AFRICAN JOURNAL OF EDUCATIONAL ARCHIVES
Vol. 10, Issue 1, - Oct/Dec, 2025. ISSN p2536-748x, e-2565-7498

Information and Communication Technology Competencies and Conduct of Research by Postgraduate Students of University of Calabar

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Abstract
*The study determined the influence of Information and Communication Technology (ICT) on conduct of research by postgraduate students of University of Calabar. To achieve the purpose, two research questions were asked and two null hypotheses were formulated. The study adopted a predictive correlation research design. Purposive sampling technique and census approach were used to select 99 Post Graduate Students, comprising 85 Business Education students and 14 Agricultural Education students) from 2020/2021 to 2022/2023 academic sessions in the Department of Vocational Education, University of Calabar. A validated questionnaire titled "ICT Competencies and Conduct of Research Questionnaire" (ICTCCRQ) was the instrument used for data collection. The questionnaire was validated by three experts. A reliability index of 0.81 was obtained for the questionnaire using Cronbach Alpha reliability coefficient after a pilot test. Ninety five copies of the questionnaire were successfully retrieved after distribution. Research questions were answered and hypotheses were tested using simple linear regression analysis t .05 significance level. From the answers to the research questions, word processing competencies and online information search competencies influence conduct of research by postgraduate students of University of Calabar. Test of hypotheses revealed that word processing and online information search competencies significantly influence conduct of research by postgraduate students of University of Calabar. Based on the findings, it was recommended amongst others that students should master the act of searching for information online using Boolean operators and phrase searching as search strategies, as this is very vital in reviewing related literature when conducting research.***

Keywords: Communication, Information, Research, Student, Technology.

Introduction

In this age of Information and Communication Technology (ICT), competencies in the use ICT are necessity. A developing country like Nigeria is not exempted from this trend. This

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stems from its central role in information and communication technology with access to free online journals, magazines and other information resources anytime and from anywhere for the academic and research purposes (Amini&Oluyide, 2020). Nigeria postgraduates are required to conduct different research, publish articles, write and defend their dissertation before graduation. Research writing is a major pre-requisite of the award of degree in many tertiary institutions in Nigeria. Hence, every student considers research writing important to his or her academic success.

Research can be defined as the production of new knowledge through certain processes (Cebrián et al., 2020). As it approaches the quality of academic research, each research includes the following stages. Identifying the problem (subject/issue), preparing research proposals, planning the research, conducting the research, writing and reporting the research (Roman, 2021). In another way, it is categorized as recognizing the problem, defining the problem, estimating solutions, developing the research method, collecting and analyzing data, and making and interpreting decisions (Aasheimet *et al.*, 2015; Anisimova, Sabirova & Shatunova, 2020). Research can be perceived as an art of how to do it rather than an academic field of study. Research requires skills and experience; it is an experience that requires the ability to conduct research independently and to criticize the research of others (Cebrián, Junyent & Mulà, 2020).

In the context of the study, ICT competencies of the students may either impede or improve the conduct of research. Competency refers to the ability resulting from an individual's knowledge, skills, characteristics and attitudes to carry out work to achieve success (Kopaiboon, Reungtrakul & Wongwanich, 2014). Competency is made up of knowledge, skills, and attitudes. Knowledge connotes what a student has learned in class or in a workshop as an apprentice. This learning is subject to experience and understanding of a particular subject. Skill means to derive from knowledge the ability to perform work, in an appropriate and accurate manner, meeting a pre-determined standard. Attitude, on the other hand, refers to stance, feeling, or internal characteristics of individuals that express a sense of realizing the benefit and value of a particular thing. According to Syahrial, et al. (2022), ICT competency refers to knowledge, skills, and ability to take advantage of ICT for the purpose of gathering, processing and presenting information. Abinan (2021)also see ICT competence as knowledge, skills and ability to take advantage of ICT for gathering, processing and presenting the information. Kopaiboon *et al* (2014); Anisimova *et al* (2020) also stated that individuals who are regarded as ICT competent or having ICT Competency must be able to: reproduce necessary documents, find out solutions to problems, choose proper ICT tools for problem-solving and effective work, collect and share information in an ethical way, process data, and possess fundamental ICT knowledge as well as use ICT tools.

