

Teachers' use of academic research databases and its relationship to their research skills and performance

Sheiry-Gil A. Camahalan¹ and Genesis B. Naparan²

¹Saint Columban College, Pagadian City, Philippines, e-mail: sheirygilc@gmail.com ORCID: <https://orcid.org/0000-0001-7689-650X>

²Saint Columban College, Pagadian City, Philippines, genesisbnaparan@gmail.com ORCID: <https://orcid.org/0000-0003-2335-2757>

Article Info

Abstract

Research Article

Received: 10 June 2022

Revised: 10 October 2022

Accepted: 15 October 2022

Keywords:

Academic research databases,
Research skills,
Teachers' performance

This descriptive-correlational study aims to determine the relationship between teachers' use of academic research databases, research skills, and teachers' performance. Research teachers in public secondary schools under the Pagadian City division, Philippines, were selected as participants for the survey. The results showed a strong positive correlation between teachers' use of academic research databases and research skills. However, teachers' performance has no relationship with research skills and teachers' use of academic research databases. Since teachers' use of academic research databases and research skills among the teacher-participants of this study were not related to their very satisfactory performance, teachers may have been developed successfully due to the Department of Education's reinforced programs, training conferences, and workshops.

1. Introduction

Research searches for information through an objective and systematic approach of seeking solutions to a problem through study, observation, comparison, and experiment. Research is a scientific inquiry method by which one can solve a problem through a careful and exhaustive investigation of all ascertainable evidence, bearing upon a definable problem (Connaway and Powell, 2010). Research became a final step in most programs in every institution in education, even senior high school students.

The emergence of technology introduces academic research databases. To use the rising number of electronic resources available, one must learn and practice the skills required. These abilities include knowledge of databases' structure and instructions that must be entered by the searcher and grasping how the instructions are related to one another. Their awareness may influence researchers' use of electronic databases for research purposes. Awareness raises awareness and understanding of a particular technology and its personal and social benefits (Obuh and Bozimo, 2012). This viewpoint backed their research, which found that user awareness is the most crucial factor in user attitude and behavior toward technology.

Research skills are the first of the two dependent variables tested in this study. The study evaluated such connections between the use of academic research databases and teachers' research skills. Research competencies are defined as cognitive dispositions, which are (a) acquired by learning in university courses, (b) applied in the context of carrying out the research process, and (c) needed to cope with tasks arising from research-oriented teaching arrangements successfully (Bottcher and Thiel, 2017). Some authors pay attention to the converting nature of research competence and represent it as an integrated personal quality. It is expressed as the readiness and ability to master and receive new knowledge systems independently due to the transfer of an activity semantic context, from functional to converting, based on already available knowledge, abilities, skills, and ways of acting (Edwards and Osipova, 2011).

In an immensely complicated setting where hundreds of crucial decisions are required each day to enhance student learning, teachers must know a wide range of competencies. According to research on the link between

* All responsibility belongs to the researcher. All parties were involved in the research of his own free will.

To cite this article: Camahalan, S.A. & Naparan, G. (2022). Teachers' use of academic research databases and its relationship to their re-search skills and performance. *International Journal of Social Sciences and Education Research*, 8 (3), 318-331. DOI: <https://doi.org/10.24289/ijsser.1127770>

teaching and student accomplishment, instructors' most significant effect on student success. Teachers are the most potent influence on student success of all the factors under the control of a school (Babu and Mendro, 2003). The study also explored the teachers' performance as the second dependent variable and its connections to the use of academic research databases.

The researchers were interested in determining whether academic research databases correlate to research skills and teachers' performance. A previous study linked electronic databases to research productivity, concluding they had a good association. It was conducted with academic staff from various higher education institutions; however, this study was conducted with secondary teachers. However, no research involving these three variables has been undertaken so far. The study focuses on teachers with research engagements from schools under Pagadian City Division. According to the researcher, this study could benefit teachers, schools, and even the Department of Education because the output or outcome could be helpful in future educational programs.

1.1. Framework

This study is anchored on the Technology Acceptance Model or TAM (Davis, 1989). It posits that two factors determine whether a computer system will be accepted by its potential users: (1) perceived usefulness and (2) perceived ease of use. The key feature of this model is its emphasis on the perceptions of the potential user. While the creator of a given technology product may believe it is practical and user-friendly, it will not be accepted by its potential users unless they share those beliefs. This theory would link to this study, particularly teachers' use of academic research databases, the independent variable. The perceived usefulness and ease of use of academic research databases among teacher participants in this study will influence their usage level positively or negatively.

This study is also anchored on the DepEd Order No. 16 s. 2017 which is known as "Research Management Guidelines." In support of the Department's policy development process, research agenda, and policy and program development and implementation, the Department of Education promotes and strengthens the research culture in primary education. This guides in managing national, regional, school, and school research initiatives. The policy also improves support mechanisms for research, such as funding, partnerships, and capacity building. This policy will guide the researcher in pursuing this study because the results of this study might provide ideas for future policy development of the Department of Education, which is the primary purpose of establishing this DepEd Order.

1.2. Objectives of the study

The study aimed to test the relationship between Teachers' Use of Academic Research Databases, Research Skills, and Teachers' Performance in some schools under the Pagadian City Division for the Academic Year 2020-2021.

2. Literature review

2.1. Academic research databases

With the introduction of online databases (e.g., ScienceDirect, Scopus, and Google Scholar, etc.), libraries, particularly academic libraries, are now focusing more on resources than any other format accessible, making information more affordable, time-saving, user-friendly, and simple to access and utilize (Madhusudhan, 2010). Scholarly internet publications are becoming increasingly relevant to scholars and researchers, according to several studies. Scholars increasingly rely on electronic resources with a high prevalence of non-traditional materials (Nicholas and Huntington, 2006). Faculty satisfaction and desire to utilize online databases are determined by the quality of online databases (Wahab et al., 2016).

Online databases and various e-resources allow users to access the most up-to-date information (Aladeniyi, 2017; Lwebahura, 2008; Sethi and Panda, 2012). A study from Nigerian Universities stated that awareness and utilization of electronic databases individually and collectively influenced the research productivity of academic staff in private universities in South-West Nigeria. The observed correlation between awareness and utilization of electronic databases readily affirms the general perception by the academic staff that awareness and utilization of electronic databases will have a positive effect on research productivity (Adetomiwa and Okwilagwe, 2018). However, studies in the developed world revealed a relatively high use of electronic scholarly journal databases by academic staff, who reported utilizing electronic journals daily or weekly for research reasons (Dillon and Hahn, 2002; Khan and Ahmad, 2009). Electronic journals in higher learning institutions were mainly used for research and education (Chirra and Madhusudhan, 2009). Other researchers surveyed the use of electronic databases by

doctoral research scholars at Goa University in India. The study's outcome was that the entire scholars, with 100 percent, were aware, familiar with, and extensively utilized the databases (Chirra and Madhusudhan, 2009).

