), e-Granary Digital Library is a mission of the WiderNet Project, a non-profit venture aimed at providing Internet and library services to developing nations. An e-Granary Digital Library gathers educational resources via a local area network in order to reduce connectivity costs in Internet-scarce areas.

Most e-Granary subscribers do not have Internet connection, but those who do can open resources up to 5,000 times faster from the e-Granary Digital Library. Some of the documents in the e-Granary Digital Library are in public domain, some carry a license, but most of them have been freely provided by their authors and publishers as a contribution to global education. About 6% of the content in the e-Granary Digital Library is not available on the public Internet. It typically requires a subscription or payment, but authors and publishers have agreed to provide it free to people in low-bandwidth situations. Any subscriber can include their own digital content in the e-Granary Digital Library, making it a publishing platform for communication and collaboration.

The e-Granary Digital Library contains a built-in proxy server and search engine similar to the Internet, at a speed that is otherwise not usually available to them. The proxy server allows users' Web requests to "play-through" to the Internet if a connection is available. Since many patrons of the e-Granary Digital Library are unfamiliar with using the Internet, WiderNet Project hires librarians worldwide to assist partners in locating specific resources. The e-Granary's interface includes a word search powered by Lucene and Solr, an online public access catalogue powered by VuFind which contains over 60,000 records and dozens of portals cooperatively developed with experts from around the world.

Since 2010, the e-Granary Digital Library includes interactive Web 2.0 features in its Community Information Platform. Thanks to a generous grant from the Intel Corporation, the Community Information Platform allows users to create and share their own content through technologies like built-in Web editors, LDAP security, Moodle, WordPress, MySQL, PHP, Drupal, and others. Subscribers can set up unlimited Web sites on their server and use free, built-in software to make Web pages, upload files and share local information with each other. These online services sell data to their clients and deliver the information through the Internet. The computer that stores the seller's information is referred to as a host. Other examples of online databases available especially for engineering technology students' academic use include, EBSCOHOST databases, ScienceDirect, Inspec, Compendex, E-granary, MYilibrary, Engineering village 2, Engnetbase engineering handbooks online, Environmental engineering abstracts, Applied Science and Technology, IEEE/IET Electronic Library (IEL), Wiley Online Library, SpringerLink Journal Online, PapersFirst and ArticleFirst, EMA (Engineering Materials Abstracts), Knovel library, EngNetbase, Springer e-books, SynTheses Digital Library of Engineering and Computer Science, ASM Handbooks, e-library, CRCNetBases and numerous other databases and digitised versions of reference works.

For example, the Library of the University of Hyderabad in India provides access to both in-house digital resources as well as external digital resources. The in-house resources are stored in web server and made accessible through Network. They are books, serials, theses and dissertations, project reports, lectures of visiting experts, conferences/workshops, seminars and so on. Hyderabad library in India subscribes to 8,000 e-journals from several publishers like EBSCO, Elsevier, UGC-Infornet, SCOPUS and some others. These electronic resources in the library are usually made available in diverse forms but most commonly in the form of databases. Databases are only accessible to the library users through the use of basic infrastructure such as electricity, computer systems which include hardware, software, human ware, and Internet facilities. Also, access can be provided to digital resources to its students, faculty and staff members using identification and password.

It is equally important to state equivocally that, access to digitised databases according to Fatoki (2004) is basically through computer medium before it could provide researchers and students with thousands of scholarly articles in their fields of

specialization or research. This infers that, for students to utilise the growing range of electronic resources, they must acquire and practice the skills necessary to explore them, develop the right attitude and visit the polytechnic libraries attached to their institutions. It is therefore imperative that libraries put these infrastructures in place to ensure effective use of the electronic resources.

In Nigeria today as in other parts of the developing world, to achieve desired educational results, some institutions like polytechnics provide digitised databases through the academic library (via a consortium) of the institution to members of their community and the learners can also purchase some of these media resources themselves or have access to them through the cybercafés. Typically, libraries pay subscription fees to have access to these databases. Therefore, the information that users can find using an electronic database is far from what you can be found searching the Internet. Some electronic databases can only be accessed at the institution's library, at some other times, students can access the digitised databases from any campus computer. Some databases can be accessed via a student's home computer, using the academic library's homepage as the entrance point. Many databases are commercial electronic information services that people reach through the Internet. The information packager or reseller is referred to by such names as online database, online service, interactive service, information provider, service provider or content supplier. Examples include EBSCOHOST, ScienceDirect and e-Granary.

A previous study by Oyelaran–Oyeyinka and Adeya (2004) expressed that 43.2% higher education lecturers in Kenya have access cost paid by their institutions while only 13% of their counterparts in Nigeria had access paid for by their institutions resulting in high use of cybercafés. This confirms the findings of previous studies in Nigeria where cybercafés are major access points for majority of the citizens (Adomi, Okiy and Ruteyan, 2003 and Ajuwon, 2003) this is so because most institutions do not provide access for their members. According to Omolase, Balarabe and Omolase (2010), students in higher institutions who desired to use digitised databases for quantitative and qualitative education among Nigerian students access the databases through the polytechnic library, and cybercafés to improve their leisure and academic requirements.

Users of today's virtual information resources can also get access to scholarly electronic publications through a variety of channels ranging from the websites of

the producers or publishers of the information resources to a number of intermediaries, services providers, and search tools. Chowdhury (2005) in a study on access and use of scholarly electronic publications identified electronic archives, special websites of institute and professional bodies and personal websites as channels through which a researcher can get access to and use scholarly publication like full text of e-journal and e-book, digital libraries–special collections, CD-ROM and online databases. To add impetus to students' access to knowledge and promote use and academic learning outcomes of students, CourseWare (CW), which is an academic initiative, gave the public access to much of the needed information in undergraduate and graduate programmes at institutions of higher education free of charge. The main objective is to obtain higher grades in schools by students. The use of the service is believed to be yielding desired results in improving the quality of education of students.

Also, the idea of Open Access Initiative Course Ware (OAICW) gained prevalence in 2002 when Courseware began distributing academic materials from courses to the public for free. Through the early 2000, this idea began to gain popularity with other colleges, polytechnics and universities in Nigeria. Open access initiative programmes are another example of how technology can allow more people to have access to information and resources. Its aim and objectives centred round provision of access to intellectual knowledge, high level scholastic standard and educational turn around.

The other predictors of digitised databases access include telecommunication regulation, the wealth of a nation, and the presence of commercial access providers (OpenNet Initiative, 2009). However, most developing countries face capacity constraints, largely due to thin-bandwidth and frequent power cuts. The structure of the Internet Service Providers' market is also an important factor influencing access to the Internet (Oyelaran-Oyeyinka and Adeya, 2004 and Jensen, 2007). Also, the combination of constrained budgets and the changing increasingly competitive domain of information production impact virtually every higher institution in some ways. The presence of institutional regimes in which Internet Service Providers operate is also important to market competitiveness and cost to end-users.

Countries with particularly good Internet access include South Korea where 50% of the population has broadband access, Sweden and Canada (where 62% households use the Internet) and United States of America with over 70% (WordIQ,

2007). Therefore, students working in any location in these countries with services and proper computer software and browser services can access digitised databases with ease. Multiple users including researchers, students and semi-literate people can even access the same issue of an electronic journals, e-books, and e-technical reports from different locations thus, Brudie (2005) posited that "information in electronic formats can generally be accessed from remote locations such as an office, home or dorm room".

While some polytechnics have the ability to invest strategically in collections as well as new kinds of services, most polytechnics now face real tradeoffs between print publications and digital resources. Many librarians find it necessary to cancel journal subscriptions and acquisitions, devoting more time and resources to negotiating licensing agreements with digital providers, acquiring access to important databases and digital collections, re-profiling approval plans, or implementing new software to provide federated searching. This may be largely due to the fact that, the 21st century is witnessing a knowledge revolution resulting from rapid growth in information and communication technology, acceleration of technical change and intensification of globalisation.

On the benefits of easy access to digitised databases, Brudie (2005) stated that, scholarly electronic instructional materials (digitised database) and course wares provides an improved access to the processes and outcomes of scholarly research and learning in higher colleges. The ability to quickly access, read and print an online article at the point of need remains one of the greatest benefits of scholarly electronic materials to the learning process. Schaffner (2001) noted that 'unlike paper publications, these formats allow simultaneous users access, with books and other instructional materials as tools of trade for the engineers'. Thus, engineering technology students need to seek information resources for research and advance the frontiers of knowledge. They need to determine the approach of obtaining answers to their problems either by using the traditional method of physical access to literature in the library or by electronic access to the materials through consultation of digitised databases. Whichever method is adopted and used by Engineering technology students, it must lead to access to information resources which if positively used could in turn lead to an increased research productivity and academic accomplishment.

As noted by Wells (1998/1999) 'information availability from a desktop computer (laptop) means significant increase in access particularly for those students in technical areas who do not work within easy reach of the library.' Though, Wells (1998/1999) observed that, with information converted to digital formats, scholars in developing countries will be disadvantaged. In line with Well's observations, Teferra (2003) in a study on scientific communication in African universities reported that "an Ethiopian plant taxonomist who also wrote on the same concern of dissemination retorted 'I do not think they will be available to most people (researchers) in the third world, even if they would be potentially available, in reality the telephone lines, power sources and computers are not reliable and computer networking may not exist in such institutions.' He emphasized that, researchers in institutions without Internet connectivity could be highly disadvantaged. He however concluded by emphasising that, 'digitised databases where available and accessible have the capacity to enhance increased productivity through access to scholarly research findings in adequately Internet connected institutions'.

Part of factors that affect access to digitised databases are telecommunication and cost. It is not an over statement to say that, there is a correlation between electronic media resource access, cost and income. The authors emphasized that, cost is a major barrier to electronic media resource access in Africa. They concluded by reiterating that, Internet services especially in developing world cost seven times more than the United States due to the monopoly that the Internet Service Providers (ISPs) in Africa have and enjoy. Viewing from another perspective, Oyelaran-Oyeyinka and Adeya (2004) are of the opinion that, income is a strong determinant of digitised databases access and that, there exists disparities between the rich and the poor countries. The researchers quickly added that, the use of information resources in Africa is correlated to income and socio-economic status. This implies that, societies with more of low income earners tend to have less access to the digitised databases. Therefore, acquisition of knowledge will be constrained by low income and low levels of education due to unequal use of the technology. Lack of basic infrastructure is another major factor that can affects access to the digitised databases. Mass utility of the Internet depends to a great extent on the quality of the underlying tele-communication infrastructure.

Further to this, is poor quality of the network which can also serve as impediment to rapid development of the electronic media resource access in developing countries. Africa as a country even in this 21st century still depends on developed countries which serve as internet backbone. It is strongly believed that, skills, innovations and major investments are concentrated in the United States of America, Japan and Europe. Hence, this limits access to science and technology in developing countries. Oyelaran-Oyeyinka and Adeya (2004) concluded that, local and regional telecommunications infrastructure such as server connectors, local loop telecommunication lines, Inter-nodal connections and switching systems among others determine the cost and quality of access. Therefore, users in countries with high bandwidth telecommunications environment are likely to have access to lower cost connections.

2.10 Attitude and use of digitised databases by students in Nigeria

McLeod (2014) defined attitude as a relative enduring organization of beliefs, feelings, and behavioural tendencies towards socially significant objects, groups, events or symbols. He structured attitude into three component terms namely: affective, behavioural and cognitive. The affective involves a person's feeling and emotions about an object, the behavioural concerns the way an individual behaves or acts, while the cognitive concerns itself with what one believes. From another point of view, attitude can be described as predisposition or tendency to respond positively or negatively to objects, situations, people, ideas and everything in one's environment. Attitude determines whether a person is willing to try a new innovation (Kutlucer, 2011). Some students may appear to have a favourable attitude towards internet use and recognise the need for Internet in the classroom. According to Keengwe and Onchwari (2008), the success of Internet use in the educational settings largely depends on students' attitude toward Internet use. Attitude is important because it determines one's behaviour to an object or response to everything. Attitudes therefore represent the conceptual value of technologies in the minds of the academics, not the values of the technologies themselves.

In the spirit of research, Yaacob (1990) as cited by Adekunle, Omoba, and Tella (2012) investigated the attitude of students towards the use of electronic media in Government-supported special schools in Malaysia. Also examined was the

relationship between the students' attitudes toward electronic media use and other variables. Attitude is a behaviour learned predisposition to respond positively or negatively to a specific object, situation, institution, or person. A significant relationship was found between attitudes and awareness of the potential of the use of digitised databases and academic performance of students thus, attitude is considered a potent, powerful and strong factor that could predict people's behaviour. It affects what people do and reflect what they are. Equally, it is a dispositional act of expressing inner feelings; attitude therefore, determines people's behaviour according to Ushida (2005). Again, attitude can be seen as the overall pattern of individual behaviour towards something like, the way an individual will behave or responds to a given situation. Therefore, people's attitude can be predicted from the individual behavioural pattern.

Having said this and in the context of this research, a student's attitude towards the use of digitised database has the possibility of predicting whether such particular student will make use of Internet or not. Njagi and Isbell (2003) assessed the students' attitudes towards web-based learning resources especially digitised databases. The study addressed the differences in attitude change towards computer technology, for students using web-based resources and those using traditional textbooks. It was established that, majority of the students in both web-based and the traditional textbook groups had owned personal computers and had Internet access at their homes. It is therefore, possible that computer use was equal for all. On this issue, Swain and Panda (2009) argued that users' attitude to information is gradually shifting from printed documents to e-resources. In Singh's (2009) view, it could be deduced that, ICT has brought a tremendous change in nature, boundaries and structure of information seeking behaviour of students.

This opinion was suitably supported by Spacey, Goulding and Murray (2012) when they expressed that, a student who is focused, positive, committed, and wants to do well usually will, while others who are not smarter than him and just do not care, will end up getting bad grades. To Spacey et al (2012), positive attitude to digitised databases is everything students need to achieve excellence in school. If students do not believe they will succeed, then it is likely that they will not, regardless of the quality of the teacher or the students' academic abilities. This means that, if students do not value the use of appropriate instructional materials in learning, they would not treat their

schoolwork as a priority, and when they start to struggle because of this, they will have no scholastic achievement.

Craghill, Neale and Wilson (1989) carried out a research that reinforced the importance of a positive attitude on the implementation of new technology. The three researchers disclosed that, students got more stimulated when they were presented with learning materials hence, students became more retentive. As a result of this, students participated better in class activities. Within the educational context, positive attitude towards computer by students is believed will encourage, enhance and promote the use of Internet for learning and associated activities. Therefore, any successful transformation in educational practice and process need the development of positive user attitude towards the web. This connotes that, without positive user attitude, the transformation of educational process with technology may be very difficult to achieve among the students. Other studies were undertaken by Eagly and Chaiken (1998) to determine the level of use of databases and other resources. Their study showed how students feel about various issues surrounding digitised databases and whether attitude change is dependent upon subject studied or not. It was asserted that students with positive attitude to digitised databases' use had a better learning outcome than those indifferent to the application.

However, teachers can change students' attitude towards the use of digitised database in their courses by discussing the relationship between positive attitudes and success in academics. They could also make connections between students and their interests can help to improve students' attitudes by showing them practically how the materials they need to include in learning can improve their academic and research activities. This assertion is in line with Morley's (2005) view when he expressed that 'an eager attitude can help students to learn'.

This shows how important students' attitudes play in their ability to learn, assimilate, and comprehend. Also, it is important for teachers to understand students' attitude to the use of digitised databases if, they intend to change negative attitudes into positive ones. Alongside other subject matters and on the bases of how to handle classroom behaviour problems, all relevant stake holders in education industry need to know how students think and how their attitudes to instructional materials especially digitised databases can affect not only their participation in the classroom, but also their entire academic career in future.

Verma (2010) in another study entitled 'Attitude versus behaviour: learner's attitude and its impact on language learning' studied the attitude of learners towards language learning in a second language learning environment. The author selected group of students pursuing different undergraduate courses after secondary examination in Uttar Pradesh (a state in India). Learners mostly undergraduates between the age bracket of 18-21 years (undergraduate students) were intentionally selected for the study as they have reached a certain level of psychological maturity as compared to the school going students and also that their learning objectives at this stage is directly related to their future career. This infers that respondents are highly motivated group of learners as their career needs are specified and their objective of learning is clear to them. The study thus showed a demonstration of their positive attitude to the use of digitised databases to facilitate learning. Therefore, it is evident that, if a learner is reluctant to learn how to use appropriate learning material or does not have a positive attitude to technology use, such a person may not produce any good result. Hence, learning is affected by attitude and motivation.

2.11 Computer literacy skills and use of digitised databases by students

Over the past few decades, technology has truly revolutionised lives of mankind. Prior to the industrial revolution, society had a virtually non-existent form of media technology. But as life began to transform, media began to grow in all aspects. For students to succeed in today's information-driven academic environment, they need to know how to find, use, manage, evaluate and convey information efficiently and effectively. This can only be achieved if one is computer literate. Computer literacy skills is the ability to use technology as a tool to research, to organise, to evaluate and to communicate information.