When it comes to conducting research, students benefit from having specific Information and Communication Technology (ICT) competencies**.** These competencies enable them to navigate digital tools effectively and ethically, collaborate, and

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enhance their communication processes. Amini and Oluyide (2020) opined that some key ICT competencies for research include information literacy**,** that is students should know how to find, evaluate, and use information from various sources, including online databases, academic journals, and websites; Digital literacy encompasses basic computer skills, familiarity with software applications (such as word processors, spreadsheets, and presentation tools), and understanding how to manage files and folders (Harrison, 2015; Cebrián *et al.* 2020). Syahrialet *et al* (2022**)** stated that search and organization skills are students' proficiency in using search engines, databases, and library catalogs to locate relevant research materials. Organizing and citing sources are also essential.

Other ICT competencies, according to Anisimova *et al.* (2020) include critical thinking and problem-solving**,** these competencies involve analyzing information, identifying patterns, and solving research-related problems using digital tools. An aspect of ICT competencies is collaboration and communication which entails the ability for students to collaborate with peers, share documents, participate in online discussions, and use communication tools effectively and ethical use of technology**.** According to Abinan (2021), collaboration and communication competencies are competencies in understanding copyright, plagiarism, and responsible use of digital content is crucial for conducting ethical research. These ICT competencies are not only valuable for research but also essential for success in various academic and professional contexts. However, this study focused on the following ICT competencies; word processing and online information search.

Word processing is the application of computer for manipulating text-based documents; the electronic equivalent of paper, pen, typewriter, eraser, and most likely, dictionary and thesaurus (Olayanju & Asogwa, 2019). According to Acharu (2014), word processing can be likened to a typewriter inside a computer; in that it incorporates all the duties of a typewriter which basically are: the ability to type and produce text on paper, store and manipulate text in documents and get printed copies. Word processing allows information to be created, processed, retrieved and communicated from one point on the system to another point or station.

With respect to word processing competencies and conduct of research, Burin, Irrazabal, Ricle, Saux and Barreyro (2018) conducted a study on word processing and electronic office operation competencies needed by graduates in offices in Abia and Imo States. The purpose of their study to determine word processing and electronic office operation competencies in selected business offices. The researchers used the survey design and the population of the study consisted of 81 secretaries from 41 business offices in public liability companies in Abia and Imo States. There was no sampling since the population was manageable. The data collected were by means of a 20-item self-report inventory titled word processing skills inventory (WPCI) while percentage, mean rating (with standard deviation) were employed in analyzing the data. The finding of the study revealed among others that; graduates required the following word processing competencies, word processing system

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(hardware and software) competencies in using software packages including keyboard accuracy/speed, mail merge, formatting proof reading, saving texts, printing, centralized and distributed processing. Based on the forgoing finds, it was recommended that there was no need to organize refresher courses and seminar for secretarial studies/office technology teachers in word processing skills. Lecturers should adopt ICT innovative teaching approaches in teaching the students for easy transition and acquisition of word processing competencies among the students.

Furthermore, Olupayimo (2018) informed that word processing competencies needed by students for conduct of research include capabilities of word wrap, editing the copy on screen, printout characteristics, help menus, making copies, right justification, hyphenation, and automatic. Oyinloye and Oluwalola (2018) referred to word processing as the creation, editing, formatting, storage, and output of both printed and online or electronic documents. Ajisafe, Bolarinwa and Tuke (2015) also noted stated that word processing is the accurate processing and management of information. In addition, Hancock (2014), asserted that word processing competencies such as formatting letters in various letter styles, short reports with references, and tables are needed by students when writing their research work. Ezenwafor and Olaniyi (2016) is of the opinion that the acquisition of computer and word processing competencies will lead to the following benefits: reduce the length of time required to do work; ensure accuracy and efficiency; eliminate drudgery; ensure standardization of work and accelerate the speed and capacity of office work done. Another key ICT competency is online information search.