Users must learn and practice the skills necessary to efficiently use the rising number of electronic information resources. Knowledge of the structures of electronic information resources, the instructions that must be entered into search engines, and the methods in which instructions are related to one another are among these talents (Ajuwon and Popoola, 2015; Obuh and Bozimo, 2012). According to a survey conducted on monitoring and evaluating electronic resources in Kenyan academic and research institutions, most trained research participants stated that training had improved their access and retrieval skills, allowing them to do so more easily (Gathoni et al., 2011). Ansari and Zuberi (2010) looked into Karachi's digital library resources available to academics. Electronic resources were reportedly used for research and the production of lesson notes during lectures.

While electronic journals have become crucial resources for learning, research, teaching, and consulting, most scholars and researchers do not fully utilize them (Ajegbomogun, 2007). A study on using electronic resources at Obafemi Awolowo University discovered that electronic resources were used infrequently (Oyedapo and Ojo, 2013). Limited searching abilities were the critical factor contributing to the low use of electronic resources. According to some authors, there was a minor demand for training in maintaining electronic journal references and locating full text from concerns among academic staff and researchers at Loughborough University (Brown et al., 2007). The biggest obstacles to using electronic library resources were inadequate information or awareness about the existence of these databases and lack of training (Anaraki and Babalhavaeji, 2013; Okello-Obura and Magara, 2008).

In a study conducted to identify awareness level, accessibility, and use of online databases among faculty members of Babcock University Business School, it was revealed that despite the substantial financial commitments of the University to relevant online databases subscription, many of which faculty members are aware of are not accessible to them due to the internet and power-related challenges (Aina, 2014). A study conducted on electronic databases at the University of Ghana, Legon, Kwando, found that the awareness of the databases was lower than usage. The research participants claimed that they were not aware of the databases, but they used the databases (Kwadzo, 2015). Research at Ghana's Ashesi University College found that consumers were unaware of the library's databases on behalf of the college. However, general computer usage was high because of the state-of-the-art ICT infrastructure. The study further revealed that patronage of the databases is very low. They attributed the low utilization to a lack of knowledge about databases (Dadzie, 2005). Users' awareness of available library electronic resources is critical in affecting those resources. Users who are aware of resources are more likely to use them (Asemi and Riyahiniya, 2007).

2.2. Teachers' research skills

The number and quality of publications produced by linked faculty represent the research productivity of academic institutions. Departments frequently assess faculty members based on their "publication count" (Jauch and Glueck, 2010). Conducting research, collecting, and analyzing data are all examples of research. Productivity means writing, reading, and publishing research reports in professional refereed journals, displaying them on the web, or making them known to the public through any other means, in the shape of books or making its presence on the television or radio (Iqbal and Mahmood, 2011). Research productivity is the sum of all research published in journals by certain institutions over time (Oloruntoba and Ajayi, 2006). In many works, various approaches to the concept of research competence are singled out: It is considered a personality's integrative quality, a personality's unique property, and an ability for research activity. Its fundamental elements are the body of knowledge, skills, and habits that the student has in a specific subject sphere and independent cognitive activity (Khutorskoi, 2009; Komarova, 2008; Shadrikov, 2006; Skornyakova, 2013). Some authors propose classifying educational competencies according to three levels that correspond to the content of education; subject, all-subject, and meta subject; which all relate to the general education content. Research competence is an example of meta-subject competence. It includes the complex educational competencies directly connected with thought, search, logic, and creative processes of students' knowledge mastering (Khutorskoi, 2009; Lebedev, 2009).

The analysis regarding research competencies pointed toward the different possibilities, ranging from the acquisition of instrumental skills to the attitude of a researcher (Verburgh, 2013) to the acquisition of "sustainability research and problem-solving competence" (Wiek et al., 2011). Prospective teachers' research skills develop their professional identity and contribute to implementing evidence-based techniques in teaching in nations where research activities are implemented in higher education (Naumescu, 2008; Niemi and Nevgi, 2014). The

development of research competence is treated as a separate issue in these countries' course structures. This issue is also considered at the annual seminars (Wildová, 2014).

A study in Pagadian City, Philippines revealed four (4) factors of instructors' research engagement: administrative support, recognition and promotion, motivation, and institutional requirement. It further showed that instructors' non-engagement in research could be due to four (4) factors: time constraints, lack of experience and training, financial limitation, and lack of motivation (Celesio, 2020). Another study provides evidence in favor of the hypothesis that a unifying research practice exists. Across various academic disciplines, research can be described as a process, which is systematic, methodologically controlled, and transparent, which needs to be reflected upon, and which includes discipline-specific content knowledge (Böttcher and Thiel, 2017). Besides other factors like information capacity, soundness of intellectual acumen, technology proficiency, and research infrastructure, faculty research output also depends significantly on access to available information resources due to their expediting influence on quality research (Iroaganachi and Izuagbe, 2018).

2.3. Teachers' performance

Acquired competencies are the foundation for quality and effective teaching and a requirement for achieving education goals outlined in the educational process in a specialty area (Ülger et al., 2014). Some authors defined the competencies of a teacher as the talents, knowledge, skills, and capabilities required to implement educational aims (Kelemen, 2012; Razdevik et al., 2006). Teachers' excellent Performance is demonstrated by their ability to convey the most up-to-date and accurate information as well as their ability to select the most appropriate teaching method, as these two factors influence the level of interest, knowledge, and skills that children have to achieve to meet the learning objectives (Ednah, 2012; Oogarah-Pratap et al., 2004).