As opined by Lowe and McAuley (2002) computer literacy skills is "the skills and abilities that will enable the use of computers and related information technologies to meet personal, educational and labour market goals''. As shared by Markauskaite (2006), the term involves the application of modern computer in students' daily lives. Selber (2004) presented computer literacy skills as 'the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computer'. Complementing the above description of computer literacy skills, Adeniran

(2013) described computer literacy skills as a baseline set of skills needed to successfully cope in a complex technological world. While Educational Testing Service (2007) noted that, computer literacy skills ranges from simple use of technology in everyday life to uses in performing computer tasks.

This was evident in a study by Omona and Ikoja-Odongo (2006) on application of information and communication technology in health information access and dissemination in Uganda. The result of the research established that 35 (64.8%) of the respondents rated themselves as well versed with ICT. Although, it was also stated that specific skills such as those necessary for using the different links/hyperlinks on the Internet were lacking or inadequate and it was unfortunate that they had never used computer facilities before. On the other hand, the 53.7% who did not require assistance in using ICT gave the reasons for this as having received some training and had experience in using ICT facilities. Besides being computer literate, they were also familiar with medical information databases and websites (Hong, Thong, Wong and Tam, 2002).

From the research findings, it could be seen that there is low rate of computer literacy skills in Uganda. This may explain why there is low use of ICT facilities for health information dissemination in Uganda. The situation above may be a common scenario in other African countries like Nigeria because the conditions that prevail in these nations are similar in many respects to those in Uganda. For instance, Ajuwon (2003) in a study at the University of Ibadan, Nigeria specified that “only 43% of the sampled students were found to be able to use computers”. Omona and Ikoja Odonga (2015) assessed the ICT competence of a representative sample of fourth year students in a Tanzanian medical school. The study established that an estimate of about 50% of the students did not have the necessary skills to enable them use ICT facilities effectively to access and disseminate health information for their day-to-day study, research and learning.

Numerous research studies such as that of Selwyn (2008) have examined issues relating to students and workers’ ability to use computers. In their study, Lockheed, Nielson and Stone (1985) designed a questionnaire on computer literacy skills, the instrument comprised fifteen (15) items segmented into computer knowledge (general) computer vocabulary and programming. Also, Chan, Plake, and Stevens (1985) in their instruments on computer literacy skills concentrated on the cognitive aspects of

computer literacy skills ability which they described in terms of general knowledge about computer and programming. Similarly, Jenkins, Mimbs, and Kitchel (2009) conducted a study to find out if there was a relationship between computer literacy and use of technology. When teachers were presented with statements regarding computer literacy and use of technology, it was concluded that computer literacy skills and technology use had a significant relationship.

Other researchers too have been more expressive in their approach to assessing computer literacy skills. Such included the Minnesota Computer literacy skills and Awareness Assessment (MCLAA), as revealed by Selwyn (2008). All the instruments formed the benchmark of several American studies on computer literacy skills; although the authors of the MCLAA themselves argued that most of the 84 items are concerned only with low level computer skills. Oliver (2003) tried also to include measures of students understanding of the applications, limitations and consequences of computer use, but in practice, it requires that the students to merely acknowledge these factors rather than be actively aware of them. Zin et al (2003) in their study on gender differences in computer literacy skills level among undergraduates noted that males had greatest computer experience than females and there was significantly greater use of some software and application by males than females.

To increase students' computer literacy skills level, Zin et al (2003) suggested offering more suitable computer courses or introducing computer subjects earlier in our educational system and students should be encouraged to acquire personal computers. In line with the above suggestion, Ashcrofta and Watts, (2004) noted pertinently that, "it is vital for those in management positions to recognise the importance of professional development and ensure that staff and students are proactive in maintaining up-to-date levels of expertise in ICT". Also, users should be self-taught and be capable of developing and understanding ICT through the experience of utilising them. If this is the case, then countries that are unable to provide extensive access to ICT are inevitably marginalised as they are less likely to produce capable self-taught persons. Supporting the above view, Zin et al (2003) believed that knowledge, skills, and competence with computer technology are now an asset for those entering the competitive employment market.

It is enough to say that, every aspect of life from education, leisure and work environment to social interaction is influenced by computer technology as the

advancement in science and technology such as information and communication technology (ICT) has generated a need for new brand of literacy. Laying a good foundation for learning of new skills, abilities and capabilities/competencies to handle effectively job related tasks such as in learning and research. In a study, Makauskaite (2007) noted:

> Various technological and social developments have been reshaping almost all aspects of human life. Some of the knowledge, skills, abilities, competencies and personal characteristics that were necessary for life in previous centuries have now become irrelevant, while others have becomes critical. The majority of these changes are associated with the proliferation of new technologies particularly Information and Communication Technologies (ICT). The capacity to apply ICT in various areas of human life has become an important contributor to human well-being and the prosperity of society. P 90

The information users (students) competence in deploying ICT to achieve his/her academic tasks (learning) could not be over-emphasised. Hence, searching for information in scholarly electronic publications has become inexorably linked to computer technology literacy. The concept, computer literacy skills is synonymous with digital literacy, ICT fluency, ICT literacy, technological and e-literacy and 21st century skills. The terms may also involve the application of modern computer in students' daily lives. Selber (2004) presented computer literacy skills as 'the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computer'. Complementing the above description of computer literacy skills, Utsi and Lowyck (2005) said computer literacy skills are a baseline set of skills for necessary to successfully cope with a complex technological world". However, Educational Testing Service (2007) noted that "computer literacy skills range from simple uses of technology in everyday life to use in performing computer tasks. Zeszotarski (2000) identified students' lack of basic computer skills as a barrier to the successful integration of computer assisted instruction. With the little that is available in literature on the issue of computer literacy skills and the use of digitised databases, it is imperative that computer literacy skills fluency is one of the basic considerations students need to utilise electronic publications and information for learning.

2.12 Theoretical framework

Though some theories that relate to both the dependent variable of use of digitised databases and that of the independent variables of access, attitude and computer literacy skills have been discussed below, however, the central theme of this research revolves round the use of digitised databases by engineering technology students in a polytechnic setting. Thus, since the focal point of the work is on the use of digitised databases, the theoretical framework on which this research work is anchored is the Information Utilisation Theory of Havelock (1975) which is based on media utilisation. Thus, if students find out that, digitised databases are central to their desires, and are the ones that provide them with several functions, as users of media, students will be more inclined positively to continue to use that particular medium. In the context of this study, Havelock's (1975) information utilisation theory is very relevant and germane to this research in that, as Engineering technology students operate in information intensive environment, therefore they need computer literacy skills to search for, access, and use information resources available at their disposal. This theory also has relevance to this work in that, databases are part of educational technologies that need to be accessed and used to enhance educational productivity of engineering technology students.

2.12.1 **Information utilisation theory**

Information utilisation theory was postulated by R. G. Havelock (1975). The theory concerns knowledge utilisation and educational improvement. That means the theory is connected to school effectiveness and improvement in research. Information utilisation theory is a paradigm that moves information from availability to access and finally to utilisation level. Havelock (1975) examines the tasks of generation, dissemination and use of knowledge (information). He sees dissemination of information as the mode of moving knowledge or information from one place to another. Meaning that, knowledge already exists and that the components can be transmitted from one point to another. The theory is relevant to this study because, it indicates that, the use of information is dependent on the ability of the users to search for relevant information, access information, use information and achieve success at last.

Varieties of theories that have relevance to both the dependent variable of use of digitised databases and independent variables of access, attitude and computer literacy skills, have been reviewed. However, the nucleus of this research work is on access and use of digitised databases by Engineering technology students of Federal polytechnics in Southwestern Nigeria, hence the study is anchored on Information Utilisation Theory (information generation that is availability) => (access that is dissemination through computer literacy skills) and => (utilisation). The theory concerns media utilisation. In this theory, Littlejohn's (2008) explanation is relevant because "students who are computer literate, with positive attitude to the use of digitised databases will become more dependent on information resources that meet a number of their educational needs than on media that provide just social needs". Since each student's needs are different, it is clear that individual need is going to fluctuate. Therefore, if students find digitised databases that are central to their desires, and the ones that provide them with several functions, as users of media, students will be more inclined positively to continue to use that particular medium. In the context of this study, Havelock's (1975) information utilisation theory is very relevant and germane to this research in that, as Engineering technology students operate in information intensive environment, therefore they need computer literacy skills to search for, access, and use information resources available at their disposal. This theory also has relevance to this work in that, databases are part of educational technologies that need to be accessed and used to enhance educational productivity of engineering technology students.

Today, information utilisation theory is a popular approach to understanding media resources' use because, the theory discusses how users proactively search for media that will not only meet a given need but, enhance knowledge. The theory which takes a more humanistic approach to looking at media use suggests that, engineering technology students in the Federal polytechnic must be able to use digitised databases in their libraries. Students need to search for information from the avalanche of information resources made available in the polytechnic library using their computer literacy and information retrieval skills. To this end, engineering technology students must be able to access, discern, choose, and use the retrieved information to satisfy both educational and career needs.

2.12.2 **Uses and gratifications/dependency theory**

Elihu Katz introduced the Uses and Gratifications/Dependency Theory in the early 1970. Precisely in 1974, he introduced the Uses and Gratifications Approach, when he came up with the notion that people use and depend on media that are beneficial to them. The new perspective emerged in the early 1970s as Katz and his two colleagues, Jay Blumler and Michael Gurevitch continued to expand the idea. This theory was fashionable today because, it assumed the audience is active, meaning that students (users) actively seek out specific media (Databases) and content to achieve certain results or gratification (academic attainment) that satisfy their personal educational needs. It is assumed that, users' sources of the media chosen are distinctive. As pointed out by Blumler, Katz and Gurevitch (1974), gratifications can be derived from at least three distinct sources namely: media content (for example engineering resources), exposure to the media per se (access), and social context that typifies the situation of exposure to different media (Skills).

It is clear from the theory that, students spend time using the media in various ways. Whether students or users are whiling away the time, reading for academic understanding or using it as a social tool, each medium is unique in its purpose. To explain this further, another theory that emerged and became quite prevalent is the Dependency Theory. Ball-Rokeach and DeFleur (1976) described the Dependency Theory as an extension of the Uses and Gratifications Approach brought about some years earlier. The theory is in essence, an explanation of the correlating relationship between the media content (engineering technology courses), the nature of society (polytechnic), and the behaviour of the audiences (attitude of students).

Henderson, Golwitze, and Yaelde‘s (2008) research supported these propositions because, individuals who were found with favourable attitudes towards certain topics or products were more inclined to select or choose and use databases than those with negative attitudes. Attitudes could play a very important role because it ranges from strong to weak attitudes. It is assumed that, when a person has a strong attitude toward something, it is most likely that, the person's mind is made up and set in his or her own ways. When strong and weak attitudes are already implemented in the mind, thought and memories are automatically activated.

2.13 Conceptual model on access, attitude, computer literacy skills and use of digitised databases.

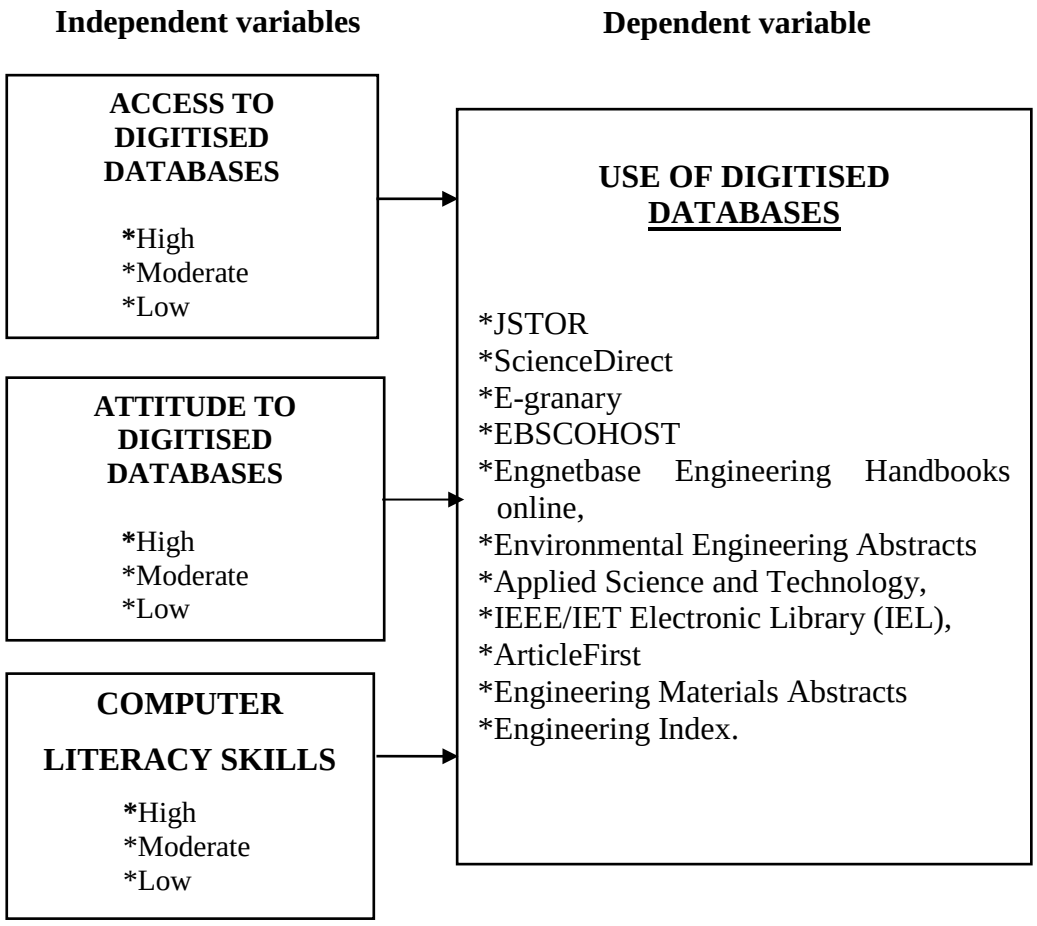

Fig. 2.2 Researcher's designed conceptual model

The conceptual model for this study was personally developed by the researcher. The model shows the three independent variables, which are access, attitude, computer literacy skills with their attendant sub-components interacting together to influence the dependent variable, that is, use of digitised databases by engineering technology students in federal polytechnics in Nigeria. As charted in the conceptual model, acquisition and unhindered access to digitised databases are believed could facilitate use. If the management and authorities of polytechnics provide databases and make it easily available to the polytechnic students, embark on trainings, workshops, seminars and talk shows that will encourage students on how to use scholarly electronic publications, the use of digitised databases might improve.

Furthermore, attitude that is, the disposition of students to digitised databases, either negative or positive determines their use by students. Computer literate students are likely to develop positive attitude towards use and once their attitude corresponds with the use of databases, they are likely to access them. Thus, attitude is also a determining factor toward use of digitised databases by engineering technology students of the federal polytechnics in Southwestern Nigeria.

Also, the model shows the relationship between computer literacy skills that is independent variable and access to digitised databases which is another independent variable. It is believed that, information professionals with high computer literacy skills are more likely to access and retrieve information from the electronic information resources more than those with inadequate ICT skills. This infers that, computer literacy skills could promote the use of digitised databases. For instance, any publication that is in electronic format requires that the user has computer skills to explore and exploit information contained in them. Hence, it is anticipated that computer literacy skills correlate with use. In the light of the above, the use of digitised databases, which is the dependent variable, is greatly influenced by any of the independent variables either positively or negatively.

However, it is believed that, an engineering student who is computer literate and has access to digitised databases is likely to develop positive attitude towards the use of these facilities for improved academic activities. It is therefore envisaged that, any modification on any of the independent variables is likely to have a significant influence on the use of digitised databases by engineering technology students of the Federal polytechnics in Southwestern Nigeria.

2.14 Appraisal of the literature reviewed

Digitised databases are products of information and communication technologies and they have been found relevant to the learning and research process in polytechnics. However, a review of the literature in the area of electronic media in the aspect of digitised databases vis-à-vis their use by engineering technology students in Nigerian polytechnics, reveals that not much has been done. In addition, there appears to be insufficient literature and empirical studies on the influence of psychological and academic constructs like access, attitude and computer literacy on the use of digitised databases in Nigeria as it affects students of polytechnics.

Consequently, there has been an extensive review of literature, both foreign and local, on the three independent variables of access, attitude and computer literacy skills as they influence the use of digitised databases by students of higher institutions of learning. However, literature reviewed has highlighted further that, all inhibitions on the use of information by students must be tackled in all the polytechnics so as to move vocational and technological education in tertiary institutions forward. There is no gainsaying in the fact that, polytechnics students with positive attitude to the use of digitised database, who equally have access to these invaluable resources would perform better in their academic activities. Polytechnic students therefore, require more of these resources to successfully solve problems, provide solutions and produce new ideas and direction for the future. In line with the above, carrying out this study will further provide information on the level of use of digitised databases and factors that could promote its use among polytechnic students in Nigeria.

Nevertheless, in spite of both local and foreign literature reviewed to support these independent variables as they relate to the use of digitised databases in higher institutions of learning in Nigeria, there appears to be a lacuna in literature with regard to the influence of the variables in this study on the use of digitised databases in relation to engineering technology students in federal polytechnics in Southwestern Nigeria. Noticeably, there is an apparent gap in knowledge with regard to local studies on access, attitude and computer literacy skills of engineering technology students in federal polytechnics in Nigeria. Consequently, due to limitation of literature in the identified field of media resource studies, particularly with reference to engineering technology students in federal polytechnics in Nigeria, the gaps so observed form the bottom line on which this study is anchored.