Information search competencies refer to the techniques or approaches possessed by students when utilizing the resources found in a physical library or online (Cebrián *et al*., 2020). For physical library, this is not limited to: how to locate a particular book from the shelve; how to skim and scan through materials to filter key information needed and for online library; how to use the search engines, type key words to get needed information, use Boolean operators (the AND and OR words) appropriately when typing a question, among others. While the presentation of information in digital environments enables students to access information easily and quickly, it also creates a complex structure. This complex structure requires students to have the knowledge and competencies to obtain the information presented in electronic media through communication technologies, to use the information they obtain, to evaluate the information, and to format and re-present the information in the same environment (Harrison, 2015). For this, it is important for students to have these competencies when conducting academic research so as to improve the quality of their research work.

Brown (2019) stated that the most valuable skill for the 21st century will be information navigation. Navigating through the plethora of information stored on the Internet to find accurate and reliable information will be a new form of literacy. Because of all these changes brought about by the Information Age, the American Library Association (2019) offered this definition in their final report: To be information literate, a person must be able to recognize

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when information is needed and have the ability to locate, evaluate and use effectively the needed information. To become fully literate in today's world, students must become proficient in the new literacies of ICT (Ezenwafor & Olaniyi, 2016). Olayanju and Asogwa (2019) identified these new literacies in terms of five functions: identifying important question; locating information; critically evaluating the usefulness of information; synthesizing information to answer questions; and communicating answers to others. Of these five functions mentioned above, the ability to locate information is perhaps the most critical as much of what one do on the Internet stems from one's ability to adequately search for specific information.

Furthermore, as the size of the Internet increases, efficient access to information becomes increasingly more difficult. The results from a single search task on the Internet can produce an overwhelming amount of information, often causing frustration and a sense of information overload (Burin et al., 2018). It takes having the ability to search in a strategic and concise manner to curtail the numerous possibilities that can inundate a researcher and prevent a virtual bottleneck that prohibits access to information. Obviously, information is worthless unless it can be efficiently located and retrieved. Search engines offer a variety of features that allows students to construct a precisely targeted search. Among frequently used searching strategies some of which are cited in Aasheim *et al*. (2015) are Boolean search commands (and, or, near, none, not), (+, -, ‘’, etc.), power searching commands (in titles:, sites:, url:, link:, *, ?, etc.) and search assistance features (related search, clustering, stemming, etc.). In the same vein, Xie and Joo (2010) highlighted the following as search strategies: Boolean operators, phrase searching, proximity search, fuzzy search, stemming, truncation searches and wildcard searches.

In order to evaluate and describe the Internet search strategies of adolescent learner, Abinan (2021) conducted a study with 161 middle and high school students. Data were collected through students' descriptions of their search process, observations of students searching behaviours and audit trial list of search strings used by students. Approaches adopted by students to locate information were listed as dot-com formula, shopping mall, and search engine all of which were used by students regardless of the computer experience. They revealed four techniques for recovering from unsuccessful search attempts, which were switching topics, visiting additional web sites, trying new keywords, and continuous instruction and support, students fall back on their previous stage of web search results from ineffective search queries. The study found that this have contributed to them using the online library. Thus, it was suggested that students should be trained in a way that they may become more meta-cognitive about their searching to differentiate between successful search and unsuccessful search.

Among the well-documented applications of computers in education are the ICT competencies of teachers and students alike. According to Caluza *et al.* (2017), one force generating attention to ICT in education is the growing need for lifelong learning, driven by the rationale of the rapid rise in the amount of information and the need for more frequent career changes. Caluza *et al* (2017) also reasoned that ICT could help implement lifelong

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learning by such activities as on-demand learning and project-based learning. In the 21st Century, universities are pressured to add ICT to the skills and knowledge that students need to work and live with (Roman, 2021). A lot of other factors, apart from the demand of the century, may also influence the conduct of research by students. It is in a bid to determine this that the study on Information and Communication Technology (ICT) competencies and conduct of research by postgraduate students of University of Calabar was embarked on.