Three types of learning based on research will probably prevail in competence-based teaching in the 21st Century: project-based, problem-based, and research-based learning (Abersek, 2012). These will provide students with a more comprehensive understanding to use competencies obtained in school (knowledge and skills) for real-life problem-solving. Johnson (2000) discussed the challenges of action research and advised teachers interested in conducting student perception surveys. He stressed the relevance of students' opinions of the learning environment and student feedback for professional development. Initial teacher education programs must focus on improving the teaching competency of pre-service teachers (PTs) (Cheng, 2014). Most PT training programs incorporate mandatory teaching practices to develop teaching competency properly (Struyven et al., 2014). However, older teachers who were experts in teaching had more knowledge in subject areas than young teachers and were more efficient in using their teaching methods (Huyen, 2003). The evaluation of teaching performance requires specific materials; yet, due to the use of holistic approaches, the exact nature of teaching, and the integration of knowledge, skills, and attitudes, a meaningful assessment of competency can be challenging (Tigelaar et al., 2005). The most significant and challenging level of teacher competency is differentiation in teaching utilizing various methodologies (Antoniou and Kyriakides, 2013).

Education is mainly based on teaching, and the learning process is where a teacher is teaching and a learner is learning in the formal education system. A teacher's role is centrally based on teaching and learning. On the other hand, Teachers and curriculum are two sources that provide education well (Curzon, 2003). Teachers' Performance as a variable was evaluated in this study using teachers' yearly evaluation of Performance which is the IPCRF for the school year 2020-2021. IPCRF as a tool is one of teachers' evidence in their Performance for a specific school year which comprises the overall Performance of teachers inside or outside the classroom setting. These pieces of literature have something to tell that these three variables, namely teachers' use of academic research databases, research skills, and teachers' Performance, are directly/indirectly related to each other, yet are subject to be proven. Some studies link electronic databases to research productivity, which concluded that they have a positive relationship. Those studies were participated by academic staff of some higher education institutions, which differs because this study will be participated by primary education teachers. However, there were no studies conducted yet, in which these three variables were involved. An analysis of the correlation between these variables will be performed to address this gap.

3. Method

3.1. Research design

This study used a quantitative research method. Quantitative research methods are those methods in which numbers are used to explain findings (Kowalczyk, 2016). According to Creswell (2002), when researchers want to identify a research problem based on trends in the field or the desire to explain why something happens, they

employ a quantitative approach. Mainly, it followed a descriptive-correlational design. The researchers' sole goal was to describe and show the relationship between the variables studied. Because the study's concerns and challenges were based on real-life scenarios, correlational design was preferable. This approach also made data collection more accessible, quick, and cost-effective. It used a survey in two forms, online and printed, to collect information needed for the analysis.

3.2. Research setting

This study was conducted in public secondary schools under Pagadian City Division, Pagadian City, Zamboanga del Sur, Philippines. This division was divided into 14 districts with corresponding supervisors, from district 1 to district 14. It has 82 schools, 52 elementary and 30 secondary schools. More or less 2,021 personnel are working in this division, including teaching and non-teaching personnel.

3.3. Research participants

The study was participated by the 51 selected teachers at some secondary public schools under Pagadian City Division. The participants included are those teachers with research engagements, teachers teaching research subjects, and those teachers funded by research funds in their research. Table 1 presents the profile of the research participants of this research.

Table 1. *Research participant's profile*

No. of participants	Gender		Age Mean	Position				
	M	F		T1	T2	T3	MT	HT
51	21	30	34.2	5	13	27	4	2

3.4. Research instruments

The researcher used a self-made questionnaire that experts validated to gather data for teachers' use of academic research databases. This questionnaire was a Likert scale and was answered by ticking the boxes. It uses six scales in rating the two sub-variables. For knowledge of academic research databases, 1.0-1.49, 1.50-2.49, 2.50-3.49, 3.50-4.49, 4.50-5.49, 5.50-6.0 with an adjectival equivalent and interpretation of No Knowledge, Very Poor Knowledge, Poor Knowledge, Fair Knowledge, Satisfactory Knowledge, and Very Knowledgeable respectively. For frequency of use, 1.0-1.49, 1.50-2.49, 2.50-3.49, 3.50-4.49, 4.50-5.49, 5.50-6.0 with an adjectival equivalent and interpretation of Never, Very Rarely, Rarely, Occasionally, Frequently, and Very Frequently respectively.

For research skills, the researcher used the published questionnaire of Meerah et al. (2011). It was a 39-item questionnaire divided into two categories: information-seeking skills and methodology skills. The questionnaire is a Likert-type scale with a 5-rating scale where participants tick on the boxes that signify their answer to every question. Its scales are 1.0-1.49, 1.50-2.49, 2.50-3.49, 3.50-4.49, and 4.50-5.00, with an adjectival equivalent and interpretation of Very Poor, Poor, Average, High, and Very High, respectively. On the other hand, the teachers' IPCRF ratings of the participants were the teachers' performance instruments. The study used the recent IPCRF of teachers for the school year 2020-2021. Its scales are 1.000-1.499, 1.500-2.499, 2.500-3.499, 3.500-4.499, and 4.500-5.000 with an adjectival equivalent and interpretation of Poor, Unsatisfactory, Satisfactory, Very Satisfactory, and Outstanding respectively.

3.5. Data gathering procedure

Before gathering data, the researcher first communicates and negotiates with the Schools' Division Superintendent by submitting a permission letter/consent letter to conduct a study for this research to be formal. The researcher must enlighten them and the participants on the study's context, purpose, and benefits. Informed consent was sent to the participants days before the actual data gathering. The consent aimed to inform the participants about the context, purpose, advantages, and disadvantages of participating in the study. The participants took these backs upon distributing the questionnaires via hard copy. Only those participants who had affixed their signatures on the informed consent will be given questionnaires to answer. It signifies their voluntary participation in the study. The participants were given a week to answer the questionnaires.

To collect data, the researcher used printed questionnaires that were distributed to the participants. A soft/hard copy of their IPCRF SY 2020-2021 was collected for the data on the teachers' performance in the study. Observance of the primary health and safety protocols was observed during the conduct of the survey. The participants can also answer via google forms and attach a rating of their IPCRF.

3.6. Data analysis

Descriptive and inferential statistics were used in this study to analyze the data that was gathered. Descriptive statistics will help reveal the status of the study's variables and evaluate how data was distributed. On the other hand, inferential statistics was used to assess and measure the significant relationship between the variables. The inferential statistics utilized in the data treatment was Pearson correlation analysis. Pearson correlation will determine whether the study's pairs of variables have a significant linear relationship. There were three sets of tests in which the analysis will be utilized. The first test explores the relationship between Teacher's Use of Academic Research Databases and Research Skills. Second, testing the relationship between Teacher's Use of Academic research Databases and Teachers' Performance, and third, testing the relationship between Research Skills and Teachers' Performance. The use of SPSS spearheaded the data treatment of the study.