CHAPTER THREE

METHODOLOGY

3.1 This chapter is focused on the method used to carry out the research work. Succinctly, the chapter dwells on the following sub-headings

3.2 Research design.

3.3 Population of the study.

3.4 Sample and sampling technique.

3.5 Data collection instrument.

3.6 Validity and reliability of the research instrument.

3.7 Procedure for data collection.

3.8 Data analysis.

3.2 Research design

This study employed descriptive survey design of correlational type. According to Fawole, Egbokhare, Itiola, Odejide and Olayinka (2006), descriptive research is primarily concerned with describing the nature or conditions and degree in detail of the present situation, and the emphasis is on describe rather than judge or interpret, and no manipulation of variables is attempted. In addition, no artificial setting was created for the study. This research method was appropriate for this study because it investigated the relationship between the use of digitised databases and access, attitude and computer literacy skills among engineering technology students in federal polytechnics in Southwestern Nigeria. Furthermore, the research is also expected to glide to prediction between independent and dependent variables.

3.3 Population of the study

The population for the study was estimated at 1456, mainly Higher National Diploma (HND II) engineering technology students offering engineering related

courses in the four federal polytechnics in Southwestern Nigeria (Table 3.1). The four areas of engineering technology courses common to the schools of engineering in the four federal polytechnics used for the study are: Electrical Electronics Engineering Technology, Computer Engineering Technology, Civil Engineering Technology and Mechanical Engineering Technology. The study further focussed on the use of digitised databases chosen as resource materials for engineering technology students in the federal polytechnics in Southwestern Nigeria.

As at the time of conducting this research work, there were five federal polytechnics in Southwestern Nigeria namely; Federal Polytechnic, Ado Ekiti; Federal Polytechnic, Ede; Federal Polytechnic, Ilaro; Federal Polytechnic Ile-Oluji and Yaba College of Technology, Yaba Lagos. However, only four (4) federal polytechnics were used for the study. The four federal polytechnics that were involved in the study were those ones offering engineering technology courses. Federal Polytechnic, Ile-Oluji, Ondo State was excluded because it was newly established and just grappling to consolidate, and also without HND II students who formed the population for the study. Table 3.1 shows the estimated respondents by institution and department.

Table 3.1 **Estimated population of engineering technology students across the four institutions and departments**

S/N	Course of study	Coll. of Tech., Yaba	Fed. Poly., Ado-Ekiti	Fed. Poly., Ede	Fed. Poly., Ilaro	Total
1.	Electrical Electronic Engineering Technology	102	104	83	116	**405**
2	Computer Engineering Technology	116	112	76	98	**402**
3.	Mechanical Engineering Technology	104	100	---	76	**280**
4.	Civil Engineering Technology	126	108	45	90	**369**
	Total	**448**	**424**	**204**	**380**	**1456**

Source: Preliminary investigation from the field by the Researcher in 2014.

3.4 Sample and Sampling technique

Multi-stage sampling procedure was adopted for the study. At the first stage, purposive cum total enumeration technique were used to select all the four institutions that offered engineering technology courses and were also at HND II level. At the second stage, purposive and total enumeration technique were further employed to select the four engineering technology departments common to all four polytechnics involved in the study. Also, because of the limited number of HND II students in the four areas of engineering technology courses that were common to the federal polytechnics in Southwestern Nigeria as at September, 2015, total enumeration technique was used to select all the estimated 1456 engineering technology students in all the four engineering technology departments used for the study. The study was also limited to HND II engineering technology students alone because, they were deemed to have been exposed to digitised databases during their national diploma programme and also because they would need to consult digitised databases in their bid to conduct and submit a research project and practical as part of the requirement for the award of national diploma certificate. In addition, the HND II engineering technology students belong to the category of polytechnic students who, by virtue of their level, experience and exposure to the use of digitised databases, appeared to be well informed to be able to respond adequately to the instrument used for the study.

3.5 Data collection instrument

The research instrument that was used to collect data for this study was a questionnaire titled "Access, Attitude and Computer Literacy Skills Questionnaire (AACLQ)" with different scales which measured different constructs. The questionnaire consists of 5 sections with each section designed to elicit unbiased responses from the respondents. The sections are as follows:

Section A: Personal Data. This section of the questionnaire aimed at gathering data from the respondents on their personal information. Information was required on their age, gender, designation and so on.

Section B: Access to Digitised Databases Scale (ADDS). This section was designed to gather information on access to digitised databases by the respondents. 15 different engineering databases were listed. Likert scale was adopted for this section, and the options were: Very easily accessible = 4; Easily accessible = 3;

Occasionally accessible = 2; and Not accessible = 1. The reliability coefficient of the access to digitised databases scales was found to be r = 0.91 which made it suitable and reliable for administration.

Section C: Attitude of Students to Digitised Databases Scale (ASDDS). The adapted form of computer attitude questionnaire developed and validated by Selwyn (1997) was employed for this study. The original version contains 49 items meant to measure the attitudes of students towards computer technology. The original form of the computer attitude scale yielded high internal reliability coefficient of 0.90 and test-retest reliability of 0.93. The adapted version aimed at investigating the attitude of students towards the use of digitised databases. On attitude of students to digitised databases scale, there were nine (9) statements in the negative and 10 in the positive. Likert scale was adopted to elicit response from the respondents where the options were: Strongly agree = 4; Agree = 3; Disagree = 2; and Strongly disagree = 1. The reliability coefficient of the attitude questionnaire scale was also found to be r = 0.77 meaning that the scale was reliable and suitable for administration.

Section D: Computer Literacy Skills Scale (CLS). The computer literacy scale utilised for this study contains 29 items meant to assess the basic understanding of computer terms and operation. It is an adapted form of computer literacy scale for newly enrolled nursing college students by Lin (2011). The original scale possessed good content validity and reliability. There were 13 statements in the negative and 16 in the positive format. Respondents were asked to indicate the extent of their agreement or disagreement with the statements on computer literacy skills on a modified 4-point Likert Scale of which the options were: Strongly agree = 4; Agree = 3; Disagree = 2; and Strongly Disagree = 1. The reliability coefficient of 0.76 was established for the scale.

Section E: Use of Digitised Databases Scale (UDDS). This section of the questionnaire was personally designed by the researcher to elicit information from the respondents on the use of digitised databases. The measurement was determined using Likert scaling techniques. The scale contains 15 items to obtain respondents' opinion on the type and extent of use of digitised databases. The opinion was measured by response format such as: Very highly used = 4; highly

used = 3; occasionally used = 2; not used = 1. Reliability coefficient of 0.93 was established for the scale. A copy of the questionnaire was provided in Appendix II

3.6 Validity and reliability of the research instrument

In determining the validity and reliability of the instrument, the researcher obtained a duly signed letter of introduction from the Director, Centre for Educational Media Resource Studies, Faculty of Education, University of Ibadan to the two Federal Polytechnics selected for the pilot study to seek for permission from the managements of the institutions to administer copies of the research instrument (questionnaire) to 40 Higher National Diploma II engineering technology students at the Federal Polytechnic, Offa, and Osun-State College of Technology, Esa-Oke respectively. Students were initially stratified into male and female strata, then, ten (10) students were randomly selected per course and the selection was gender balanced. After permission was granted to the researcher to administer the instrument on engineering technology students, the researcher was introduced to the Heads of Departments concerned. The Engineering technology courses were (Computer Engineering Technology, Civil Engineering Technology, Mechanical Engineering Technology and Electrical Electronics Engineering Technology). The questionnaire was administered to the respondents by the researcher. (Appendix III refers)

In terms of the validity which is the content appropriateness of the scales, the instrument was submitted for scrutiny to researcher's supervisor, lecturers in the Department of Library, Archival and Information Studies (LARIS), and Centre for Educational Media Resource Studies, both at the University of Ibadan, and School of Engineering, Federal Polytechnic, Offa. Based on the experts' advice, comments and suggestions on the items of the instrument, appropriate corrections were effected.

For the purpose of this study, the reliability coefficient of the instrument was established through Cronbach Alpha method. Copies of the research instrument were administered to about 40 students pursuing various engineering technology courses in both state and federal Polytechnics outside those selected for the study. The polytechnics involved were Federal Polytechnic, Offa and Osun State College of Technology, Esa-Oke. Both institutions were outside the scope of the population for the study. Using Cronbach alpha method for the analysis of the responses, the following reliability coefficients were obtained for the scales: Access to digitised databases, r =

0.91; Attitude to digitised databases, r = 0.77; Computer literacy skills, r = 0.76; and Use of digitised databases, r = 0.93.

3.7 Procedure for data collection

For the purpose of data collection for the study, the researcher obtained a duly signed letter of introduction from the Director, Centre for Educational Media Resource Studies, Faculty of Education, University of Ibadan, to all the Federal Polytechnics selected for the study, to seek for permission from the managements of the institutions to administer copies of the questionnaire to all the Higher National Diploma II engineering technology students in the institutions visited (Appendix II). After permission was granted to the researcher to administer copies of the instrument on engineering technology students, the researcher was introduced to the Heads of Departments concerned. The Engineering technology courses were Computer, Civil, Mechanical and Electrical Electronics Engineering Technology. The questionnaire was administered to the respondents through the help of four (4) trained research assistants, mainly workers in the polytechnics used as samples. Data collection exercise took 24 weeks. Out of the 1456 copies of the instrument distributed to the respondents, 947 representing 65% response rate were properly filled, returned and found suitable for analysis.

3.8 Data analysis

The data collected were collated and analysed through the use of descriptive and inferential statistics. Specifically, the research questions were analysed by using descriptive statistics such as percentage, mean and standard deviation. The hypotheses, on the other hand, were subjected to inferential statistics using Pearson's Product Moment Correlation (PPMC), and Multiple regression analyses with the aid of Statistical Package for Social Sciences (SPSS). The software package has been widely applied in user studies, technology acceptance as well as many researches (Al-Zahrani, 2006; Ifinedo, 2006; Louho, Kallioja and Oittinen, 2006). In all, five research questions were answered and four null hypotheses tested at 0.05 level of significance.

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CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 In chapter four, the results of data analysis and their interpretation are presented and consequently discussed. The research study is on the influence of access, attitude and computer literacy skills on the use of digitised databases among engineering technology students in federal polytechnics situated in Southwestern Nigeria. All the hypotheses were presented in null form and were tested at 0.05 level of significance. Likewise, the following sub headings are fully discussed in details:

4.2 Questionnaire distribution and response rate.

4.3 Demographic characteristics of the respondents.

4.4 Answers to the research questions.

4.5 Test of the hypotheses.

4.6 Discussion of the findings.

4.2 Questionnaire distribution and response rate

For the purpose of administration of research instrument, total enumeration technique was adopted. Out of the 1456 copies of the questionnaire distributed, 947 copies representing 65% were properly filled and returned and found suitable for analysis. Table 4.1 gives detailed analyses of the response rate by institution and department. The response rate of 65% recorded was considered adequate, enough and suitable for analysis because the standard acceptable response rate for most research studies in social and behavioural sciences is put at 60% (Malaney, 2002, Evans, Peterson and Demark-Wahnefried, 2004, as cited in Dulle, Minish-Majanja and Cloete, 2010).

Table 4.1 **Questionnaire distribution and the response rate by institution and department**

S/N	Polytechnic	Elect. /Elect tech.	Comp. tech.	Mech. Tech.	Civil Tech.	Total	No returned	%
1.	Yaba Coll. of Tech., Lagos	102	116	104	126	**448**	280	62.5
2.	Federal Poly, Ado Ekiti	104	112	100	108	**424**	291	68.6
3.	Federal Polytechnic, Ede	83	76	-	45	**204**	139	68.1
4.	Federal Polytechnic, Ilaro	116	98	76	90	**380**	237	621.3
	Total	**405**	**402**	**280**	**369**	**1456**	**947**	**65.0**

4.3 Demographic characteristics of the respondents

The demographic characteristics of the respondents are presented in graphic form for vivid illustration in this section. Essentially, the respondents are all HND II students pursuing courses in various engineering departments in Nigerian polytechnics in Southwestern Nigeria. Table 4.1 and Figure 4.1 illustrates the distribution of the respondents by institution, department and gender respectively. Table 4.1 which shows the population sample by institution is as follows: Yaba College of Technology, 280 students representing 29%; Federal Polytechnic, Ado Ekiti (291; 29%); Federal Polytechnic, Ilaro (237; 25%); Federal Polytechnic, Ede (139; 15%). Out of the 947 respondents, 770 representing 81% of them were males, while 177 (19%) constituted the females. This shows that male students constituted the majority of engineering technology students in the Federal Polytechnics in Nigeria.

The skewness may be due to the fact that engineering technology courses in most tertiary institutions in Nigeria are male dominant. The reason adduced for the gender imbalance in this research work is that, engineering as a course has so many practical parts/phases which may not favour female students especially during professionalism. Since the total enumeration method was adopted for the sample, only those found pursuing the four engineering technology courses were involved in the research work.

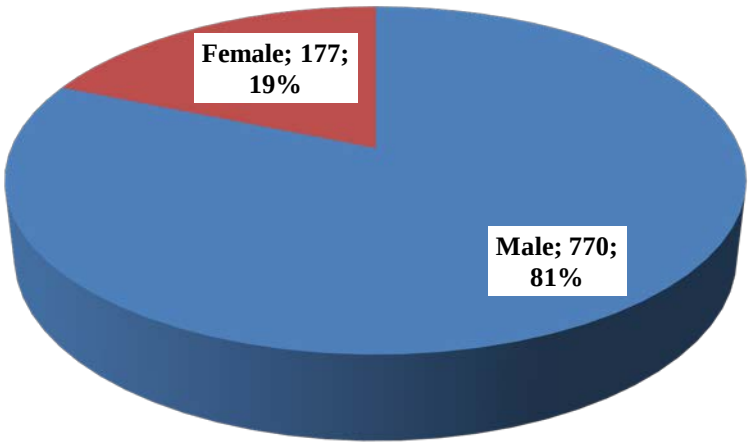

Fig. 4.1: Population sample by gender

4.4 Answers to the research questions

In this segment of chapter four, data analysis on the research questions that were asked in chapter one was done. Furthermore, answers were provided to the five research questions that guided the conduct of this study.

4.4.1 **Research question one**: What is the level of use of digitised databases amon engineering technology students in federal polytechnics in Southwestern Nigeria?

Table 4.2 shows the percentage, mean and standard deviation scores of the respondents to the questionnaire items on "use of digitised databases scale". Furthermore, Table 4.2.1 shows the test norm table on the level of use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria.

Table 4.2 **Level of use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria**

S/N	Digitised databases	Very highly utilised	Highly utilised	Occasionally utilised	Not utilised	Mean	Standard deviation
1.	Myilibrary	216 22.8%	215 22.7%	272 28.7%	244 25.8%	2.57	1.10
2.	ScienceDirect	201 21.2%	244 25.8%	268 28.3%	234 24.7%	2.56	1.08
3.	Engineering Materials Abstracts (EMA)	218 23.0%	243 25.7%	232 24.5%	254 26.8%	2.55	1.12
4.	African Journal Online (AJOL)	238 25.1%	203 21.4%	314 33.2%	192 20.3%	2.49	1.08
5.	Engineered Materials Index (EMI)	225 23.8%	296 31.3%	227 24.0%	199 21.0%	2.42	1.07
6.	Engineering Village 2	238 25.1%	251 26.5%	286 30.2%	172 18.2%	2.41	1.05
7.	Engnetbase Engineering Handbooks Online	233 24.6%	258 27.2%	291 30.7%	165 17.4%	2.41	1.04
8.	Journal Storage (JSTOR)	236 24.9%	276 29.1%	276 29.1%	159 16.8%	2.38	1.03
9.	IEEE/IET Electronic Library (IEL)	269 28.4%	253 26.7%	233 24.6%	192 20.3%	2.37	1.10
10.	Directory of Open Access Journal (DOAJ)	273 28.8%	279 29.5%	225 23.8%	170 18.0%	2.31	1.07
11.	EBSCOHOST (e-journal)	295 31.2%	276 29.1%	248 26.2%	128 13.5%	2.22	1.03
12.	E-Granary e-books	280 29.6%	352 37.2%	200 21.1%	115 12.1%	2.16	.98
13.	INSPEC	301 31.8%	284 30.0%	272 28.7%	90 9.5%	2.16	.98
14.	Wilson WEB Omnifile	352 37.2%	232 24.5%	221 23.3%	142 15.0%	2.16	1.09
15.	Compendex	332 35.1%	285 30.1%	217 22.9%	113 11.9%	2.12	1.02
	GRAND MEAN = 2.35						

The overall mean score of the respondents stands at 46.93 while the standard deviation is 6.72. The percentage score of those who have positive ratings of the questionnaire items is 55.29%. This shows that the level of use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria is high. Table 4.2.1 further illustrates this conclusion that the overall mean score of the respondents falls within the high use in the norm table. This clearly shows that

engineering technology students of federal polytechnics in Southwestern Nigeria make use of digitised databases for their academic pursuits.