Statement of the Problem

Information and Communication Technology are very important and useful part of life in recent times. Conducting research entails obtaining materials in writing background to the study, reviewing related literature, writing the methods to be used in carrying out the research, analyzing data collected and making recommendations based on the findings. Quality research involves the researcher sorting accurate information from the internet for the development of conceptual and empirical review; having a systematically arrange methodology that the research is expected to follow, gather relevant data from the filed through primary and secondary sources, as the case may be, analyzing the results gotten from the field, interpreting it and making cogent recommendations, that would lead to solving the problem, that the study intends to solve from the objectives of the study.

Many students still find it difficult to carry out this research process systematically as expected from the supervisor. In addition, conducting of research is a very complex task that involved various competencies in solving a problem. It involves typing, assessing the internet and analysing data that would be gathered from the respondents. The quality of any research is dependent on the quality of online information assessed and cited, typesetting of the entire manuscript and how data collected is coded and analysed. However, it has been observed by the researcher that many postgraduate students successfully complete their course work but abandon their research work, either at proposal stage, Internal Departmental defense or Faculty defense stages. Many have lamented that research work is a herculean task that needs God for one to survive. Could this be true? This have resulted to some students abandoning their research work at various stages, some having phobia towards writing research, as it is being seen a difficult task and cannot be learnt. Could ICT competencies of these students reduce the difficulty in conducting research and improve the quality of their research? It is in a bid to answer these questions that this research was carried out.

Purpose of the Study

The main purpose this study was to determine the influence of Information and Communication Technology (ICT) competencies on conduct of research by postgraduate students of University of Calabar. Specifically, the study sought to determine the influence of:

1. Word processing competencies on conduct of research by postgraduate students of University of Calabar

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2. Online information search competencies on conduct of research by postgraduate students of University of Calabar

Research Questions

The following research questions were posed to guide the study:

1. What is the influence of word processing competencies on conduct of research by postgraduate students of University of Calabar?
2. How do online information search competencies influence conduct of research by postgraduate students of University of Calabar?

Research Hypotheses

The following hypotheses were formulated and were statistically tested in the study:

1. Word processing competencies does not significantly influence conduct of research by postgraduate students of University of Calabar
2. There is no significant influence of online information search competencies on conduct of research by postgraduate students of University of Calabar

Methodology

The researcher adopted a predictive correlation research design. The study was carried out in University of Calabar, Calabar. The population of the study consists of 99 post graduate students (that is, 85 business education students and 14 agricultural education students) from 2020/2021 to 2022/2023 academic sessions in the Department of Vocational Education, University of Calabar (Records from the Office of Chairman, Department of Vocational Education, Graduate Committee). Purposive sampling and census were adopted in this study. Purposive sampling was used to select only postgraduates' students in the Department of Vocational Education to participate in the study. Census was used to incorporate all the postgraduates' students in that Department. The instrument for data collection is a structured researcher-made questionnaire titled "Information and Communication Technology Competencies and Conduct of Research Questionnaire" (ICTCCRQ). The ICTCCRQ has 20 items with 5 items measuring each sub-independent variable and 10 items measuring the dependent variable. Two business educators and one measurement and evaluation expert validated the instrument. To ascertain the reliability of the instrument, a trial test was carried out using 15 post graduate business education students in University of Uyo who were not part of the main study. The data collected was subjected to Cronbach Alpha Statistical Analysis, which yielded an overall reliability index of .81. Copies of the questionnaire were distributed to the postgraduate students after their classes and were collected. At the end of the exercise, 95 copies were correctly responded to and used for data analysis.Research questions were answered using simple linear regression, as well as hypothesis testing. All the hypotheses were tested at 0.05 level of significance with relative degree of freedom.

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Results

Research Question 1: What is the influence of word processing competencies on conduct of research by postgraduate students of University of Calabar?

To provide answers to research question one, model summary table of simple linear regression was used. The result is presented in Table 1.

Table 1: Simple regression analysis on the influence of word processing competencies on conduct of research by postgraduate students of University of Calabar. n=95

Model	R	R^2	Adj R^2	Std. Error
1	.332[a]	.110	.101	4.797

Source: Field Survey, 2024

Table 1 shows the influence of word processing competencies on conduct of research by postgraduate students of University of Calabar. The correlation coefficient (R) of the variable is .332 which implies that word processing competencies influence conduct of research by postgraduate students of University of Calabar. That is, word processing competencies influence conduct of research by postgraduate students of University of Calabar by 10.1 percent.