3.7. Ethical considerations

The participants' rights, privileges, and well-being were prioritized throughout the study. When the participants were invited to engage in the study, it was made free of coercion. The ethical considerations used and observed in the study were as follows. The first was the use of consent letters. They were given days before the event to rationalize their decisions and sign a document indicating their voluntary involvement if they chose to participate. They had plenty of time to voluntarily give their complete cooperation, support, and involvement or refuse to engage in the study if they did not want to. The study's goals, benefits, and drawbacks were communicated to the participants via a consent letter, which was a significant factor. As a result, the study's second ethical consideration in research, deception, was avoided during its conduct. The researchers ensured that the participant's personal information and identities would not be revealed to the public and that the data acquired would be kept secure and anonymous. The researchers handled and disposed of papers (printed or soft copies) holding the participants' data with extreme caution following the data collection.

4. Results and discussion

This section of the paper presents the results and discussions of the data gathered for the teachers' use of academic research databases, research skills, and teachers' performance in some schools under the Pagadian City Division for the Academic year 2020-2021.

4.1. Teachers' use of academic research databases

Teachers' use of academic research databases refers to the extent of teachers' usage of academic research databases in research-making and teaching improvement. This concept covers knowledge of academic research databases and frequency of use. Table 2 presents teachers' use of academic research databases regarding their knowledge and awareness.

Table 2. Teachers' level of knowledge of academic research databases

	Research Databases	Mean	SD	Interpretation
1.	Scopus (Elsevier)	2.71	1.59	Poor knowledge
2.	Web of Science	2.75	1.53	Poor knowledge
3.	PubMed	2.49	1.35	Very poor knowledge
4.	ERIC	2.35	1.55	Very poor knowledge
5.	IEEE Xplore	2.16	1.42	Very poor knowledge
6.	ScienceDirect	2.96	1.64	Poor knowledge
7.	Directory of Open Access Journals (DOAJ)	2.47	1.38	Very poor knowledge
8.	JSTOR	2.27	1.47	Very poor knowledge
9.	Proquest	3.02	1.78	Poor knowledge
10.	ResearchGate	3.47	1.90	Poor knowledge
11.	Academia	3.37	1.79	Poor knowledge
12.	Google Scholar	3.86	1.85	Fair knowledge
13.	FreeFullPDF	2.45	1.42	Very poor knowledge
14.	Z-Library	2.33	1.42	Very poor knowledge
15.	Philippine E Journals	2.59	1.47	Poor knowledge
16.	Mendeley	2.43	1.65	Very poor knowledge
17.	Publish or Perish	2.27	1.40	Very poor knowledge
	Overall	2.70	1.57	Poor knowledge

Scale: 1.00–1.49 – No Knowledge; 1.50–2.49 – Very Poor Knowledge; 2.50–3.49 – Poor Knowledge; 3.50–4.49 – Fair Knowledge; 4.50–5.49 – Satisfactory Knowledge; and 5.50–6.00 – Very Knowledgeable

Table 2 shows an overall mean of 2.70 and an overall SD of 1.57, which was interpreted as poor knowledge. The result means that teachers have poor knowledge in terms of academic research databases. Among those mentioned academic research databases, google scholar has a higher mean of 3.86, interpreted as fair knowledge, which means that it is somehow familiar to some teachers compared to other research databases. Anaraki and Babalhavaeji (2013) found that the biggest obstacles to using electronic library resources were inadequate information about these databases and a lack of training. Okello and Magara (2008) supported this notion of underutilization. They stated that the common obstacle to using electronic journals in higher learning institutions was a lack of awareness about the resources. Asemi and Riyahiniya (2007) stated that a user's awareness of available library electronic resources is critical in affecting those resources. Users are more likely to use resources when they are aware of them.

The very poor knowledge of academic research databases may be linked to the Technology Acceptance Model, which states that two factors determine whether a computer system will be accepted by its potential users: (1) perceived usefulness and (2) perceived ease of use. It might be because teachers do not understand the usefulness of academic research databases and do not know whether they are easy to use. These factors may contribute to teachers' unacceptance of academic research databases, leading to teachers' lack of interest in learning academic research databases. The findings have shown that the teachers' level of knowledge of academic research databases is interpreted as very poor based on the data gathered. The findings suggest that there should be training for teachers regarding academic research databases and their utilization. Teachers should be given an idea about the existence of these academic research databases and learn how to access them. Table 3 presents teachers' use of academic research databases.

Table 3. Extent of teachers' use of academic research databases in terms of frequency of use

	Research Databases	Mean	SD	Interpretation
1.	Scopus (Elsevier)	2.22	1.45	Very rarely
2.	Web of Science	1.98	1.16	Very rarely
3.	PubMed	1.92	1.23	Very rarely
4.	ERIC	2.02	1.50	Very rarely
5.	IEEE Xplore	1.76	1.18	Very rarely
6.	ScienceDirect	2.67	1.66	Rarely
7.	Directory of Open Access Journals (DOAJ)	1.98	1.21	Very rarely
8.	JSTOR	2.02	1.39	Very rarely
9.	Proquest	2.55	1.62	Rarely
10.	ResearchGate	3.12	1.77	Rarely
11.	Academia	2.90	1.82	Rarely
12.	Google Scholar	3.51	1.92	Occasionally
13.	FreeFullPDF	2.33	1.51	Very rarely
14.	Z-Library	1.98	1.38	Very rarely
15.	Philippine EJournals	2.12	1.37	Very rarely
16.	Mendeley	2.12	1.52	Very rarely
17.	Publish or Perish	2.00	1.33	Very rarely
	Overall	2.31	1.47	Very rarely

Scale: 1.00–1.49 – Never; 1.50–2.49 – Very Rarely; 2.50–3.49 – Rarely; 3.50–4.49 – Occasionally; 4.50–5.49 – Frequently; and 5.50–6.00 – Very Frequently

Table 3 shows an overall mean of 2.31 and an overall SD of 1.47, which was interpreted as very rarely based on the scale given. The result means that teachers have infrequent or scarce usage and utilization of academic research databases. Among those mentioned academic research databases, google scholar has a higher mean of 3.51, interpreted as occasionally, which means that some teachers somehow use it compared to other research databases.