In terms of item by item analysis, the most heavily used digitised database is Myilibrary (mean = 2.57), followed closely by ScienceDirect (mean = 2.56) then Engineering Materials Abstracts (mean = 2.55). Then in the lower rank, INSPEC (mean = 2.16), Wilson WEB Omnifile (mean = 2.16) and Compendex (mean = 2.12) remain the least used among the digitised databases.

Table 4.2.1 **Test norm table on the level of use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria**

Interval	Total mean score	Remark
1 - 20		Low use
21 - 40		Moderate use
41 - 60	**46.93**	High use

Maximum scores for a respondent on the 15 item access scale (15 x 4) = 60
Level of use, that is, three levels (**high, average and low**) = 3
To establish an interval score, (60/3) = 20 = 20
Therefore, an interval score of 20 is used to chart the norm table

Thus, the overall mean score of engineering technology students on the level of use of digitised databases scale of 46.93 falls within the interval distribution of 41 – 60 which is high (Table 4.2.1). This clearly shows that the level of use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria is high.

4.4.2 **Research question two**: What is the level of access to digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria?

Table 4.3 depicts the percentage, mean and standard deviation scores of respondents with respect to their level of access to digitised databases. In addition,

Table 4.3.1 also illustrates the test norm level of access to digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria.

Table 4.3 **Level of access to digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria.**

S/N	Digitised databases	Very easily accessible	Easily accessible	Occasionally accessible	Not accessible	Mean	Standard deviation
1.	ScienceDirect	213 22.5%	211 22.3%	313 33.1%	210 22.7%	2.55	1.07
2.	Engineered Materials Index (EMI)	228 24.1%	210 22.2%	296 31.3%	213 22.5%	2.52	1.09
3.	Myilibrary	248 26.2%	187 19.7%	297 31.4%	215 22.7%	2.51	1.11
4.	Engineering Materials Abstracts (EMA)	223 23.5%	226 23.9%	291 30.7%	207 21.9%	2.51	1.08
5.	Journal Storages (JSTOR)	218 23.0%	251 26.5%	269 28.4%	209 22.1%	2.50	1.07
6.	African Journal Online (AJOL)	207 21.9%	227 24.0%	350 37.0%	163 17.2%	2.50	1.02
7.	IEEE/IET Electronic Library (IEL)	249 26.3%	215 22.7%	293 30.9%	190 20.1%	2.45	1.08
8.	Engnetbase Engineering Handbooks Online	250 26.4%	225 23.8%	300 31.7%	172 18.2%	2.42	1.07
9.	EBSCOHOST (e-journal)	247 26.1%	301 31.8%	262 27.7%	137 14.5%	2.31	1.01
10.	Engineering Village 2	285 30.1%	245 25.9%	274 28.9%	143 15.1%	2.29	1.05
11.	Compendex	291 30.7%	291 30.7%	234 24.7%	131 13.8%	2.22	1.03
12.	INSPEC	303 32.0%	253 26.7%	273 28.8%	118 12.5%	2.22	1.03
13.	E-Granary (e-books)	264 27.9%	330 34.8%	248 26.2%	105 11.1%	2.20	.97
14.	Directory of Open Access Journal (DOAJ)	297 31.4%	326 34.4%	220 23.2%	104 11.0%	2.14	.98
15.	Wilson WEB Omni file	334 35.3%	257 27.1%	252 26.6%	104 11.0%	2.13	1.02
	GRAND MEAN = 2.36						

Thus, the total mean score on the level of access of the engineering technology students is put at 38.01 with a standard deviation of 11.51. Furthermore, the charting of the total mean score on the test norm table puts the total mean of 38.01 within the moderate access level. In addition, 72.8% of the respondents affirm that they have unhindered access to digitised databases. This means that, engineering technology

students in federal polytechnics in Southwestern Nigeria have access to digitised databases.

For the item by item analysis, those who agreed to have moderate access to ScienceDirect ranked highest with the mean of 2.55, followed by Engineering Materials Index EMI (mean = 2.52), and then Myilibrary following closely with (mean = 2.51). On the other hand, E-granary (mean = 2.20), Directory of Open Access Journal (mean = 2.14), and Wilson WEB Omni file (mean = 2.13) ranked lowest.

Table 4.3.1 **Test norm table on the level of access to digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria**

Interval	Total mean score	Remark
1 - 20		Low Access
21 - 40	38.01	Moderate Access
41 - 60		High Access

Maximum scores for a respondent on the 15 item access scale (15 x 4) = 60
Level of access, that is, three levels (**high, medium and low**) = 3
To establish an interval score (60/3) = 20 = 20
Therefore, an interval score of 20 is used to chart the norm table

Thus, the overall mean score of engineering technology students on access to digitised databases scale of 38.01 falls within the interval distribution of 21 - 40 which is moderate access (Table 4.3.1). This clearly shows that the level of access to digitised databases by engineering technology students in federal polytechnics in Nigeria is moderate.

4.4.3 **Research question three**: What is the attitude of engineering technology students to digitised databases in federal polytechnics in Southwestern Nigeria?

Table 4.4 depicts the percentage, mean and standard deviation scores of respondents concerning their attitude to digitised databases. Besides, Table 4.4.1 shows the test norm of attitude of engineering technology students in federal polytechnics in Southwestern Nigeria.

Table 4.4 **Attitude of engineering technology students to the use of digitised databases in federal polytechnics in Southwestern Nigeria**

S/N	Attitude scale	Strongly disagree	Disagree	Agree	Strongly agree	Mean	Standard deviation
1.	I know that DDs give me opportunities to learn many new things in my studies.	105 11.1%	143 15.1%	281 29.7%	418 44.1%	3.07	1.02
2.	I consider DDs very useful in exploring technological concepts and ideas.	104 11.0%	155 16.4%	379 40.0%	309 32.6%	2.94	.96
3.	I am convinced that the use of DDs in learning will give better academic results.	126 13.3%	179 18.9%	329 34.7%	313 33.1%	2.88	1.02
4.	I find using DDs in learning my subject better than using the traditional methods (prints).	109 11.5%	249 26.3%	377 39.8%	212 22.4%	2.73	.94
5.	I would like to learn more about DDs.	220 23.2%	177 18.7%	245 25.8%	306 32.3%	2.67	1.15
6.	I feel comfortable in my ability to use DDs.	109 11.5%	279 29.5%	409 43.2%	150 15.8%	2.63	.88
7.	I feel comfortable when there is discussion on DDs use for learning.	119 12.6%	264 27.9%	413 43.6%	151 15.9%	2.63	.90
8.	I am indifferent about using DDs for learning.	113 11.9%	309 32.6%	383 40.4%	142 15.0%	2.59	.88
9.	I have reservation about using DDs for learning.	145 15.3%	306 32.3%	377 39.8%	119 12.6%	2.50	.90
10.	I know DDs resources are important but I don't feel I need to use them to learn my subject.	218 23.0%	286 30.2%	253 26.7%	190 20.1%	2.44	1.05
11.	I cannot use DDs for other activities than for learning.	205 21.6%	301 31.8%	321 33.9%	120 12.7%	2.38	.96
12.	I use DDs more at school than at home.	196 20.7%	324 34.2%	313 33.1%	114 12.0%	2.36	.94
13.	I do not like using DDs for learning important topics in my subject	238 25.1%	305 32.2%	295 31.2%	109 11.5%	2.29	.97
14.	I find the use of DDs frightening.	249 26.3%	347 36.6%	220 23.2%	131 13.8%	2.25	.99
15.	I would rather learn by reading prints only than using digitised media resources.	299 31.6%	312 32.9%	186 19.6%	150 15.8%	2.20	1.05
16.	I have phobia for digitised information resources.	272 28.7%	342 36.1%	207 22.9%	126 13.3%	2.20	1.00
17.	I am not what I could call a computer literate person.	350 37.0%	294 31.0%	196 20.7%	107 11.3%	2.06	1.01
18.	I do not have search skills to search the Internet for learning.	356 37.6%	318 33.6%	185 19.5%	88 9.3%	2.01	.97
19.	I won't have anything to do with DDs.	367 38.8%	309 32.6%	164 17.3%	107 11.3%	2.01	1.01
	GRAND MEAN = 2.52						

In Table 4.4, the total mean score of 46.82, standard deviation of 7.46 as well as the percentage score of 61.5% of those who agreed and strongly agreed with the positive statements in the attitude scale affirm positive attitude of engineering technology students to digitised databases. In addition, the test norm table (Table 4.4.1) shows that the total mean score of 46.82 falls within the moderate attitude level. This indicates that, the attitude of engineering technology students in federal polytechnics in Southwestern Nigeria is moderately high.

The item by item analysis shows that the statement "I know that DDs give me opportunities to learn many new things in my studies (mean = 3.07) ranks highest, followed by 'I consider DDs very useful in exploring technological concepts and ideas' with (mean = 2.94) and 'I am convinced that the use of DDs in learning will give better academic results' (mean = 2.88). On the lower side of attitude of engineering technology students to the use of digitised databases, "I won't have anything to do with DDs (mean = 2.01) ranks lowest, trailed closely by 'I do not have search skills to search the Internet for learning' (mean = 2.01), and 'I am not what I could call a computer literate person' (mean = 2.01) respectively.

Table 4.4.1 **Test norm table of attitude of engineering technology students to the use of digitised databases in federal polytechnics in Southwestern Nigeria**

Interval	Total mean score	Remark
1 - 25		Low Attitude
26 - 50	46.82	Moderate Attitude
51 - 75		High Attitude

Maximum scores for a respondent on the 19 item attitude scale (19 x 4) = 76
Level of attitude, that is, three levels (**high, medium and low**) = 3
To establish an interval score (76/3) = 25.3 = 25
Therefore, an interval score of 25 is used to chart the norm table

Thus, the overall mean score of engineering technology students on attitude to digitised databases scale of 46.82 falls within the interval distribution of 26 – 50 which is moderate (Table 4.4.1). This clearly shows that attitude of engineering technology students in federal polytechnics in Southwestern Nigeria is moderately high.

4.4.4 **Research question four**: What is the level of computer literacy skills possessed by engineering technology students in federal polytechnics in Southwestern Nigeria?

Table 4.5 indicates the percentage, mean and standard deviation scores of the respondents on their level of computer literacy skills. Also, Table 4.5.1 illustrates the test norm of computer literacy skills of engineering technology students in federal polytechnics in Southwestern Nigeria.

Table 4.5 **Computer literacy skills of engineering technology students in federal polytechnics in Southwestern Nigeria**

S/N	Computer literacy skills scale	SD	D	A	SA	Mean	Std. D
1.	I can confidently use computer to communicate with people and send e-mails.	37 3.9%	68 7.2	244 25.8%	598 63.1%	3.48	.79
2.	I have the ability to check my mail account.	70 7.4%	96 10.1%	242 25.6%	539 56.9%	3.32	.93
3.	I can use the computer to surf the world wide web.	57 6.0%	80 8.4%	334 35.3%	476 50.3%	3.30	.86
4.	I can confidently use the computer facilities to find needed information.	68 7.2%	86 9.1%	321 33.9%	472 49.8%	3.26	.90
5.	I can use computer to access information needed to perform tasks related to learning in an efficient manner.	58 6.1%	151 15.9%	306 32.3%	432 45.6%	3.17	.91
6.	I am able to use the computer to organise and manage files.	48 5.1%	126 13.3%	409 43.2%	364 38.4%	3.15	.84
7.	I know how to get information from databases online.	53 5.6%	154 16.3%	577 39.8%	363 38.3%	3.11	.87
8.	I am proficient in the use of computer to browse the Internet.	120 12.7%	144 14.9%	225 23.8%	461 48.7%	3.08	1.07
9.	I can comfortably use the computer to organise information.	78 8.2%	150 15.8%	368 38.9%	351 37.1%	3.05	.93
10.	I can draw pictures on the computer.	92 9.7%	171 18.1%	303 32.0%	381 40.2	3.03	.99
11.	I can use the computer to analyse data.	93 9.8%	142 15.0%	366 38.6%	346 36.5%	3.02	.95
12.	I can confidently use computer facilities to solve practical problems.	70 7.4%	171 18.1%	393 41.5%	313 33.1%	3.00	.90
13.	I am experienced at using ICT in learning.	121 12.8%	150 15.8%	327 34.5%	349 36.9%	2.95	1.02
14.	I am able to use variety of programmes (software).	116 12.2%	153 16.2%	389 41.1%	289 30.6%	2.90	.97
15.	I am proficient in the use of computer to carry out research work.	201 21.1%	113 11.9%	283 29.9%	350 37.0%	2.83	1.14
16.	I can make selections from the databases online.	263 27.8%	234 24.7%	275 29.0%	175 18.5%	2.38	1.08
17.	I do not have the ability to handle online software.	323 24.5%	280 29.6%	288 30.4%	147 15.5%	2.37	1.02
18.	I cannot get software up and running.	238 25.1%	320 33.8%	244 25.8%	145 15.3%	2.31	1.01
19.	I understand all the terms relating to online databases.	239 25.2%	319 33.7%	271 28.6%	118 12.5%	2.28	.98
20.	I have low ability to work on a personal computer.	384 40.5%	177 18.7%	195 20.6%	191 20.2%	2.20	1.17
21.	I have no ability to organise and manage online files	335 35.4%	281 29.7%	211 22.3%	120 12.7%	2.12	1.03
22.	I have low ability to word process my documents on the computer.	334 35.3%	305 32.2%	223 23.5%	85 9.0%	2.06	.97
23.	I cannot handle, fix and remove storage devices correctly.	382 40.3%	262 27.7%	200 21.1%	103 10.9%	2.03	1.02
24.	I have low ability to search for databases relating to my course of study online.	370 39.1%	292 30.8%	188 19.9%	97 10.2%	2.01	1.00
25.	I cannot integrate computer facilities in learning.	373 39.4%	313 33.1%	157 16.6%	104 11.0%	1.99	1.00
26.	I do not know how to copy from the CD-ROM.	407 43.0%	265 28.0%	170 18.0%	105 11.1%	1.97	1.03
27.	I cannot confidently use computer for the following purposes: refresh, reboot, reload, stop, forward, etc.	453 47.8%	234 24.7%	127 13.4%	133 14.0%	1.94	1.08
28.	I am not able to perform basic operations like using keyboard, mouse, launch browsers, etc.	556 58.7%	202 21.3%	95 10.0%	94 9.9%	1.71	1.00
29.	I am not experienced at using computer and its facilities.	595 60.7%	182 19.2%	117 12.4%	73 7.7%	1.67	.97
	GRAND MEAN = 2.61						

In Table 4.5, the overall mean score and the standard deviation of computer literacy skills of engineering technology students in federal polytechnics in Southwestern Nigeria are 75.71 and 9.64 respectively. Furthermore, the percentage score of the respondents who strongly agreed and agreed respectively with the questionnaire items on computer literacy skills is put at 68.4%. It can thus be deduced from the results that the level of computer literacy skills of engineering technology students in federal polytechnics in Southwestern Nigeria is moderately high. This is further confirmed in the test norm table (Table 4.5.1) which clearly specifies an overall mean score of 75.71 within the moderate interval level. This clearly demonstrates that engineering technology students in federal polytechnics, especially in Southwestern Nigeria, are computer literate and possess the necessary computer literacy skills to explore the myriad of digitised databases in their areas of studies.

In terms of ranking, the item by item analysis indicates that, the statement, 'I can confidently use computer to communicate with people and send e-mails' (mean = 3.48) ranks highest by the mean score rating, followed by 'I have the ability to check my mail' (mean = 3.32), and 'I can use the computer to surf the World Wide Web' (mean = 3.30). On the other hand, the last three statements, 'I cannot confidently use computer to refresh, reboot, reload, stop forward, etc.', (mean = 1.94), 'I am not able to perform basic operations like using keyboards, mouse, launch browsers, etc., (mean =1.71), and 'I am not experienced at using computer and its facilities' (mean = 1.67) rank lowest.

Table 4.5.1 **Test norm table of computer literacy skills of engineering technology students in federal polytechnics in Southwestern Nigeria**

Interval	Total mean score	Remark
1 - 39		Low CL
40 - 78	75.71	Moderate CL
79 - 117		High

*CL = Computer literacy skills

Maximum scores for a respondent on the 29 item CL scale (29 x 4) = 116

Level of computer literacy, that is, three levels (**high, moderate and low**) = 3

To establish an interval score (116/3) = 38.6 = 39

Therefore, an interval score of 39 is used to chart the norm table

The overall mean score of engineering technology students on computer literacy skills scale of 75.71 falls within the interval distribution of 40 – 78 which is moderate computer literacy (Table 4.5.1). This clearly shows that the level of computer literacy skills of engineering technology students in federal polytechnics in Southwestern Nigeria is moderately high.

4.4.5 **Research question five**: What is the relative contribution of access, attitude and computer literacy skills to the use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria?

Table 4.6 shows the relative contributions of the independent variables (access, attitude and computer literacy skills) to the dependent variable (use of digitised databases).