Research Question 2: How do online information search competencies influence conduct of research by postgraduate students of University of Calabar?

To provide answers to research question two, model summary table of simple linear regression was used. The result is presented in Table 2

Table 2: Simple regression analysis on the influence of online information search competencies on conduct of research by postgraduate students of University of Calabar. n=95

Model	**R**	**R^2**	**Adj R^2**	**Std. Error**
1	.543[a]	.295	.288	4.269

Source: Field Survey, 2024

Table 2 shows the influence of online information search competencies on conduct of research by postgraduate students of University of Calabar. The correlation coefficient (R) of the variable is .543 which implies that online information search competencies influence conduct of research by postgraduate students of University of Calabar. That is, online information search competencies influence conduct of research by postgraduate students of University of Calabar by 28.8 percent

Null Hypothesis 1: Word processing competencies does not significantly influence conduct of research by postgraduate students of University of Calabar

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The independent variable is word processing competencies while the dependent variable is conduct of research. Simple linear regression was used as statistical tool to test this hypothesis and the result is presented in Table 3.

Table 3: Simple regression analysis on the influence of word processing competencies on conduct of research

Model	R	R^2	Adj R^2	Std. Error
1	.332[a]	.110	.101	4.797

Source of variation	SS	Df	MS	F	Sig.
Regression	265.256	1	265.256	11.529	.001[b]
Residual	2139.649	93	23.007		
Total	2404.905	94			

*p<.05; df= 1, 93 Source: Field Survey, 2024

From Table 3, the R, which is the correlation coefficient of the independent and the dependent variable, was 0.332 indicating significant positive relationship between the independent and the dependent variable. This shows that, as the word processing competencies increases, there is likelihood increase in the conduct of research by postgraduate students of University of Calabar. The coefficient of determination (Adj. R^2) which explains the power of the independent variable in predicting the dependent variable is 0.209. This shows that up to 10.1 percent of variance in conduct of research by postgraduate students of University of Calabar is attributed to word processing competencies. The Table also shows that the p-value of .000 associated with the computed F-ratio of 11.529 is less than 0.05 level of significance at 1 and 93 degrees of freedom. With these results, the null hypothesis was rejected. It was accepted alternately that word processing competencies significantly influence conduct of research by postgraduate students of University of Calabar.

Null Hypothesis 2: There is no significant influence of online information search competencies on conduct of research by postgraduate students of University of Calabar

The independent variable is online information search competencies while the dependent variable is conduct of research. Simple linear regression was used as statistical tool to test this hypothesis and the result is presented in Table 4.

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Table 4: Simple regression analysis on the influence of online information search competencies on conduct of research

Model		R	R^2	Adj R^2	Std. Error	
1		.543[a]	.295	.288	4.269	
Source of variation	SS	Df	MS	F	Sig.	
Regression	709.810	1	709.810	38.943	.000[b]	
Residual	1695.095	93	18.227			
Total	2404.905	94				

*p<.05; df= 1, 93 Source: Field Survey, 2024

From Table 4, the R, which is the correlation coefficient of the independent and the dependent variable, was 0.543 indicating significant positive relationship between the independent and the dependent variable. This shows that, as the online information search competencies increases, there is likelihood increase in the conduct of research by postgraduate students of University of Calabar. The coefficient of determination (Adj. R^2) which explains the power of the independent variable in predicting the dependent variable is 0.288. This shows that up to 28.8 percent of variance in conduct of research by postgraduate students of University of Calabar is attributed to online information search competencies. The Table also shows that the p-value of .000 associated with the computed F-ratio of 38.943 is less than 0.05 level of significance at 1 and 93 degrees of freedom. With these results, the null hypothesis was rejected. It was accepted alternately that online information search competencies significantly influence conduct of research by postgraduate students of University of Calabar.