While electronic journals have become crucial resources for learning, research, teaching, and consulting, according to Ajegbomogun (2007), most scholars and researchers do not fully utilize them. In a study on using electronic resources at Obafemi Awolowo University, Oyedapo and Ojo (2013) discovered that electronic resources were used infrequently. Limited searching abilities were the critical factor contributing to the low use of electronic resources. In a study conducted by Aina (2014) to identify awareness level, accessibility, and use of online databases among faculty members of Babcock University Business School, it was revealed that despite the substantial financial commitments of the University to relevant online databases subscription, many of which faculty members are aware of are not accessible to them due to the internet and power-related challenges.

The very rare usage of academic research databases may be linked to the Technology Acceptance Model, which states that two factors determine whether a computer system will be accepted by its potential users: (1)

perceived usefulness and (2) perceived ease of use. It might be because teachers do not understand the usefulness of academic research databases and do not know whether they are easy to use. These factors may contribute to teachers' unacceptance of academic research databases, leading to teachers' lack of interest in using academic research databases.

4.2. Teachers' research skills

Teachers' research skills refer to the skill level of teachers in doing research studies. This concept covers information-seeking skills and methodology skills among the five constructs identified by the original author. Other constructs are Statistical/Quantitative analysis skills, Problem-solving skills, and Communication Skills which the author discarded for valid reasons. However, few items from those discarded constructs were inserted into the retained constructs. Table 4 presents teachers' research skills level regarding information-seeking skills.

Table 4. Level of teachers' research skills in terms of information seeking skills

	Indicators	Mean	SD	Interpretation
1.	I premeditate the types of information that I need, like books, articles, journals, and others.	3.39	0.87	Average
2.	I am aware that information found in journals is more often checked, edited, and criticized compared to information found in magazines.	3.65	1.02	High
3.	I am aware that information can be obtained through various means (e.g., electronic media, images, audio, and video).	3.80	1.02	High
4.	I am aware that the primary source is the first source (original source) that records work related to the literature.	3.84	1.12	High
5.	I am aware that the secondary source is the source that discusses the work of others.	3.75	1.09	High
6.	I use other sources besides the library in my institution.	3.82	1.18	High
7.	I identify and look for synonyms, themes, or key words that can be used to find information based on my topic.	3.65	1.02	High
8.	In order to find information, I read general texts like dictionaries or encyclopedia articles to gain more understanding on the terminologies used in my topic.	3.41	0.94	Average
9.	I need to broaden my search using key words given that the existing source of information indicates that my topic of research is too narrow.	3.69	1.07	High
10.	I am aware that I can use truncation (or shortcuts) in my search, or I can also use root words to start my search.	3.35	1.02	Average
11.	I am aware that I can find a book based on the title given.	3.57	0.94	High
12.	I have to conduct the search according to the field in order to identify the materials titles according to a particular field.	3.61	1.08	High
13.	I will look at the strategy to find information again in order to get exactly what I want if it is not successful the first time.	3.57	1.08	High
14.	I usually evaluate the writer's expertise to see if he/she is qualified in the written field.	3.41	0.98	Average
15.	I evaluate the accurateness of the content by reading other sources mentioned by the writer.	3.51	0.95	High
16.	I understand the contextual effect for instance how various cultures, history and geography can influence the perspective of the information.	3.51	0.99	High
17.	I realize that time is a factor that influences the relevance of the information to my topic of research.	3.78	1.08	High
18.	I get the confirmation of my understanding on a certain topic by getting an opinion or an expert's view (through individual interviews, email, telephone, and others)	3.35	1.05	Average
19.	When searching for information, I arrange each item systematically.	3.45	1.06	Average
20.	I am able to adjust with the various quotation styles used.	3.43	0.96	Average
21.	When searching for information using a database, I know how to store it into my disk or to email it to my email.	3.55	1.17	High
22.	I can record quotations in order to seek information.	3.45	1.05	Average
23.	I write down the important concepts myself using my own words.	3.57	1.01	High
24.	I use the main ideas obtained from the information researched in order to support my topic.	3.69	0.97	High
25.	I combine the main ideas from one source or more in order to form a new idea.	3.71	1.06	High
26.	I can construct my own conclusion based on the information gathered.	3.65	1.07	High
	Overall	3.58	1.03	High

Scale: 1.00–1.49 –Very Poor; 1.50–2.49 –Poor; 2.50–3.49 –Average; 3.50–4.49 –High; and 4.50–5.00 –Very High

Table 4 shows an overall mean of 3.58 and an overall SD of 1.03, which was interpreted as high based on the scale given. This result means that teachers have a high level of skills in seeking information. In addition, teacher-participants in the study were competent enough to find out information and already knew some techniques for obtaining information. Online databases can provide faster and easier access to current information anywhere (Lwehabura, 2009). Aladeniyi (2017) suggests that e-resources constitute an essential source of current and timely data and information, ease of access, storage, and time-saving. Similarly, Sethi and Panda (2012) noted that using e-resources enhances users' competence and provides them with a wide range of information resources and instant access to current and up-to-date information. Seeking information is very important to the teachers, for they are the one who becomes the best source of information for the students. With this, teachers should continue their hunger to obtain information and always polish their information-seeking skills to keep updated in any matter. Table 5 presents teachers' research skills level regarding methodology skills.

Table 5. Level of teachers' research skills in terms of methodology skills

Indicators	Mean	SD	Interpretation
1. Ability to plan a research	3.47	0.97	Average
1. Developing a research question	3.51	0.99	High
2. Searching for a research problem	3.53	1.03	High
3. Doing a literature review	3.59	1.02	High
4. Design an experiment study	3.37	0.98	Average
5. Selecting an instrument	3.43	1.04	Average
6. Developing an instrument	3.29	0.97	Average
7. Collecting of survey data	3.59	1.08	High
8. Writing an abstract	3.49	1.10	Average
9. Preparing a manuscript for publication	3.25	1.00	Average
10. Selecting an appropriate research method	3.45	0.90	Average
11. Choosing an appropriate method analysis of data	3.41	0.98	Average
12. Interpreting the result of a research study	3.43	1.10	Average
Overall	3.45	1.01	Average

Scale: 1.00–1.49 –Very Poor; 1.50–2.49 –Poor; 2.50–3.49 –Average; 3.50–4.49 –High; and 4.50–5.00 –Very High

Table 5 shows an overall mean of 3.45 and an overall SD of 1.01, which was interpreted as an average based on the scale given. This result means that teachers' skills in terms of research methodology are at an average level.