Table 4.6 **Relative contributions of access, attitude and computer literacy skills on the use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria**

Model	Un-standardized Coefficient		Standardized Coefficient	Rank	T	Sig.
	B	Standard Error	Beta Contribution			
(Constant)	2.430	.746			3.258	.00
Computer literacy skills	9.297E-	.00	.133	2nd	10.828	.000
Attitude to digitised databases	02	.012	.910	1st	70.234	.000
Access to digitised databases	.819	.008	-.040	3rd	-3.108	.002
	-2.36E-02					

In Table 4.6, the relative contribution of each of the three independent variables to the dependent variable, expressed as beta weights is as follows: Access to digitised databases (β = -.040, P < .05); Attitude to digitised databases (β = .910, P < .05); and Computer literacy skills (β = .133, P <. 05). Although, all the three independent variables are good predictors of the use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria, their relative

contributions differ. In terms of ranking, attitude to digitised databases ranks highest (β = .910), followed by computer literacy skills (β = .133), and finally, access to digitised databases (β = -.040). This means that the three independent variables could enhance, advance, improve, and positively boost the use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria.

4.4.6 **Ranking of the institutions used in terms of variables**

Table 4.7 shows the ranking of the four institutions involved in the study in terms of their relative standing according to the four variables used.

Table 4.7 **Institution by institution analysis of both independent and dependent variables**

S/N	Variables	Polytechnics	N	Mean	Std. Dev.	Rank-ing
1.	Access to digitised databases	Fed. Polytechnic, Ede	136	39.7647	10.7897	1st
		Yaba College of Tech.	256	38.0195	11.5043	2nd
		Fed. Polytechnic, Ilaro	234	37.8675	11.9568	3rd
		Fed. Poly., Ado Ekiti	321	37.3645	11.4802	4th
		Total	**947**	**38.0106**	**11.5183**	
2.	Attitude to digitised databases	Fed. Polytechnic, Ilaro	234	47.6923	6.8302	1st
		Yaba College.of Tech.	256	46.7617	7.4287	2nd
		Fed. Poly., Ado Ekiti	321	46.5452	8.0034	3rd
		Fed. Polytechnic, Ede	136	46.1029	7.1764	4th
		Total	**947**	**46.8237**	**7.4614**	
3.	Computer literacy	Fed. Polytechnic, Ede	136	76.7721	9.0913	1st
		Yaba College of Tech.	256	76.5625	10.4204	2nd
		Fed. Polytechnic, Ilaro	234	75.5470	9.4574	3rd
		Fed. Poly., Ado Ekiti	321	74.7040	9.2721	4th
		Total	**947**	**75.7117**	**9.6376**	
4	Use of digitised databases	Fed. Polytechnic, Ilaro	234	47.7564	6.2450	1st
		Yaba College of Tech.	256	46.8164	6.7685	2nd
		Fed. Polytechnic, Ede	136	46.7500	6.3266	3rd
		Fed. Poly., Ado Ekiti	321	46.4891	7.1257	4th
		Total	**947**	**46.9282**	**6.7146**	

Table 4.7 shows the mean scores and the ranking of each of the variables (independent and dependent) by institution. On access to digitised databases, Federal Polytechnic, Ede (mean = 39.7647) was highest in ranking, while Yaba College of technology (mean = 38.0195), Federal Polytechnics at Ilaro (37.8675), and Ado Ekiti (37.3645) came second, third and fourth respectively. In terms of attitude to digitised databases, Federal Polytechnic, Ilaro (mean = 47.6923) ranked highest, trailed closely by Yaba College of Technology (mean = 46.7617), Federal Polytechnic, Ado Ekiti (mean = 46.5452) and Federal Polytechnic, Ede (mean = 46.1029) respectively.

For computer literacy, Federal Polytechnic, Ede ranks highest with a mean of 76.7721, followed closely by Yaba College of Technology (mean = 76.5625), Federal Polytechnic, Ilaro (mean = 75.5470), and Federal Polytechnic, Ado Ekiti (mean = 74.7040) respectively. Finally, on the use of digitised databases, Federal Polytechnic, Ilaro (mean = 47.7564) came first in ranking while, Yaba College of Technology (mean = 46.8164), Federal Polytechnics at Ede (mean = 46.7500) and Ado Ekiti (mean = 46.4891) followed in succession.

Table 4.8 depicts the peculiarity of digitised databases to each of the four polytechnics used in the study.

Table 4.8 **Digitised databases peculiar to each polytechnic**

S/N	Polytechnic	Digitised databases available
1.	Federal Polytechnic, Ado Ekiti	ScienceDirect, Ebscohost, E-Granary, MYILIBRARY, Engineering Village 2 African Journal Online (AJOL). Directory of Open Access Journal (DOAJ), JSTOR.
2.	Federal Polytechnic, Ede	ScienceDirect, Ebscohost, E-Granary, African Journal Online (AJOL). Directory of Open Access Journal (DOAJ), Engineering Village 2, JSTOR
3.	Federal Polytechnic, Ilaro	ScienceDirect, Ebscohost, E-Granary, African Journal Online (AJOL). Directory of Open Access Journal (DOAJ), Engineering Village 2, JSTOR, Compendex,
4.	Yaba College of Technology	ScienceDirect, Ebscohost, E-Granary, MYILIBRARY, Engineering Village 2 African Journal Online (AJOL). Directory of Open Access Journal (DOAJ), JSTOR., Engeineered Materials index (EMI)

One of the findings of this study is the peculiarity of digitised databases in each of the four polytechnic libraries. It was found out that, not all the digitised databases listed in the digitised databases scale are available, accessible and used by engineering technology students in every polytechnic involved in the study. In spite of the fact that, all the polytechnics investigated had the same funding body, they do not have the same library materials for their students. Therefore, it should be noted that, polytechnic libraries, through their consortium, should strive to provide identical online information resources for their students

4.5 Test of hypotheses

In this section, the results of the five hypotheses formulated for this study are reported. The hypotheses were tested at 0.05 level of significance.

4.5.1 Hypothesis one

There is no significant relationship between access and use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria.

Table 4.9 gives a picture of the relationship between the dependent variable (use of digitised databases) and the independent variable (access)

Table 4.9 **Relationship between access and use of digitised databases among engineering technology students in Southwestern Nigeria**

Variable	Mean	Standard Deviation	n	r	p	Remark
Use of digitised databases	46.9282	6.7146	947	.322**	.000	Sig.
Access to digitised databases	38.0106	11.5183				

** Correlation significant at .05 level

Table 4.9 shows the existence of a positive significant relationship between access to digitised databases and its use by engineering technology students in federal polytechnics in Southwestern Nigeria. As a result, the null hypothesis was rejected. This means that access to digitised databases has a positive relationship to the use of digitised databases ($r = .322^{**}$, $N = 947$, $P < .05$).

4.5.2 Hypothesis two

There is no significant relationship between attitude and use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria.

Table 4.10 indicates the relationship between the dependent variable (use of digitised databases) and the independent variable (attitude).

Table 4.10 **Relationship between attitudes to digitised databases and their use by engineering technology students in Southwestern Nigeria**

Variable	Mean	Std. Dev.	n	r	p	Remark
Use of digitised databases	46.9282	6.7146	947	.921**	.000	Sig.
Attitude to digitised databases	46.8237	7.4614				

** Correlation significant at .05 Level

As shown in Table 4.10, there is a positive significant relationship between attitude to digitised databases and use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria ($r = .921^{**}$, $N = 947$, $P < .05$). As a result, the null hypothesis was also rejected. This translates to the fact that, engineering technology students in polytechnics have positive attitude towards the use of digitised databases for their academic work. In other words, they are more inclined to the use of digitised databases available at their disposal, because, their attitudes towards the use of digitised databases are high.

4.5.3 **Hypothesis three**

There is no significant relationship between computer literacy skills and use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria.

Table 4.11 is about the relationship between the dependent variable (use of digitised databases) and the independent variable (computer literacy skills).

Table 4.11 **Relationship between computer literacy skills and use of digitised databases among engineering technology students in federal polytechnics Southwestern Nigeria**

Variable	Mean	Std. Dev.	n	r	P	Remark
Use of Digitised Databases	46.9282	6.7146	947	.299**	.000	Sig.
Computer literacy skills	75.7117	9.6376				

** Correlation significant at .05 level

As depicted in Table 4.11, positive significant relationship existed between use of digitised databases and computer literacy skills by engineering technology students in federal polytechnics in Southwestern Nigeria ($r = .299^{**}$, $N = 947$, $P < .05$). This means that, computer literacy skills correlated significantly with the use of digitised databases among engineering technology students in the study. Therefore, the null hypothesis was rejected. Inference from this result is that, engineering technology students need to be well versed in computer literacy skills, so as to explore the vast resources available in the digitised databases.

4.5.4 Hypothesis four

The combination of access, attitude, and computer literacy skills does not have significant joint contribution to the use of digitised databases among engineering technology students of federal polytechnics in Southwestern Nigeria.

Table 4.12 presents the joint contributions of the independent variables (access, attitude and computer literacy skills) to the dependent variable (use of digitised databases).

Table 4.12 **Joint contribution of access, attitude and computer literacy skills on use of digitised databases among engineering technology students of federal polytechnics in Southwestern Nigeria**

R	R Square		Adjusted R Square	Std. error of the estimate	
.930	.865		.865	2.4690	
A N O V A					
Model	**Sum of Squares**	**DF**	**Mean Square**	**F**	**Sig.**	**Remark**
Regression	36902.625	3	12300.875	2017.873	.000	Sig.
Residual	5748.492	943	6.096			
Total	42651.117	946				

It is shown in Table 4.12 above that, the joint contribution of access, attitude and computer literacy skills on the use of digitised databases by engineering technology students in federal polytechnic in Southwestern Nigeria was significant. Therefore, hypothesis four, which is in null form was equally rejected. Thus, the joint influence of the three independent variables to the prediction of the dependent variable, that is, use of digitised databases was positively predicted. The table also shows a coefficient of multiple correlation (r = .930 and a multiple R^2 of .865). This means that 86.5% of the variance was accounted for by the three predictor variables when taken together. The significance of the composite contribution was tested at $P < .05$. The table also shows that the analysis of variance (ANOVA) for the regression yielded an F-ratio of 2017.873 significant at 0.05 level. This implies that the joint effect of the independent variables to the dependent variable was significant and that other variables not included in this model may have accounted for the remaining variance.

4.6 Discussion of the findings

4.6.1 Level of use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria

The result of research question one indicates that the level of use of digitised databases among engineering technology students in federal polytechnics in

Southwestern Nigeria is high. The interpretation of this is that, engineering technology students make use of digitised databases maximally in respect of their academic pursuits. This finding also indicates that, engineering technology students in federal polytechnics in Southwestern Nigeria used digitised databases to complement prints because they wanted to excel in their courses of study and to collect additional points to what they got from the familiarised sources.

This was substantiated in the finding by Ajuwon (2014) that, many students now use digitised databases such as e-books, e-journals and other available resources in the university libraries for learning and research activities. The use, Ajuwon (2014) believed, enables students to do better literature reviews for their dissertations and manuscripts. She further reported that, scholars of the National Open University, through distant learning programme in two Nigerian study centres indicated that, majority of the respondents in the two study centres, to a great extent, made use of the available electronic information resources mostly for knowledge acquisition and learning purposes. She enumerated other reasons that enhanced the use of e-materials by the respondents. These are; access, ease of use, deviation from the use of aging and poor textbooks, centrality of information centres, conducive environment and so on. Furthermore, high level of use of digitised databases as reported in this study is validated by the finding of Jenkins, Mimbs, and Kitchel (2009) in a study that, teachers used different types of technology available within their classroom or school.

This is also in tandem with the outcome of another research work carried out by Dhanavandan, Esmail, and Nagarajan, (2012) that, a maximum number of faculty members used the Internet and electronic resources for research, study and communication purposes respectively. The researchers stated further that, other respondents who used Google to access the information on the Web accessed current and up-to-date information because it was perceived to be one of the benefits of using electronic resources.

4.6.2 L**evel of access to digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria**

Research question two sought to find out the level of access to digitised databases among engineering technology students in the federal polytechnics in Southwestern Nigeria. The result of data analysis showed that, the use of digitised

databases by the respondents was significantly influenced by access. This implies that, engineering technology students in polytechnics in Nigeria have access to the avalanche of learning and instructional resources on engineering technology, through the polytechnic libraries and other sources at a moderate level. Thus, libraries attached to polytechnics play prominent role in ensuring that students have uninterrupted access to all necessary library collections. The information revolution brought about by advances in Information and Communication Technology (ICT) has enabled universities, polytechnics and colleges around the world to take advantage of these developments. Interestingly, the federal polytechnics that were involved in this study have academic libraries with Internet connectivity. This establishes that, provision of databases, as well as access should be the concern of every polytechnic library in Nigeria.

This finding is similar to the previous ones by Chew and Grant (2004), Omolase, Balarabe, and Omolase (2010), Omolase, Ihemedu, Ogunleye and Omolase (2010) that, provision of internet facilities in academic libraries enabled respondents to have access to electronic resources. This finding corroborates the opinion of Croxall and Cummings (2000) in a study that, in a contemporary society, students have access to a wide variety of technologies. Students' access to these technologies, according them, has helped to shift the classroom from a teacher-centred environment to a more student-centred one. In addition, Jenkin's (2009) study on teachers' level of access to technology indicated that they reported moderate access.

In the same vein, the result of a research work carried out by Mahmood (2010) showed that, despite the poor economic conditions in the country, the Internet technology and its resources were common and available in Pakistan thus, most of the respondents of the research study signified that, they had easy access to the electronic resources and they felt comfortable using the technology. According to Akintunde (2004), as reported by Aboyade, Aboyade and Babalola (2015) in an empirical study, noted that, the architecture of library buildings must take into consideration the provision of access points for computer networks, telecommunication facilities and online resources. This assertion should be given prominence because, libraries today should no longer be fixed structures of stones and blocks, rather, they should be a mesh of wire and cables transporting and transmitting electronic data from one remote server to the other. Chowdhury (2005) in another research study on access and use of scholarly electronic publications, identified electronic archives, special websites of institute and

professional bodies and personal websites as channels through which a researcher can get access to and use scholarly publication like full text of e-journal and e-book, digital libraries–special collections, CD-ROM and online databases.

This is rightly corroborated by Shabana (2014), while discussing how *Researc4Life* (an International Organization that specialises in providing access to research initiative and bridging the gap between the industrialised and developing counties) can aid vital discoveries. She stated that, access to knowledge resources especially online databases can empower people to bring about the desired technological and scientific change. Change in technological education today is a concept that must be critically considered if the much taunted vision 20:2020 must be achieved in Nigeria.

This is equally important to Uhegbu (2009) when he opines that, access to information materials is one of the prerequisites of information use. The purpose of use, the users' characteristics, and the environment in which information is being used, medium of communication, infrastructural facilities and equipment, cost of acquisition and time, all determine the use of digitised databases. Access to these new and emerging technologies is possible because of the value inherent in them and the ease of use. Supporting this assertion, Darkwa (2010) noted that, new modes of teaching, learning and accessing information have emerged as a result of Internet and World Wide Web**.** For example, CD-ROM databases are important tools for identifying the bibliographic details of potentially useful documents and ensuring easy access to large volumes of literature for research. The reasons being that: e-databases are considered versatile; help in sharing of data; improve control and collection of Engineering Information Resources (EIR); provide current awareness services and support their specific information needs. This means, access is inevitable in the use of digitised databases.

This implies that, engineering technology students' access to digitised databases in an academic environment increases their awareness of value to technological information sources and resources, thereby increasing the scientific and technological advancement of the nation.

4.6.3 Attitude of engineering technology students to digitised databases in federal polytechnics in Southwestern Nigeria

Research question three sought to find out the attitude of engineering technology students to digitised databases in federal polytechnics in Southwestern Nigeria. The research result indicates that majority of the respondents had moderate positive attitude to digitised databases. This finding corroborates the findings of Spacey et al. (2012), where it was noted that positive attitude to digitised databases is everything students need to achieve excellence at school. This is believed, will re-direct learning towards a successful living. In another empirical study undertaken by Eagly and Chaiken (1998), the research tried to determine the level of use of databases and other resources. Their study showed how students feel about various issues surrounding digitised databases and whether a change in their attitude is dependent upon subject studied or not. It was asserted that, a large number of the students with positive attitude to digitised databases' use had a better learning outcome than those indifferent to the application.

This assertion is in line with Morley's (2005) views when he expressed that, 'an eager attitude can help students to learn'. This shows clearly the important role students' attitudes play in their ability to learn and the importance of the need for teachers and librarians to understand students' attitude to database use if they intend to change negative attitudes into positive ones. On the contrary, if a learner is reluctant to learn how to use appropriate learning material or does not have a positive attitude to the use of technology, such a person may not produce any good result. Hence, learning is affected by attitude.

Kubiatko (2010) in a pilot study on 'Czech University students' attitudes towards ICT use in science education', found that the university students had positive attitudes towards ICT use in science. Similar findings reported by Simsek (2008) revealed that majority of the students accepted the use of ICT for learning and they maintained positive attitudes toward its use in school. Kubiatko and Halakova (2009) in a similar study, observed that Slovak secondary grammar school students had positive attitudes towards ICT for teaching and learning biology. This finding is in line with that of Topkaya and Kaya (2014) that, nurses had positive attitude to the use of computer and were also skilled in computer literacy. Similarly, some studies have also confirmed significant positive relationship between computer literacy skills, as well as

attitude to the use of ICT (Hsu, Hou, Chang and Yen, 2009; Malo, Neveu, Archambault, Émond, and Gagnon, 2012). Moreover, Croxall and Cummings (2000) reported positive attitudes towards the use of technology in classroom by teachers. They opined that, positive attitudes exhibited by teachers, in no small measure, influenced the incorporation of technology into the classroom. This implies that, both students' and teachers' interest aided the use of technology, and eventually learning.