Discussion of Findings

Word processing competencies and conduct of research by postgraduate students

The finding in this regard showed the answer to research question one, which revealed that word processing competencies influence conduct of research by postgraduate students of University of Calabar by 10.1 percent. The test of hypothesis revealed that word processing competencies significantly influence conduct of research by postgraduate students of University of Calabar. The implication of this finding is that word processing competencies allows information to be created, processed, retrieved and communicated from one point on the system to another point or station. The finding is supported by Burin, Irrazabal, Ricle, Saux and Barreyro (2018) that graduates required the following word processing competencies, word processing system competencies in using software packages including keyboard accuracy/speed, mail merge, formatting proof reading, saving texts, printing, centralized and distributed processing.

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The finding agrees with Ajisafe, Bolarinwa and Tuke (2015) opinion that word processing is the accurate processing and management of information. In addition, Hancock (2014), asserted that word processing competencies such as formatting letters in various letter styles, short reports with references, and tables are needed by students when writing their research work. The finding of this study aligns withEzenwafor and Olaniyi (2016) opinion that the acquisition of computer and word processing competencies will lead to the following benefits: reduce the length of time required to do work; ensure accuracy and efficiency; eliminate drudgery; ensure standardization of work and accelerate the speed and capacity of office work done.

Online information search competencies and conduct of research by postgraduate students

The finding in this regard showed the answer to research question two, which revealed that online information search competencies influence conduct of research by postgraduate students of University of Calabar by 28.8 percent. The test of hypothesis revealed that there is significant influence of online information search competencies on conduct of research by postgraduate students of University of Calabar.The implication of the finding is that navigating through the plethora of information stored on the Internet to find accurate and reliable information will be a new form of literacy. To become fully literate in today's world, students must become proficient in the new literacies of ICT. The finding is supported by Brown (2019) assertion that the most valuable skill for the 21st century will be information navigation. The finding agree with Olayanju and Asogwa (2019) who identified these new literacies in terms of five functions: identifying important question; locating information; critically evaluating the usefulness of information; synthesizing information to answer questions; and communicating answers to others. Of these five functions mentioned above, the ability to locate information is perhaps the most critical as much of what one do on the Internet stems from one's ability to adequately search for specific information.

The finding is supported by Aasheim et al. (2015) statement that among the frequently used searching strategies are Boolean search commands (and, or, near, none, not), (+, -, ‘’, etc.), power searching commands (in titles:, sites:, url:, link:, *, ?, etc.) and search assistance features (related search, clustering, stemming, etc.). the finding agrees withXie and Joo (2010) opinion that the following as search strategies: Boolean operators, phrase searching, proximity search, fuzzy search, stemming, truncation searches and wildcard searches. The finding is supported byAbinan (2021) who revealed that the finding four techniques for recovering from unsuccessful search attempts were switching topics, visiting additional web sites, trying new keywords, and continuous instruction and support, students fall back on their previous stage of web search results from ineffective search queries. The study found that this have contributed to them using the online library.

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Conclusion

The quality of academic research is dependent on the following stages: Identifying the problem (subject/issue), preparing research proposals, planning the research, conducting the research, writing and reporting the research. From the findings of the study, ICT competencies of students in word processing, online information search and use of data analysis software plays a key role in ensuring that research is properly conducted.

Recommendations

Based on the findings, the researcher recommended that:

1. Students are encouraged to take computer courses on computer appreciation and word processing, as this would ensure that they master the application and likely use it to typeset their research papers and dissertation, where necessary.
2. Students should master the act of searching of information online using Boolean operators and phrase searching as search strategies, as this is very vital in reviewing related literature when conducting research.
3. Students should be encouraged to own a personal computer and lecturers of Research and Statistics should ensure that students put into practice the application of these statistical tools using current analysis software such as SPSS.

References

Aasheim, C. L., Williams, S., Rutner, P., & Gardiner, A. (2015). Data analytics vs. data science: A study of similarities and differences in undergraduate programs based on course descriptions. *Journal of Information Systems Education, 26*(2), 103-115.

Abinan, A. L. (2021). Research exposure, attitude towards research and research competence of the senior high school teachers: Research exposure, attitude towards research and research competence of the senior high school teachers. *International Journal of Arts, Sciences and Education, 1*(2), 198-218.