A study in Pagadian City revealed four (4) factors of instructors' research engagement: administrative support, recognition and promotion, motivation, and institutional requirement. It further showed that instructors' non-engagement in research could be due to four (4) factors: time constraints, lack of experience and training, financial limitation, and lack of motivation (Celesio, 2020). Another study provides evidence in favor of the hypothesis that a unifying research practice exists. Across various academic disciplines, research can be described as a process, which is systematic, methodologically controlled, and transparent, which needs to be reflected upon, and which includes discipline-specific content knowledge (Böttcher and Thiel, 2018). The analysis regarding research competencies pointed towards the different possibilities, ranging from the acquisition of instrumental skills to the attitude of a researcher (Verburgh, 2013) to the acquisition of "sustainability research and problem-solving competence," as proposed by Wiek et al. (2011).

The findings have shown that the teachers' methodology skills are interpreted as an average based on the data gathered. These findings suggested that there should be training and workshops regarding developing teachers' methodology skills that will help them acquire knowledge on research methods and procedures. With this, the Department of Education aims to strengthen the research area will be supported.

4.3. Teachers' performance

Teachers' performance refers to the performance level of teachers in their duties and responsibilities in the profession. This concept covers teachers' yearly performance ratings with the IPCRF as its basis. Table 6 presents teachers' performance levels based on their IPCRF rating for 2020-2021.

Table 6. Level of teachers' performance based on the IPCRF rating

Variable	Mean	SD	Interpretation
IPCRF Rating	4.454	0.29	Very satisfactory

Scale: Below 1.499 - Poor; 1.500-2.499 - Unsatisfactory; 2.500-3.499 – Satisfactory; 3.500-4.499 - Very Satisfactory; and 4.500-5.00 - Outstanding

Table 6 shows an overall mean of 4.454 and an overall SD of 0.29, which was interpreted as very satisfactory based on the scale given. This result means that teachers have a very satisfactory performance regarding their teaching competency. In addition, teacher participants in the study have performed well in their duties and responsibilities as teachers.

Ülger et al. (2014) stated that acquired competencies are the foundation for quality and effective teaching and a requirement for achieving education goals outlined in the educational process in a specialty area. Razdevik et al. (2006) defined the competencies of a teacher as the talents, knowledge, skills, and credentials required to implement the subject's aims. Kelemen (2012) adds that teachers' competencies include their motivation, knowledge, skills, and capabilities to realize professional education activities. Teachers' competence is also demonstrated by their ability to convey the most up-to-date and accurate information as well as their ability to select the most appropriate teaching method, as these two factors influence the level of interest, knowledge, and skills that children have to achieve to meet the learning objectives (Ednah, 2012; Oogarah-Pratap et al., 2004).

Teachers should always maintain good performance through the continuous development of skills, knowledge, and motivation. New challenges arise for the teachers in this new normal, but everything will go smoothly with passion. Table 7 presents the test of the relationship between teachers' knowledge and use of academic research databases and research skills using the Pearson correlation coefficient.

Table 7. Testing the relationship of teachers' knowledge and use of academic research databases and research skills ($n = 51$)

Variables	Pearson's r	Interpretation	p-value	Interpretation
Teachers' knowledge and use of academic research databases and research skills	.536	Strong positive correlation	.000	With significant relationship

Pearson's r Scale (Cohen, 1988): ± 0.10 =Weak correlation, ± 0.30 =Moderate correlation, ± 0.50 =Strong correlation

Teachers' Knowledge and Use of Academic Research Databases and Research Skills posted a strong positive correlation (Pearson-r = .536). More importantly, the two variables have a significant relationship (p-value < .05). These findings imply that if the knowledge and use of research databases increase, teachers' research skills will significantly and greatly improve. Conversely, if teachers' knowledge and use of research databases are underdeveloped, their research skills will also decrease. Thus, the null hypothesis was rejected, and the alternative hypothesis specifying a significant relationship between teachers' knowledge and use of academic research databases and research skills was accepted.

A statement supports the result, which stated that awareness and utilization of electronic databases individually and collectively influenced the research productivity of academic staff in private universities in South-West Nigeria. The observed correlation between awareness and utilization of electronic databases readily affirms the general perception by the academic staff that awareness and utilization of electronic databases will have a positive effect on research productivity (Adetomiwa and Okwilagwe, 2018). Studies in the developed world revealed a relatively high use of electronic scholarly journal databases by academic staff, who reported utilizing electronic journals daily or weekly for research reasons (Khan and Ahmad, 2009). Electronic journals in higher learning institutions were mainly used for research and education (Chirra and Madhusudhan, 2009).

Since the significant relationship between teachers' knowledge and use of academic research databases and research skills has been established, this recommends that teachers maximize the use of academic research databases to improve their research skills. Table 8 presents the test of the relationship between teachers' knowledge and use of academic research databases and teachers' performance using the Pearson coefficient of correlation, as shown on the next page.

Table 8. Testing the relationship of teachers' knowledge and use of academic research databases and teachers' performance ($n = 51$)

Variables	Pearson's r	Interpretation	p-value	Interpretation
Teachers' knowledge and use of academic research databases and teachers' performance	.031	No correlation	.202	No significant relationship

Pearson's r Scale (Cohen, 1988): ± 0.10 =Weak correlation, ± 0.30 =Moderate correlation, ± 0.50 =Strong correlation

Teachers' Knowledge and Use of Academic Research Databases and Teachers' Performance posted no correlation (Pearson-r = .031). More importantly, the two variables have no significant relationship (p-value > .05).

These findings imply no relationship among the variables, meaning they exist independently or do not associate with each other. Thus, the null hypothesis was accepted, and the alternative hypothesis specifying a significant relationship between teachers' knowledge and use of academic research databases and teachers' performance was rejected. According to a study with somewhat opposing results, electronic databases among academics and students in Agricultural Universities provide far-reaching benefits. It is used in research, teaching, and learning (Mohammed and Akor, 2017).

Another statement with opposite implications stated that members of the academic staff of Dar es Salaam University College of Education (DUCE) were searching electronic journals mainly for teaching purposes and research purposes (Msagati, 2014). However, in the same study, many research participants who did not use electronic journals used search engines. This situation might be attributed to the fact that search engines could serve as a communication tool and a source of information for teaching and research purposes. Thus, in this study, teachers' performance improved not only because of academic research databases. There are still many ways to enhance teachers' performance, including mentoring and using search engines where teachers are free to search for learning materials and teaching materials and, more importantly, search for teaching strategies and methods. Table 9 presents the relationship test between teachers' research skills and teachers' performance using the Pearson correlation coefficient.