Another survey by Bassi (2010) on attitude of students towards the use of e-resources, shows that students constitute major users of the libraries and they are heterogeneous in nature. This is important here because electronic database resources open opportunities for both male and female students for their information needs in the pursuit of their educational career and future endeavours. Many explorations are focused on finding gender differences in attitudes and using ICTs. For instance, Dorup (2004) in a survey conducted and entitled 'Experience and attitudes towards information technology among first year medical students in Denmark reported that males had more access to computers at home, and held more favourable attitudes toward the use of computers in their studies as compared to females. Males were found to be also significantly more inclined to replace traditional teaching activities with ICT resources.

This research result was reflected in Palaigeorgiou, Siozos, Konstantakis, and Tsoukalas's (2005) research submission that, both men and women in Slovak medical school had similar engagement with computers and held concerns for the future effects of continuous computer use, but women were more anxious about hardware usage, and judged less positively the consequences of computers in educational and social life. Thus, results in some researches on gender differences in ICT has shown that in most countries, girls and women are often behind in ICT knowledge, use and proficiency.

Mahmood (2010) in a different study, disclosed that respondents' attitude both in developed and developing world was positive towards online resources and technology. This positive development was due to the respondents' long use of the facilities in their academic and personal lives. Supporting this assertion, Aramide (2014) opined that, positive attitudes could affect how learners react to the use of technology in an instructional setting. Therefore, a significant increase in their extent of use and strength of attitude towards electronic resources was evident in the research result. The implication here is that, engineering technology students are moderately

inclined to the use of digitised databases. Equally, engineering technology students in federal polytechnics utilise the multiple digital opportunities to improve their learning culture. So, the average positive attitude and habit of engineering technology students is believed, would aid engineering technology students' knowledge acquisition and the use of information resources to better their educational standing.

4.6.4 Level of computer literacy skills possessed by engineering technology students in federal polytechnics in Southwestern Nigeria

Research question four also sought to ascertain the level of computer literacy skills possessed by engineering technology students in federal polytechnics in Southwestern Nigeria. The finding clearly shows that the level of computer literacy skills is moderate with most of the respondents indicating their ability to confidently use computer to perform many tasks. Many of the respondents specially indicated their ability to obtain information from digitised databases such as: EBSCOHOST, E-granary, JSTOR, Nigerian Virtual Library, DOAJ, and HIGHWIRE ARCHIVE. This implies that, if computer literacy skills of engineering technology students improve, use of scholarly electronic publications in polytechnic libraries will increase. In other words, computer literacy skills are predictors of use of e-materials. This finding is in tandem with a related study by Jenkins, Mimbs, and Kitchel (2009) on teachers. They found out that, teachers agreed that they had knowledge connected to computer literacy

This research result is in concord with the report of Majid and Abazova (1999) when they explored the use of electronic information sources relevant to computer literacy skills among academic staff of the International Islamic University, Malaysia. It was found that nearly all respondents considered themselves to have good or very good computer literacy skills. This means that, electronic resources are widely used among higher institution students and that there is a direct relationship between computer literacy skills and use of electronic resources. This scenario of high computer literacy skills among engineering technology students' is a pointer to knowledge as food to soul, translating to the fact that, computer literacy skills is a key factor in digitised databases' use among students. To engineering technology students in federal polytechnics in Southwestern Nigeria, this is an essential tool for educational development.

This is in tandem with the statement credited to Oluwatuyi (2015) who opined that 'the recent rapid growth and enthusiastic uptake of the Internet in education, with the corresponding avalanche of available information, has seen a much wider understanding of the importance of information literacy skills in the academic community'. Therefore, for polytechnic students to complete educational tasks successfully, they must be able to formulate key questions and know how to locate, evaluate and use information from many sources including a variety of online database resources.

Also, Emwanta and Nwalo (2013) in a research work, observed that the level of computing and Internet experience with which students enter higher education influenced their use of library's electronic resources. This finding is consistent with that of a previous study by Sasikala and Dhanraju (2011) that, respondents were able to have access to databases online due to their various search strategies and techniques. The technique which is only demonstrable with computer literacy skills include keyword search such as: simple keywords, Boolean operators searching, truncation field search, etc. All these made searching not limited but broad, wide, easier for users and widen learning horizons especially information literacy competence. Examples of online database resources that can be accessed electronically using search skills by the students include: electronic journals, scholarly databases, electronic books and hybrid digital collections. These can be achieved through Internet gateways and search engines.

The resources can be accessed free or for a fee and it could be full-text-whole journal, electronic version or print, partial or full-text-selected articles only, table of contents/abstract only or citation only. These invaluable resources are always up-to-date, convenience, linkable to other databases; provide access to a wider range of materials than might otherwise be available through the library. They are used to disseminate research findings, find out about research being carried out by others in a field of interest and identify methodologies that might be relevant to the work. The information therein is of high quality as they are majorly written and reviewed by experts with relevant documentations.

In this context, it indicates that engineering technology students would be able to access and use digitised databases only if they are knowledgeable about the skills required to navigate and retrieve information from the World Wide Web. The ability to use the databases will in turn aid students' academic performance, empower them,

develop them and make them cultivate good reading culture and academic activities. It is of interest to say that, all the polytechnic libraries visited have Internet ready computers found visible in the e-library section, although with their little attendant problems. Therefore, the researcher was able to infer from the research result that, engineering technology students in federal polytechnics are knowledgeable in the use of digitised databases made available to them in and around the polytechnics.

4.6.5 R**elative contribution of access, attitude and computer literacy skills to the use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria**

The analysis of data on research question five provided an answer on the relative contribution of each of the three independent variables of access, attitude and computer literacy skills on the use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria. The three independent variables (access, attitude and computer literacy skills) are found to be very significant and good predictors of use of digitised databases among engineering technology students. Though, all the three independent variables are significant and good predictors of use of digitised databases among engineering technology students, their relative contributions to the use of digitised databases however differ. From the result, attitude has the highest relative contribution to the use of digitised databases, followed by computer literacy and access in that order. Meaning that, attitude of engineering technology students towards the use of digitised databases ought to be given priority over computer literacy and access. This is so because it is believed that engineering technology students who are positive and proactive in mind tend to use digitised databases practically to improve their academics. This in turn is likely to lead them to do better in their studies and cope with the dynamic changes in the learning environment.

In a pilot study, McGuigan (2001) examined factors that influenced the use of electronic information resources and services in academic and research institutions in Tanzania. He posited that access, awareness, attitude and computer skills are paramount in promoting the use of electronic information resources. This implies that in the higher institutions of learning, access, attitude and computer literacy skills are paramount to the use of digitised database if electronic resources must remain the best means of

getting current and up-to-date information. The implication of the research result is that, the three independent variables (access, attitude and computer literacy skills) offer students the chance of right to use relevant and current information from different subject areas. This infers that, emergence of electronic resources has tremendously transformed information handling and management in Nigerian academic environments and polytechnic libraries in particular.

Thus, the use of electronic resources is gradually giving rise to new modes of organising the educational environment of tertiary institutions, new concepts of teaching process and recasting the role played by the participants in education process. Again in a research conducted in Southwestern Nigerian universities by Emwanta and Nwalo (2013) confirmed that, factors affecting students' access to, retrieval of, evaluation and use of electronic information resources especially through library mediation include factors like; attitude, availability, access, computer and information literacy skills.

Thus, engineering technology students need to be encouraged to develop positive attitude to the use of digitised databases right from the beginning of their studies so that they will be able to cope and survive in the contemporary digital world. It is also imperative for engineering technology students to have passion for the use of digitised databases because of the intensive and extensive need for practical activities in their fields of studies. Most of these valuable educational resources are available online but without the knowledge and the readiness to use the tools, it may be difficult to find these resources and explore them for academic gains. Many research studies support this assertion (Keengwe and Onchwari 2008, Verma 2010 and Kutlucer, 2011, Adekunle, Omoba, and Tella 2012).

From the ongoing, electronic resources are therefore seen as very important, inevitable and useful to polytechnic engineering technology students because, they support high quality information service network which provides access to a full range of learning and teaching materials in various formats. Therefore, it is necessary and important for federal polytechnic managers in Nigeria to raise and nurture students to have positive attitude towards database use in Nigerian federal polytechnics. The implication of this is that, this will lead engineering technology students to use digitised databases within their reach to better their academic life.

4.6.6 **Institutional ranking by variables**

In an effort to rank the institutions involved in the study, engineering technology students at Federal Polytechnic, Ede seemed to have an edge over their colleagues in other polytechnics in terms of access to digitised databases. This is closely trailed by Yaba College of Technology, Federal Polytechnics at Ilaro and Ado Ekiti correspondingly. This is in line with Tenopir's (2003) research submission where he noted that, for users to access databases, an in-depth knowledge of Information Communication Technology is compulsory. To him, ICT access refers to the 'how' and 'where' users access Information resources. Again to Tenopir (2003), where there is an increase access points, learners may increase their use of digital databases.

Also, on the attitude of engineering technology students in federal polytechnics in Southwestern Nigeria to digitised databases, Federal Polytechnic, Ilaro ranked highest on the attitude scale. This means that engineering technology students at Federal Polytechnic, Ilaro had positive attitude towards digitised databases than their fellow students in other federal polytechnics in Southwestern Nigeria. Following closely in terms of attitudinal ranking is Yaba College of Technology, Federal Polytechnics at Ado Ekiti and Ede respectively.

In terms of computer literacy level of engineering technology students in federal polytechnics in Southwestern Nigeria, Federal Polytechnic, Ede ranks first, followed by Yaba College of Technology, Federal Polytechnics at Ilaro, and Ado Ekiti respectively. This indicates that engineering technology students at Federal Polytechnic, Ede are more computer literate than their counterparts in other polytechnics that situate in Southwest geo-political zone of Nigeria.

Finally, the level of use of digitised databases at Federal Polytechnic, Ilaro by engineering technology students, was higher than what obtained at Yaba College of Technology (second), Federal Polytechnics, Ede (third), and Federal Polytechnics, Ado Ekiti.

4.6.7 **Relationship between access and use of digitised databases among engineering students in federal polytechnics in Southwestern Nigeria**

Since a significant relationship existed between access and use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria, hypothesis one was rejected. This means that access

significantly correlated with use of digitised databases among engineering technology students of polytechnics in Southwestern Nigeria. The role played by digitised databases is important and vital in the changing nature of information access and dissemination for the engineers in training at the federal polytechnics in Nigeria. Access to and use of electronic information resources are even more valuable when they are readily available in the required electronic formats in the polytechnic library therefore, the result of the study is significant because, it is true that having access to value-laden information resources is seen as a stimulus for progress. This finding tallies with a study conducted on teachers on the use of technology and access by Jenkins, Mimbs, and Kitchel (2009). The outcome of the study indicated that, moderate relationship existed between access to technology and its use by teachers.

In a related research finding by Tahir, Mahmood and Shafique (2010), many of the scholars access electronic information through the medium of the Internet which is very easy to learn and can be practically worked upon. In agreement with the above, pilot survey titled 'Access and use of electronic information resources by scientists of National Physical Laboratory in India' by Kumar and Singh (2011), disclosed that majority of respondents used e-journals for updating knowledge and learned about the current literature published in their fields. So, it is necessary for the library to provide high bandwidth Internet connectivity.

Since the role played by digitised databases is important and vital in the changing nature of information access and dissemination for engineering technology students at the federal polytechnics in Nigeria, access to and the use of electronic information are considered more valuable when it is made handy in the required electronic formats in the polytechnic library. This assertion was upheld in a research submission of Aboyade, Aboyade and Babalola (2015) that computer literacy skills, attitude, information literacy competence and awareness facilitated access and use of electronic information resources by students in polytechnics in Nigeria. Most of the polytechnic libraries now have e-library section to cater for the use of digitised databases. Their opinion is premised on the findings of Akintunde (2004) that, 'libraries had up till now always served as tangible structures where books, journals and all types of resources and documents are kept and retrieved for information. However, the custodian nature and status of the library should give way to a liberalised access to

information without borders'. These may be contributory factors to moderate access to digitised databases and their use by engineering technology students in Nigeria.

The lesson from this research report is that, polytechnic librarians should make it a point of duty to work actively in making the information materials in the library (both prints and electronic) easily accessible to polytechnic students generally. This is necessary in that, library resources whether prints or electronic that are provided but not accessed nor utilised are like a garden full of weeds. Thus, the use of electronic resources by the students starts from formation of attitude, computer-competence, availability and access.

Therefore, one can deduce from this that, access to digitised databases has significant influence on their use thus, leading to academic efficiency of engineering technology students in federal polytechnics in Nigeria. In line with the foregoing discussion, Adeniran (2013) is of the opinion that, if there are digital resources in the library, this could play a prominent role in facilitating access to the required information by the users. Other access points that can influence the use of digital resources as indicated by the researcher are guidance from fellow lecturers, guidance from fellow students, cyber café, mobile devices, Internet sources provided by the polytechnics management and the use of personal modems. Sequel to the above discussion, the Federal Government of Nigeria sponsored an intervention programme through Tertiary Education Trust Fund (TETFund) to provide accessible instructional materials to polytechnic community so as to revitalise, invigorate, advance, revive, rekindle and reform education in Nigeria.

4.6.8 **Relationship between attitude and use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria**

Findings from hypothesis two showed a significant positive relationship between attitude and use of digitised database among engineering technology students in federal polytechnics in Southwestern Nigeria. In other words, attitude positively correlated with the use of digitised database among engineering technology students hence, hypothesis two was also rejected. This means that positive attitude has a significant influence on the use of digitised databases by engineering technology students in federal polytechnics in Nigeria. Therefore**,** to utilise digitised databases,

attitudinal change is required. This is clearly revealed in Ukpebor's (2011), and Kumar and Singh (2011) pilot studies on Internet use by lecturers and students in engineering faculties in universities, they confirmed the correlation between attitude and use of online databases by learners in those universities. The respondents confessed to have used their own self-taught skills to access and use electronic-resources, meaning that, they are positively inclined to the use of databases. They however signified their wish to attend workshops to enrich their knowledge and skills about e-resources. This means that, learners had positive attitude to database use and were able to keep themselves abreast with the latest information to improve their professional competency.

In another study by Verma (2010), it was revealed that, the respondents demonstrated their positive attitude to the use of digitised databases and this consequently facilitated learning. Also, the findings of Ajayi, Shorunke and Aboyade (2015) in a study conducted on 'the influence of electronic resources use on students' reading culture in a Nigerian university' revealed that online databases such as (AGORA, E-granary, JSTOR, EBSCOHOST, AJOL, HINARI), electronic books, locally loaded database, website, CD-ROM , electronic text, e-abstracting and indexing databases such as MEDLINE, E-news, E-images, E-music and many others are being heavily utilised by students for learning and research purposes. This could be interpreted to mean that students of higher institutions of learning were favourably disposed to the use of digitised databases bringing about improvement on the use and promotion of digital resources for academic growth and development among higher institution students.

This finding is similar to the one by Adekunle, Omoba and Tella (2012) which reported a correlation between levels of use, computer literacy skills, familiarity, knowledge of ICT and teachers' attitudes. The results also noted that librarians in the study had positive attitudes towards the use and implementation of ICT in their libraries; having the understanding of the benefits of technology in learning. The implication in this study is that, positive attitude exercised by engineering technology students in federal polytechnics in Nigeria would equally enhance the use of digitised databases for academic and professional growth.

4.6.9 **Relationship between the use of digitised databases and computer literacy skills among engineering technology students in federal polytechnics in Southwestern Nigeria**

In hypothesis three, the relationship between use of digitised databases and computer literacy skills among engineering technology students in federal polytechnics in Southwestern Nigeria was found to be significant. This translates to the fact that, the use of digitised databases is highly influenced by the level of computer literacy skills of engineering technology students. In other words, hypothesis three, which is stated in null form was rejected. This connotes that, high level of computer literacy skills have positive relationship on the use of digitised databases by engineering technology students in polytechnics in Nigeria. This finding affirms a similar study on teachers by Jenkins, Mimbs, and Kitchel (2009) that, substantial relationship occurred between computer literacy and use of technology.

Positive relationship between computer literacy and use of digitised databases as found out in this study is further corroborated in a study conducted by Lowe and McAuley (2002), where the researchers opined that computer literacy skills remain one of the major factors that are likely to enhance students' ability to use computers and other related information technologies to meet personal, educational and labour market goals. In a related study, Bruce (2012) described the possession of computer literacy skills as a prerequisite in the transformation of the society of today into the learning society of tomorrow and that, computer literacy skills are the 'catalyst' needed to transform the information society of today into the learning society of tomorrow. Also, the finding of Waldman (2003) in a related study confirmed that, there is a significant relationship between computer competency skills and use of electronic resources in a university library.