Acharu, F. T. (2014) Influence of information and communication technology resources on teaching office education in Polytechnics in North-Central GeoPolitical Zone, Nigeria (Unpublished M.Ed Thesis). Ahmadu Bello University, Zaria.

Ajisafe, O. E. Bolarinwa, K. O. &Tuke, E. (2015). Issues in business education programme: Challenges to national transformation. *Journal of Education and Practice, 6*(21), 208-212.

American Library Association (2019).The American library association presidential committee on information literacy. http://www.ala.org/acrl/nili/ilit1st.html Retrieved 2nd July 2024

Amini, C. M. &Oluyide, O. (2020). Analysis of ICT competencies among distance learning students in selected study centres of the National Open University of Nigeria. *Journal of Learning for Development, 7*(1), 78-89.

Vol. 10, Issue 1, - Oct/Dec, 2025. ISSN p2536-748x, e-2565-7498

Anisimova, T., Sabirova, F. & Shatunova, O. (2020).Formation of design and research competencies in future teachers in the framework of STEAM education.*International Journal of Emerging Technologies in Learning (IJET), 15*(2), 204-217.

Brown, J. S. (2019). Learning, working & playing in the digital age. http://seredip.brynmawr.edu/sci_edu/seelybrown/ Retrieved 2nd July 2024

Burin, D. I., Irrazabal, N., Ricle, I. I., Saux, G. &Barreyro, J. P. (2018).Self-reported internet skills, previous knowledge and working memory in text comprehension in E-learning.*International Journal of Educational Technology in Higher Education*, *15*(1), 18-25

Caluza, J. B., Verecio, R. L., Function, D. G. D., Quisumbing, L. A., Gotardo, M. A., Laurente, M. L., Cinco, J. C. & Marmite, V. (2017). An assessment of ICT competencies of public school teachers: Basis for community extension program. *IOSR Journal of Humanities and Social Science*, *22*(3), 1-13.

Cebrián, G., Junyent, M. & Mulà, I. (2020). Competencies in education for sustainable development: Emerging teaching and research developments. *Sustainability*, *12*(2), 579.-585

Ezenwafor, J. I. &Olaniyi, O.N. (2016). Extent business education graduates in Ondo and Ekiti States need technical and ICT skills for entrepreneurial success. *ABEN Conference Proceedings*, *3*(1), 140-148.

Hancock, M. (2014).Business education 2014-2015.http://education.ky.gov/cte/ctepa/bus/documents/businesspos2014-final.pdfRetrieved 2nd July 2024

Harrison, J. (2015). *Secretarial duties.* Singapore: Pearson Education.

Kopaiboon, W., Reungtrakul, A., &Wongwanich, S. (2014). Developing the quality of ICT competency instrument for lower secondary school students.*Procedia-Social and Behavioural Sciences, 116*(2), 1802-1809.

Olayanju, T. K. & Asogwa, A. N. (2019). Competency-improvement needs of secretaries of higher institutions in ICT for effective office work performance: Office technology skills required by secretaries in managing information. *Business Education Journal, 3*(3), 7-19.

Olupayimo, E. O. (2018). Meeting the global workers' need: Competencies required by business education teachers for effective curriculum delivery.*Association of Business Educators of Nigeria, Conference Proceedings*, *5*(1), 48-56.

Vol. 10, Issue 1, - Oct/Dec, 2025. ISSN p2536-748x, e-2565-7498

Oyinloye, O. T. & Oluwalola, F. K. (2018). The place of office technology and management, curriculum and skills needed: A case study in University of Sultan Zainal Abidin (Unisza), Malaysia. *Proceeding Technology*, *1*(2), 234-249.

Roman, A. (2021). Research competencies and performance of Higher Education Institutions (HEI) faculty.*International Journal of Research Publications*, *78*(1), 41-52

Syahrial, S., Kurniawan, D. A., Asrial, A., Sabil, H., Maryani, S. &Rini, E. F. S. (2022). Professional Teachers: Study of ICT capabilities and research competencies in urban and rural? *Cypriot Journal of Educational Sciences*, *17*(7), 2247-2261.

Xie, I. &Joo, S. (2010). Tales from the Field: Search strategies applied in Web searching. *Future Internet*, *2*(1), 259-281.