Table 9. Testing the relationship of teachers' research skills and teachers' performance ($n = 51$)

Variables	Pearson's r	Interpretation	p-value	Interpretation
Teachers' research skills and teachers' performance	.070	No correlation	.232	No significant relationship

Pearson's r Scale (Cohen, 1988): ± 0.10 =Weak correlation, ± 0.30 =Moderate correlation, ± 0.50 =Strong correlation

Teachers' research skills and performance posted no correlation (Pearson-r = .070). More importantly, the two variables have no significant relationship (p-value > .05). These findings imply no relationship among the variables, meaning they exist independently or do not associate with each other. Thus, the null hypothesis was accepted, and the alternative hypothesis specifying a significant relationship between teachers' research skills and teachers' performance was rejected.

A statement with the opposite implication stated that prospective teachers' research skills develop their professional identity and contribute to implementing evidence-based techniques in teaching in nations where research activities are implemented in higher education (Naumescu, 2008; Niemi and Nevgi, 2014).

4.4. Implication of the study

The teachers' knowledge of academic research databases was inferior. Teachers have minimal knowledge and infrequent usage of academic research databases. The results of this study commend both positive and negative implications for research teachers. The results show them that using academic research databases enhances their research skills. Using academic research databases is one way of developing and strengthening their research skills, primarily since they teach research subjects.

On the other hand, the results revealed that research teachers have insufficient knowledge and infrequent usage of academic research databases. Though it is negative on the teachers' part, the results may serve as a basis for their plans for their professional development. The results also serve as the basis for curriculum planners in their decision-making for future curriculum development through its results. The results will also guide school administrators and supervisors in designing activities and programs for the schools that will familiarize research teachers with academic research databases and their utilization in the form of seminars, training, and workshops.

Secondary teachers with research engagement have minimal knowledge of the different databases necessary to build a robust literature review in doing research. They only rely on a few research databases to search for related literature. Thus, they can encounter exhausting the related literature of their research. Moreover, if they only use a few research databases, they can also share a few research databases with their students. Therefore, exposing these teachers to more research databases is needed to help them craft their literature review.

The no significant correlation between knowledge and usage of academic databases to teaching performance, as well as the research skills to teaching performance, means that secondary teachers can still excel in their teaching job without being good at research. Sometimes, teachers claim that doing research is just an additional task. They can still satisfy the other criteria in their performance evaluation without engaging in research. Nevertheless, it is an edge to their performance if they have research and publication.

This research contributes to the body of knowledge by giving the information that secondary teachers know only a few research databases necessary to build their literature. The low level of knowledge leads to low utilization of these useful research databases. Moreover, this research also conveys that in some public secondary schools in the Philippines, doing research does not necessarily lead to teaching excellence among teachers. This result is contrary to previous claims that research skills enhance teaching performance.

4.5. Conclusion and Recommendations

Based on the findings, the teachers' use of academic research databases and research skills are significantly correlated. If the knowledge and use of research databases increase, teachers' research skills will significantly improve. Conversely, if teachers' knowledge and use of research databases are underdeveloped, their research skills will also decrease. Another conclusion drawn from this study's findings is that teachers' performance has no significant relationship with teachers' use of academic research databases and research skills. Teachers' performance has no association between those two variables. Even if teachers have poor usage of academic research databases and are not that skilled in research, their performance level as teachers will not be affected. Teachers should be familiar with different academic research databases and use them to research and find relevant ideas helpful in teaching. Pieces of training and workshops are strongly suggested regarding academic research databases and their utilization to improve teachers' knowledge of academic research databases and their frequency of usage.

Author contribution statements

The authors contributed all to the research's design and implementation, the analysis of the results, and the writing of the manuscript.

Disclosure statement

The author reported no potential conflict of interest.

Ethics committee approval

All responsibility belongs to the researcher. All parties were involved in the research of his own free will.

References

- Abersek, B. (2012). Didactic of Science and Technology Education between Theory and Practice. Zavod RS za šolstvo, Ljubljana.
- Adetomiwa, B., & Okwilagwe, A. O. (2018). Awareness and use of electronic databases as determinants of research productivity of academic staff in Nigerian private universities. *Global Knowledge, Memory and Communication*, 67(6), 396-411. DOI: <http://dx.doi.org/10.1108/GKMC-03-2018-0027>
- Aina, R. F. (2014). Awareness, accessibility and use of electronic databases among academic staff of Babcock University Business School. *Kuwait Chapter of the Arabian Journal of Business and Management Review*, 3(6), 40. <https://bit.ly/3kxXW36>
- Ajebomogun, F. O. (2007). Impediments to harnessing scholarly electronic journals on the internet in developing countries: A Nigerian university case study. *Library Hi Tech News*, 24(6), 27 – 32. <https://bit.ly/3xOYAXx>
- Ajuwon, G. A., & Popoola, S. O. (2015). Influence of motivational factors on utilisation of Internet health information resources by resident doctors in Nigeria. *The Electronic Library*, 33(1), 103-119. <https://bit.ly/3hPJj9E>
- Aladeniyi, F. R. (2017). The use of e-journals by academic staff of Rufus Giwa Polytechnic, Owo, Ondo State, Nigeria. *International journal of library and information science*, 9(5), 37-43. <https://bit.ly/3hO8QzZ>
- Anaraki, L. N., & Babalhavaeji, F. (2013). Investigating the awareness and ability of medical students in using electronic resources of the integrated digital library portal of Iran: A comparative study. *The electronic library*, 31(1), 70 – 83. <https://bit.ly/3xPo9xP>
- Ansari, M. N., & Zuberi, B. A. (2010). Use of electronic resources among academics at the University of Karachi. *Library philosophy and practice*, 385, 1-7. <https://bit.ly/2VNGhtW>
- Antoniou, P., & Kyriakides, L. (2013). A dynamic integrated approach to teacher professional development: Impact and sustainability of the effects on improving teacher behaviour and student outcomes. *Teaching and Teacher Education*, 29, 1-12. <https://bit.ly/3BdvucZ>
- Asemi, A., & Riyahiniya, N. (2007). Awareness and use of digital resources in the libraries of Isfahan University of Medical Sciences, Iran. *The Electronic Library*, 35(3). <https://bit.ly/3wQErFF>