In the same vein, Omona and Ikoja-Odongo (2015) discussed the relevance of computer literacy skills in the ability to use Information and Communication Technologies for educational advancement. Supporting the relationship between computer literacy skill and use of digitised databases, Utsi and Lowyck (2015) described computer literacy skills as a baseline set of skills for successfully coping with a complex technological world. Meaning that for engineering technology students in federal polytechnics in Nigeria to successfully cope educationally in this technology era, they must be able to demonstrate their ability to use digitised databases for

academic development. This is expected to lay a good foundation for learning of new skills, abilities and competencies to handle effectively job related tasks such as in learning and research.

Corroborating this submission, Ajayi, Shorunke and Aboyade (2015) conducted a research and discovered that the use of digitised databases by higher education students was enhanced by computer literacy skills they possessed which in turn aided the students' reading habits, making education more enjoyable for independent and lifelong learning. By implication, managers of federal polytechnics in Nigeria need to fashion out the kind of computer training that engineering technology students require to be able to use digitised databases so as to bring out the best in their education. This kind of training could be like the one provided by the African Academic Digital Library (AADL) which provides access to well-known published materials, publishers and digital contents on various educational materials that can meet various educational needs.

The implication of the study is that, computer literacy skills are germane to the use of digitised databases by engineering technology students in tertiary institutions in Nigeria. The finding of this hypothesis is important in that, it specifies the need for stakeholders in education industry in Nigeria today to consider how to create meaningful learning experiences for polytechnic students, especially those in the field of engineering for more pragmatic academic performance.

4.6.10 Joint contribution of access, attitude and computer literacy skills to the use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria

In hypothesis four, the joint contribution of access, attitude and computer literacy skill on the use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria was found to be significant. This implies that, the three independent variables are good predictors of the use of digitised databases among engineering technology students. This could be interpreted to mean that, manipulation of any of the independent variables (access, attitude and computer literacy skills) is likely to bring about a change in the dependent variable (use of digitised database). In effect, access, attitude and computer literacy skills contribute significantly to use of electronic resources.

In line with this, Omotayo (2010) is of the opinion that, with the advent of the Internet and electronic publishing, electronic resources have even been found to be more easily accessible, thereby making learning more pleasurable. These accounted for the popularity and use of digitised databases such as Journal Store (JSTOR), Africa Journal Online (AJOL), E-granary, Engineering Village, Directory of Open Access Journal (DOAJ), INSPEC, EBSCOHOST, Engineering Material Index (EMI), MYilibrary, ScienceDirect and many more. Secondly, electronic educational resources such as e-journals, e-books are the most valued, practical and usable information communication channel for researchers. Even till date, this assumption still holds. She emphasised that, the production of digital resources dates back to the centuries yet, their importance keeps increasing. It could also be because, these valuable educational materials are easy and fast to search and do not require rigorous formal training or specialised skills. Another reason may be because even with very low bandwidth, Google and Yahoo load these materials easily on the Internet.

In addition, articles from digitised databases such as EBSCOHOST and ScienceDirect permit easy use making them user friendly and easily accessible for engineering technology students in Nigeria. To be able to use these materials therefore, computer literacy skills, positive attitude and access are major factors of the use. This was discussed by Link and Marz (2006) while addressing the issue of computer literacy and attitudes towards e-learning among first year medical students in Austria. The result of the study conducted reveals that greater percentage of students possess sufficient computer skills and knowledge, this in turn has the advantage of enhancing media-mix in learning.

In another study conducted by Challa and Madras (2014) on attitude and awareness of usage skills of computer and internet among medical students in India, it was revealed that majority of the students were averagely computer literate. Therefore, it was suggested that, students should be trained to get valuable information from the websites. In addition, Panchabhai, Dangayach, Metha, Patankar and Rege (2011), emphasised the need for formal introduction of ICT and other emerging technologies in learning. The result of their study showed that many of the respondents in the study had access to substantial information online using their computer literacy skills. This is not surprising, considering the present level of Internet use, and global information resources explosion.

This view is in line with Amori's (2003) submission that, with the demonstration of positive attitude to the use of digitised databases, coupled with access to and provision of e-resources such as e-journals, e-books, CD ROM databases, students in tertiary institutions in Nigeria, especially those in the polytechnics are likely to use with ease digitised databases to enhance their academic turn around. This is so in that, digitised databases have been found to help provide learners with relevant information required by students, which if properly utilised can help in improving reading culture and academic excellence. Put succinctly, engineering technology students who have access to digitised databases and are positively inclined to it have a higher tendency to use these value-laden information resources for educational pursuits.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 This chapter focuses on the summary and conclusion drawn from the research and recommendations proffered for further research work. It also focuses on the contributions of the study to the body of knowledge as well as implications of the study.

5.2 Summary of the findings

The study was on access, attitude and computer literacy skills as predictors of use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria. It was conducted with a view to establishing linkage mechanisms between the dependent variable (use of digitised databases) and independent variables (access, attitude and computer literacy skills). Four federal polytechnics in Southwestern Nigeria were selected for the study using total enumeration. Data collected from the engineering technology students focused on demographic variables, (course, age, sex), access, attitude and computer-literacy and use of digitised databases that could enhance research performances of engineering technology students in Nigeria. Answers were sought for five research questions and four hypotheses were also tested. The following are the major research findings arrived from the study.

1. The study found out that the level of use of digitised databases of engineering technology students in federal polytechnics is high. This indicated a better use of the electronic information resources by engineering technologists in training. This could be attributed to factors such as the need for academic excellence to enhance their research productivity and advancement in the areas of technology in Nigeria.

2. The level of access to digitised databases of engineering technology students in federal polytechnics in Southwestern Nigeria was found to be moderate. This translates to the fact that, many of the respondents are at liberty to access digitised databases. This was found to be possible with their level of computer literacy skills and provision of access points in the polytechnics. They also affirmed that they were able to use other points of access to get required information aside the polytechnic libraries. Such access points included use of modem, contact with cyber cafés and so on.

3. There is a high significant positive relationship between the use of digitised databases and attitude to digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria. This means that engineering technology students in federal polytechnics are favourably inclined to the use of digitised databases. The resultant effect of the result is that, the positive attitude of engineering technology students can bring about effective retrieval of information for solid academic work and profitable learning.

4. The level of computer literacy skills of engineering technology students in federal polytechnics in Southwestern Nigeria is moderate. This translates that, the students possess relative adequate computer literacy skills in the areas of word processing, Internet search skills, use of computer to solve practical problems and other related skills that enable them to retrieve relevant information in libraries. In other words, moderate computer competence level of engineering technology students in federal polytechnics in Nigeria stimulated their significant and moderate use of digitised databases. This is expected to give engineering technology students a lift in their educational lives.

5. The three variables of access, attitude and computer literacy skills are good predictors of the use of digitised databases among engineering technology students in federal polytechnics in Southwestern Nigeria. However, in terms of their relativity, attitude has the highest relative contribution to the use of digitised databases followed by computer literacy and access respectively.

6. The result of hypothesis one shows that there is a significant positive relationship between access and use of digitised databases by engineering technology students of federal polytechnics in Southwestern Nigeria. This implies that, access to digitised databases has the capacity to improve educational productivity which in turn could lead to research and academic turn around.

7. Significant positive relationship existed between attitude and use of digitised databases among engineering technology students of federal polytechnics in Southwestern Nigeria. This means that, attitude is a good predictor of the use of digitised databases. Apart from attitude, there are many other factors (commitment and motivational factors) that could affect the use of electronic resources on the web that students need to be aware of, and should work towards so as to improve on them all the time.

8. All the independent variables (access, attitude and computer literacy skills) jointly contributed significant to the use of digitised databases among engineering technology students in Nigerian federal polytechnics. Therefore, all the variables (dependent and independent) when properly harnessed and blended together in this increasingly complex world of information sources and resources management, may boost, enhance, empower, uplift and bring about simplicity in theoretical and practical learning especially in the field of engineering.

5.3 Implications of the study

The practical implication of this study is that, it would enable scholars in higher institutions of learning to blend both electronic and print resources, minimise congestion in the libraries while boosting use of e-resources and service output. It will equally help scholars to discover what relevant information exists anywhere in the world and in a variety of formats and media. Again, it will serve as a catalyst to ginger education policy makers in Nigeria to bring technological information to the users through information literacy as part of the curriculum. In addition, it will also empower librarians and media specialists to become experts in information technology and data

resources at their institutions. Likewise, collaborating with the National Board for Technical Education, Federal Government of Nigeria, students in tertiary institutions, media specialists and lecturers to find resources they need to meet their technological information needs effectively and efficiently would be achieved. Furthermore, it will also guide librarians through the transformation required in handling information in the context of the computer and the challenges posed by the new and emerging e-learning environment and globalisation.

Similarly, the findings from this research work would have significant and far reaching implications for the academic performance of engineering technology students in the nation's polytechnics through the use of digitised databases. Thus, if the independent variables of access, attitude and computer literacy skills are well harnessed by various stakeholders, that is, NBTE, Polytechnic Libraries, Library and Library and Information Professionals, School Libraries Media Specialists (SLMS) and students, it can bring about efficient, effective and well trained students that can bring to fruition the dreams of the founding fathers of our great institutions of learning and achievement of TETFund objectives. To support the major objective of this study, therefore, the research will enable the polytechnic managers, tertiary education policy makers, academic librarians, polytechnics and school media specialists, library and information professionals, universities and higher education students to improve on the provision and use of electronic resources so as to meet the academic needs of the students in Nigeria.

Thus, the outcome of this research is expected to be useful to libraries and school library media centres to improve library services, especially in assisting the students in their academic work. Other useful implication of this study is in the area of empowering polytechnic libraries, library and information professionals and media specialists to entrench the use of digitised databases across the campuses, stepping up research and demonstrating that the library is the backbone of research.

Expectedly therefore, the findings would be helpful to academic librarians in areas of improved library services and e-resources collection. Again, it would redirect learning for gainful research works thereby assisting students in their academic work. It would be of tremendous assistance to the management of higher institutions of learning in Nigeria to put in place appropriate databases that would boost and enhance academic performance of students.

5.3.1 Implications for practice

This study has provided baseline data for planning appropriate training intervention programmes in federal polytechnics in Nigeria. The training intervention programme to be provided by the Federal Government of Nigeria, National Board for Technical Education and Polytechnic Management should be tailored towards acquisition of searching and information retrieval skills from databases, portals, archives, repositories, and search engines by higher national diploma students in federal polytechnics. This study also has implications for libraries and librarians. Academic librarians in the surveyed institutions need to design intervention programmes that would benefit students and encourage, motivate and empower the use of online information resources for theory, practical and research purposes. The intervention would also enable engineering technology students in federal polytechnics to know appropriate Internet resources from which to obtain quality educational information materials that will be beneficial to them as students.

5.3.2 Implications for policy

The study shows that even at the point of entry, there is the need for adequate information retrieval skills to be designed in such a way that the use of digitised databases for research activities commences immediately. Therefore, positive attitude to the use of database in learning and training interventions, should be the target of every polytechnic library which is at the center of provision of access to online databases to all students.

5.4 Limitations of the study

This research work is limited by cost and the state of the nation. Much as the researcher would have loved to cover all federal polytechnics in Nigeria, the financial constraint led to limiting the population to federal polytechnics in Southwestern Nigeria. In addition, insecurity of lives and properties resulting from the nefarious activities of Boko Haram, kidnapping which has consequently become a national calamity, all these limited the free and unhindered movement to the North East, South East, South South geo-political zones of the country. This study was also limited to engineering technology students in federal polytechnic in Southwestern Nigeria. Another limitation is non-response and apathy on the part of engineering technology

students to complete and return questionnaire at an appropriate time. About five hundred and nine (509) copies representing 35% of the questionnaire were not returned and as such were not analysed.

5.5 Conclusions

Engineering technology students in federal polytechnics may continue to face some challenges arising from inappropriate, inefficient and inadequate use of digitised databases as a result of lack of appropriate computer literacy skills, poor attitude to the use and poor access. In view of the findings of this research work, the study concludes that, efficient and effective utilization of digitised databases by engineering technology students in federal polytechnics is germane to good performance in their academic pursuits. Digitised databases having been found to emerge as one of the vehicles for the provision of access to unlimited information therefore, if free access to information resources online is provided at the polytechnic libraries, engineering technology students may likely use it to obtain quality information to make informed decision to improve their academic/educational activities.

5.6 Recommendations

Based on the findings of this research work, the following recommendations are proffered:

1. It is recommended that scholars should add the use of digitised databases to the use of print resources. They should also learn how to discover and use relevant information that exists in their field of knowledge around the world. This, if done can be of immeasurable benefits to the entire citizenry, boost the use of information resources for academic performance, research output and technological growth.

2. The application of Use and Dependency Theory to media use scenario in the present trend of educational and personal information needs would enable the libraries to improve the use of digitised databases by students through regular and uninterrupted subscription to databases and participation in a number of consortia. There should be sufficient provision of digitised databases that would

promote scholarship, creativity, knowledge transfer, global educational mobility and accelerate the much desired vocational and technological advancement required to move Nigeria forward. Libraries and school library media centres should therefore be automated, digitised and self-sufficient to enhance and advance the use of beneficial media by prospective students.

3. With the application of access theory which discusses the correlation between the media content and users' behaviour, libraries and their institutions should provide physical environments that facilitate user privacy for accessing electronic information. All libraries are encouraged to develop websites, including links, to Internet resources to meet the information needs of their users. These links should be made within the existing mission, collection development policy and selection criteria of the library.

4. Sequel to the invaluable nature of digitised databases, librarians in-charge of e-libraries in Nigerian higher institutions should acquire a good deal of efficiency in the collection, organization and retrieval of online information resources so that users are able to assist students to obtain, retrieve and use the right information at the very right time in the right format. This is in line with the Resource description and Access the in-thing in librarianship today. This will equally serve as performance indicator for libraries and a parameter for academic excellence. This could be achieved by organising and classifying information on the Internet so that users are able to access required information easily and quickly for their research and personal benefits. Equally, this would cater for libraries, librarians, and library users in this 21st Century.

5. All polytechnic librarians should strive to help users cultivate a positive attitude to the use of technology by first of all developing themselves with a high technological infrastructure and build a solid collection of digitised e-resources to help library users through provision of a high quality and value added library services. Managers of polytechnic libraries should organise various teaching, learning, orientation and user education programmes, either by way of general or subject specific training so as to enable users use the digital resources

effectively and efficiently. These would allow students to use the new and emerging technologies that are currently the in-thing in scientific and technological education now. Thus, subject gateways, portals and data archives should be provided in libraries to provide access to back volumes of digitised databases to know the past researches done and to focus on present research trends in order to move towards a brighter and better future.

6. As part of capacity building programmes for the higher education students and to motivate and encourage them to develop positive attitude to the use of databases that are invaluable to learning, libraries and media centres should play a proactive role in guiding users to the most effective locations of e-resources through **t**raining courses organised on their use**.** Equally, libraries operating within the academic environment and their librarians should try to upgrade the library and media centres to a learning research centres.

7. The Management of the polytechnics should provide proper and consistent computer and information literacy programmes in their curricular to cater for low computer skilled users. This is central to all successful learning and by extension, to all successful living. Also, this will help re-engineer research and development policies that would earn reputation. By implication, many of the skills underlying the attributes of being a lifelong learner are computer and information literacy skills hence, institutions with a focus on lifelong learning should also have a strong focus on computer literacy skills development for all students. To accomplish this, programmes such as Advanced Digital Appreciation Programme for Tertiary Institutions (ADAPTI) by Digital Bridge Institute, sponsored and funded by the Nigerian Communications can be replicated. The programme introduces students in tertiary institutions to in-depth computer literacy skills training.

8. It is therefore noteworthy that all hands should be on deck by all stakeholders in education parlance to put in place appropriate measures that can lead to the use of digitised databases by engineering technology students in federal polytechnics in particular and all the higher institutions in general. Such

measures include provision of adequate digitised databases, paving ways for unhindered access to the databases and then motivating students through education to develop positive attitudes to their uses. It is believed that when this is done, students would be able to surmount a lot of challenges being faced in the course of their academic pursuit. Thus, the much talked about technological advancement of Nigeria would be realizable.

5.7 Contributions to knowledge

This study has contributed to the body of knowledge immensely in the following ways.

1. This research has contributed to literature both local and foreign on the dependent variable, use of digitised databases and independent variables access, attitude and computer literacy skills as they relate to each other on students' learning in higher institutions in Nigeria. Noticeably, there is an apparent gap in knowledge with regard to local studies on access, attitude and computer literacy skills of engineering technology students in federal polytechnics in Nigeria. Consequently, due to limitation of literature in the identified field of media resource studies, particularly with reference to engineering technology students in federal polytechnics in Nigeria, the findings of this research would form part of literature for other researchers.

2. Again, through the findings of this study, management of tertiary institution libraries will be able to device means that can help their students to achieve qualitative academic excellence. Thus, the attendant effect will be better library services to meet the information needs of their immediate community. The study, it is believed will be of tremendous assistance to the management of various tertiary institution libraries in Nigeria to formulate various action plans geared towards sustenance of, and enhanced scholastic standing of students in Nigeria.

3. The study has also contributed significantly to the body of literature through empirical and theoretical substances. In particular, the findings have helped to identify and recognise the status of engineering technology students in terms of

their educational needs that would permit academic excellence. In addition, the findings of this study have also revealed the relevance and importance of digitised databases' use in teaching and learning at the federal polytechnics in Nigeria. At this point, the study will be particularly significant to the Federal Government of Nigeria, Nigerian students in higher institutions of learning, National Board for Technical Education and a host of other groups and individuals in that, at the inception of any polytechnic in Nigeria, consideration would be given to polytechnic libraries in terms of acquisition of qualitative educational resources and provision of e-libraries so as to boost academic performance among engineering technology students. The independent variables (access, attitude and computer literacy skills) are thus germane to high academic performance in any higher institution.

4. This study has also shown that, access to digitised databases and adequate computer literacy skills are essential for engineering technology students in tertiary institutions in Southwestern Nigeria to utilise online information resources for personal, recreational and academic upliftment. Equally, the research result has also shown that, positive attitude and demographic factors have significant influence on the use of digitised information resources. Thus, it will create awareness and sensitise engineering technology students on the numerous instructional information resources available online for their consumption.

5. Finally, the work is unique, novel and fresh in the field of Media Resources Studies because, little is presumed to have been done on the topic, access, attitude and computer literacy skills as they affect the use of digitised databases among engineering technology students especially in Nigeria. It has also contributed significantly to the body of literature in *Educational Media Resource Studies* as it relates to the influence of access, attitude and computer literacy skills on use of digitised databases by engineering technology students in federal polytechnics in Southwestern Nigeria.

5.8 Suggestions for further studies

The study is not comprehensive as it does not cover all factors that can influence the use of digitised databases among engineering technology students in federal polytechnics in Nigeria. The following areas are therefore suggested for further research:

1. Access, computer competency, and information literacy as correlates of professional output among academic librarians in federal polytechnics in Nigeria. Undergraduate students need to be knowledgeable and comfortable with electronic resources usage. Lecturers who are to impart knowledge onto them must be equally vast in the use of these electronic resources if they must make useful impact in the academic life of the students. Academic librarians therefore need to be skillful in accessing these resources, navigate through the gamut of available information resources online, be competent in computer usage, and have the information literacy skills necessary to teach the students effectively and efficiently. Therefore, investigation into the relationship between access, computer competency, and information literacy as correlates of professional output among academic librarians in federal polytechnics in Nigeria is highly recommended.

2. This study can be replicated in other geo-political zones of Nigeria so as to take a broader view of the findings of this research for generalization since this research is limited to the Southwestern geo-political zone of Nigeria only.

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APPENDIX I

QUESTIONNAIRE

CENTRE FOR EDUCATIONAL MEDIA RESOURCE STUDIES
FACULTY OF EDUCATION, UNIVERSITY OF IBADAN, NIGERIA

ACCESS, ATTITUDE AND COMPUTER LITERACY SKILLS AS PREDICTORS OF USE OF DIGITISED DATABASES QUESTIONNAIRE (AACLDDUQ)

Dear Respondent,

The purpose of this Ph. D research instrument is purely for data collection on the effect of use of database by engineering technology students at the federal polytechnics in the Southwestern Nigeria. This is in partial fulfillment of the conditions for Ph. D studies at the University of Ibadan. Kindly complete the questionnaire to enable me complete the Ph. D programme successfully. All responses will be treated in strict confidentiality and the anonymity of the respondent ensured.

Yours faithfully,

Aboyade, M. A.

SECTION A: Bio-data Information

Please indicate your responses in the appropriate box (√) against the answer of your choice and complete what you consider fit for the ones that involve writing.

1. Name of Polytechnic ……
2. Gender: Male [ ] Female [ ]
3. Age (in years) ……
4. Course of study: .....
5. Matric No : ……

SECTION B

ACCESS TO DIGITISED DATABASES SCALE (ADDQ)

Please rate your level of access to the following digitised databases where:

Very Easily Accessible = 4 Easily Accessible = 3

Occasionally Accessible = 2 Not Accessible = 1

S/N	DIGITISED DATABASES	VEA 4	EA 3	OA 2	NA 1
1.	ScienceDirect				
2.	EBSCOHOST e-journals				
3.	E-Granary e-books				
4.	Compendex				
5.	Journal storage (JSTOR)				
6.	African Journal Online (AJOL)				
7.	Engineered Materials Index (EMI)				
8.	INSPEC				
9.	Directory of Open Access Journal (DOAJ)				
10.	Wilson WEB Omnifile				
11.	Engineering Village 2				
12.	IEEE/IET Electronic Library (IEL)				
13.	MYILIBRARY				
14.	Engnetbase engineering handbooks online				
15.	Engineering Materials Abstracts (EMA)				

SECTION C

ATTITUDE TO DIGITISED DATABASES SCALE (ADDQ)

Please indicate the options that best describes your opinion on your attitude to Digitised Databases (DDs). Indicate your response in accordance to these options:

Strongly Agree (SA) = 4 Agree (A) = 3

Disagree (D) = 2 Strongly Disagree (SD) = 1

S/N	Statement	SA 4	A 3	D 2	S D 1
1.	I am indifferent about using DDs for learning				
2.	I feel comfortable in my ability to use DDs				
3.	I feel comfortable when there is discussion on DDs use for learning				
4.	I have reservation about using DDs for learning				
5.	I use DDs more at school than at home				
6.	I cannot use DDs for other activities than for learning				
7.	I am convinced that the use of DDs in learning will give better a academic results				
8.	I do not like using DDs for learning important topics in my subject				
9.	I find using DDs in learning my subject better than using the traditional methods (prints)				
10	I consider DDs very useful in exploring technological concepts and ideas				
11	I know DDs resources are important but I don't feel I need to use them to learn my subject				
12	I find the use of DDs frightening				
13	I am not what I could call a computer literate person				
14	I would rather learn by reading prints only than using digitised media resources				
15	I have phobia for digitised information resources				
16	I do not have search skills to search the Internet for learning				
17	I won't have anything to do with DDs				
18	I would like to learn more about DDs				
19	I know that DDs give me opportunities to learn many new things in my studies				

SECTION D

COMPUTER LITERACY SKILLS SCALE (CLSQ)

Indicate your extent of agreement or disagreement with the following statements as regards your computer literacy skills. Please, indicate from these options:

Strongly Agree (SA) = 4 Agree (A) = 3

Disagree (D) = 2 Strongly Disagree (SD) = 1

S/N	Statement	SA 4	A 3	D 2	S D 1
1.	I can use the computer to surf the World Wide Web.				
2.	I have low ability to word process my documents on the computer.				
3.	I can confidently use computer facilities to solve practical problems.				
4	I can confidently use computer to communicate with people and send e-mails.				
5.	I cannot confidently use computer for the following purposes: refresh, reboot, reload, stop, forward, etc.				
6.	I am not able to perform basic operations like using keyboard, mouse, launch browsers, etc.				
7.	I am not experienced at using computer and its facilities.				
8.	I cannot integrate computer facilities in learning.				
9.	I am experienced at using ICT in learning.				
10.	I can use computer to access information needed to perform tasks related to learning in an efficient manner.				
11.	I know how to get information from databases online.				
12.	I can use the computer to analyse data.				
13.	I am able to use a variety of programmes (software).				
14.	I can comfortably use the computer to organise information.				

15.	I am able to use the computer to organise and manage files.				
16.	I can confidently use the computer facilities to find needed information.				
17.	I have the ability to check my mail account. 2				
18.	I can draw pictures on the computer. 10				
19.	I am not proficient in the use of computer to do assignment.				
20.	I am proficient in the use of computer to browse the Internet.				
21.	I am proficient in the use of computer to carry out research work.				
22.	I have low ability to work on a personal computer.				
23.	I do not know how to copy from the CD-ROM.				
24.	I can make selections from the databases online.				
25.	I do not have the ability to handle online software.				
26.	I cannot get software up and running.				
27.	I understand all the terms relating to online databases.				
28.	I have no ability to organise and manage online files.				
29.	I have low ability to search for databases relating to my course of study online.				

SECTION E

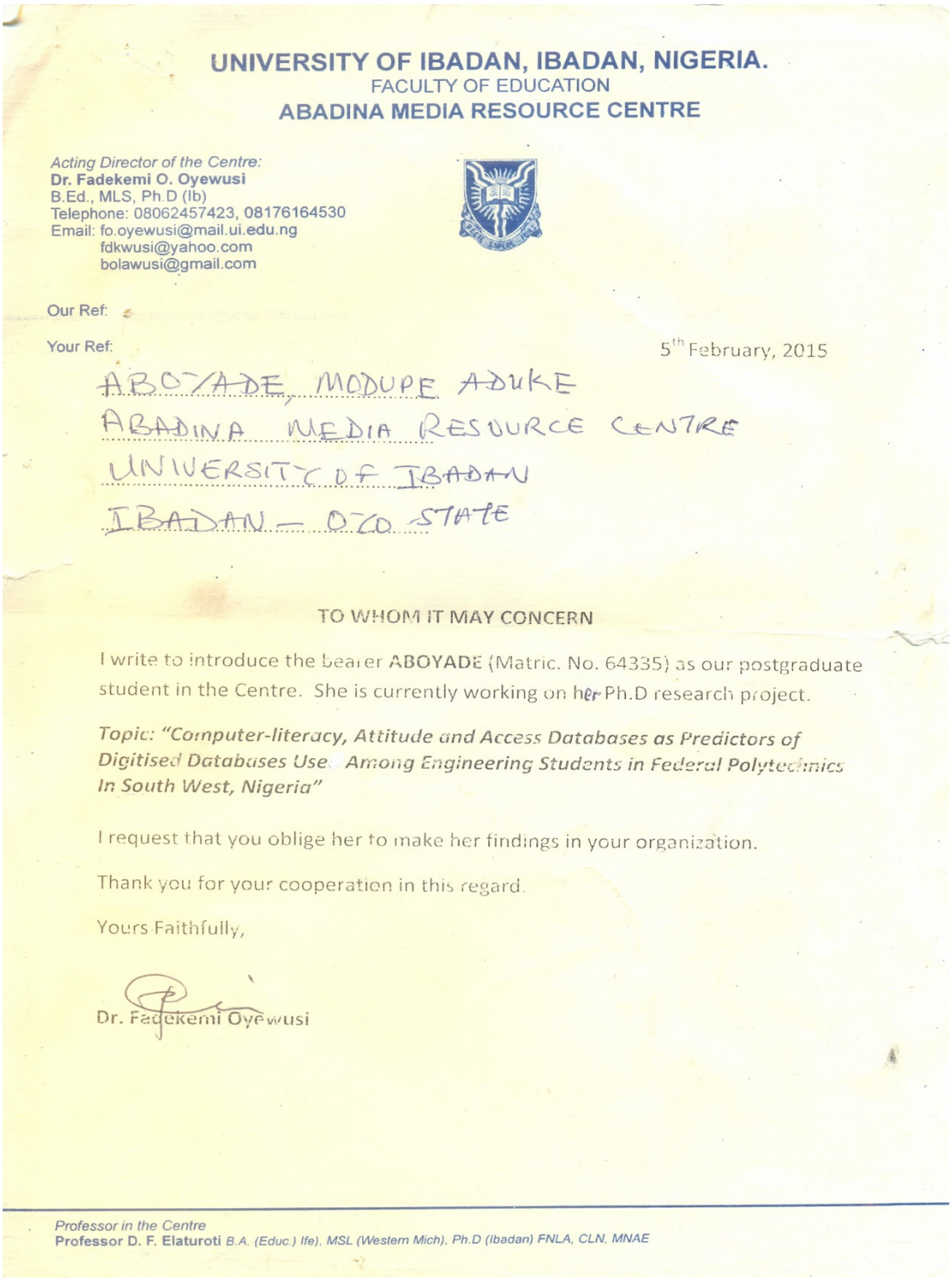
USE OF DIGITISED DATABASES QUESTIONNAIRE SCALE (UDDQ)

Kindly indicate the extent of use of these digitised databases using the following ratings. Very Highly Utilised (VHU) = 4 Highly Used (HU) = 3
Occasionally Used (OU) = 2 Not Used (NU) = 1

S/N	DIGITISED DATABASES	VHU 4	HU 3	OU 2	NU 1
1.	ScienceDirect				
2.	EBSCOHOST e-journals				
3.	E-Granary e-books				
4.	Compendex				
5.	Journal storage (JSTOR)				
6.	African Journal Online (AJOL)				
7.	Engineered Materials Index (EMI)				
8.	INSPEC				
9.	Directory of Open Access Journal (DOAJ)				
10.	Wilson WEB Omnifile				
11.	Engineering Village 2				
12.	IEEE/IET Electronic Library (IEL)				
13.	MYILIBRARY				
14.	Engnetbase engineering handbooks online				
15.	Engineering Materials Abstracts (EMA)				

APPENDIX II

LETTER OF INTRODUCTION FROM THE CENTRE FOR EDUCATIONAL MEDIA RESOURCE STUDIES, UNIVERSITY OF IBADAN



UNIVERSITY OF IBADAN, IBADAN, NIGERIA.
FACULTY OF EDUCATION
ABADINA MEDIA RESOURCE CENTRE

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Dr. Fadekemi O. Oyewusi
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bolawusi@gmail.com

Our Ref:

Your Ref:

5th February, 2015

ABOYADE, MODUPE ADUKE
ABADINA MEDIA RESOURCE CENTRE
UNIVERSITY OF IBADAN
IBADAN — OYO STATE

TO WHOM IT MAY CONCERN

I write to introduce the bearer ABOYADE (Matric. No. 64335) as our postgraduate student in the Centre. She is currently working on her Ph.D research project.

Topic: "Computer-literacy, Attitude and Access Databases as Predictors of Digitised Databases Use Among Engineering Students in Federal Polytechnics In South West, Nigeria"

I request that you oblige her to make her findings in your organization.

Thank you for your cooperation in this regard.

Yours Faithfully,

Dr. Fadekemi Oyewusi

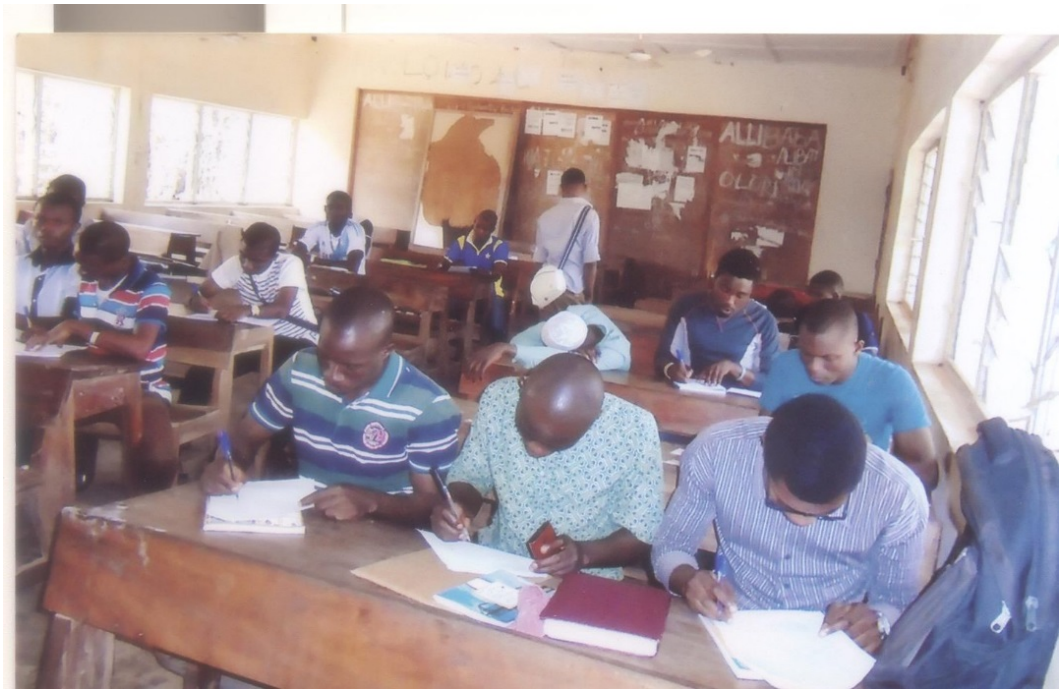
Professor in the Centre
Professor D. F. Elaturoti *B.A. (Educ.) Ife), MSL (Western Mich), Ph.D (Ibadan) FNLA, CLN, MNAE*

APPENDIX III

PICTURES OF ENGINEERING TECHNOLOGY STUDENTS FILLING COPIES OF THE QUESTIONNAIRE

Engineering technology students filling the questionnaire at the Federal Polytechnic, Offa

The researcher and the anchor person at the Federal Polytechnic, Offa



Engineering technology students filling the questionnaire at
the Federal Polytechnic, Ilaro.

Engineering technology students filling the questionnaire at the
Osun State College of Technology, Esa-Oke.

The researcher and some heads of departments at the
Osun State College of Technology, Esa-Oke.

Engineering technology students filling the questionnaire at
Yaba College of Technology, Yaba, Lagos.

The Researcher with Heads of Departments at the Federal Polytechnic, Offa

Mechanical Engineering Departmental block at the
Osun State College of Technology, Esa-Oke