- Babu, S., & Mendro, R. (2003). Teacher accountability: HLM-based teacher effectiveness indices in the investigation of teacher effects on student achievement in a state assessment program. In *annual meeting of the American Educational Research Association (AERA), Chicago, IL, April*.
- Böttcher, F., & Thiel, F. (2018). Evaluating research-oriented teaching: a new instrument to assess university students' research competences. *Higher Education, 75*(1), 91-110. <https://bit.ly/3hObhm7>
- Brown, J., Lund, P., & Walton, G. (2007). Use of e-journals by academic staff and researchers at Loughborough University. *Loughborough University Library*. <https://bit.ly/3inCTxy>
- Celesio, G. A. (2020). Instructors' Engagement or Non-Engagement in Research: Towards Construct Development. *The New Educational Review, 62*(4), 157-171. <https://bit.ly/3nU88oa>
- Cheng, E. C. (2014). Learning study: nurturing the instructional design and teaching competency of pre-service teachers. *Asia-Pacific Journal of Teacher Education, 42*(1), 51-66. DOI: <http://doi.org/10.1080/1359866X.2013.869546>
- Chirra, R., & Madhusudhan, M. (2009). Use of electronic journals by doctoral research scholars of Goa University, India. *Library Hi Tech News, 26*(10), 12-15. <https://bit.ly/3exHk7L>
- Connaway, L. S., & Powell, R. R. (2010). *Basic research methods for librarians*. ABC-CLIO. <https://bit.ly/3BkTRfK>
- Creswell, J. W. (2002). *Educational research: Planning, conducting, and evaluating quantitative* (p. 676). Upper Saddle River, NJ: Prentice Hall.
- Curzon, L. B. (2003). *Teaching in further education: An outline of principles and practice*. A&C Black. <https://bit.ly/3rwgp1L>
- Dadzie, P. S. (2005). Electronic resources: access and usage at Ashesi University College. *Campus-wide information systems, 22*(5), 290-297. <https://bit.ly/3wOwoep>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly, 13*(3), 319-340. <https://bit.ly/3iFICQP>
- Dillon, I. F., & Hahn, K. (2002). Are researchers ready for the electronic-only journal collection?: results of a survey at the University of Maryland. *portal: Libraries and the Academy, 2*(3), 375-390. <https://doi.org/10.1353/pla.2002.0053>
- Ednah, O. (2012). The role of the home economics teachers in the primary school. *Journal of Research in Education, 1*(1), 62-67.
- Edwards, N. M., & Osipova, S. I. (2011). Research competence formation for the international scientific project (monograph). *International Journal of Experimental Education, 9*, 30-31.
- Gathoni, N., Gikandi, J., Ratanya, F., Njoroge, E. M., Wasike, E., Kiilu, D., & Kabugu, A. (2011). Monitoring and evaluation of electronic resources in academic and research institutions in Kenya. <https://bit.ly/3kxOexV>
- Huyen, T., (2003). A Study of Teacher Competence Performance and Needs for Teacher Competence Improvement in Thaibinh Province, Vietnam, Master Thesis, Graduate School of Education, Assumption University, Thailand.
- Iqbal, M. Z., & Mahmood, A. (2011). Factors related to low research productivity at higher education level. *Asian social science, 7*(2), 188. <https://bit.ly/3ktajxw>
- Iroaganachi, M. A., & Izuagbe, R. (2018). A comparative analysis of the impact of electronic information resources use towards research productivity of academic staff in Nigerian Universities. *Library Philosophy and Practice (e-journal)*. <https://bit.ly/3BkxSi4>
- Jauch, G.R., & Glueck, W.F. (2010). *Business Policy: Strategy Formation and Management*. Action. New York: McGrawHill, 1976. <https://bit.ly/3rl5k3f>
- Johnson, K. E. (2000). Constructive evaluations. *The Science Teacher, 67*(2), 38. <https://bit.ly/3hN4GbC>
- Kelemen, G. (2012). Ways to determine students to become competent teachers. *Procedia-Social and Behavioral Sciences, 47*, 1911-1916. <https://bit.ly/3rid71T>
- Khan, A. M., & Ahmad, N. (2009). Use of e-journals by research scholars at Aligarh Muslim University and Banaras Hindu University. *The Electronic Library, 27*(4), 708 – 717. <https://bit.ly/3xTYrbQ>
- Khutorskoi, A. V. (2009). Goals and objectives of the scientific school of education. *Experiment conducting in the school: The Internet, competence, heuristics*, 8-16.
- Khutorskoi, A. V. (2011). The innovative aspect of the competency approach in education. *T. I. Shamova scientific legacy and its influence on the decision of actual problems of modern education*, 79-83.
- Komarova, Y. A. (2008). Scientific-research competence of experts: functional and content description. *News of the Russian state pedagogical university named after AI Herzen, 11*(68), 69-77.
- Kowalczyk, D. (2016). Research methodologies: Quantitative, qualitative, and mixed methods [video file]. <https://bit.ly/3nEL0tn>
- Kwadzo, G. (2015). Awareness and usage of electronic databases by geography and resource development information studies graduate students in the University of Ghana. <https://bit.ly/3ezC2IX>
- Lebedev, E. V. (2009). Research competence development of the future managers. *Author's abstract of the candidate of pedagogic sciences*.
- Lwehabura, M. J. (2008). Skills and Training needs for use of electronic information resources (EIRS) among students in four Tanzanian Universities. *University of Dar Es Salaam Library Journal, 10*(1-2). <https://bit.ly/36IyjEz>
- Madhusudhan, M. (2010). Use of electronic resources by research scholars of Kurukshetra University. *The electronic library, 28*(4), 492-506. <https://bit.ly/3ewCfWA>
- Meerah, T. S. M., Osman, K., Zakaria, E., Ikhsan, Z. H., Krish, P., Lian, D. K. C., & Mahmud, D. (2011). Developing an Instrument to Measure Research Skills. *Procedia - Social and Behavioral Sciences, 60*, 630 – 636. DOI: <https://doi.org/10.1016/j.sbspro.2012.09.434>

- Mohammed, S. A., & Akor, P. U. (2017). Availability and utilization of electronic information databases for research by agricultural scientists in Federal University libraries in North Central Nigeria. *Library Philosophy and Practice*, 1-32. <https://bit.ly/2YIM8sd>
- Msagati, N. (2014). Awareness and use of scholarly electronic journals by members of academic staff: A case study of dar es salaam university college of education (DUCE). *Library Philosophy and Practice*, 0_1, 2-25. <https://bit.ly/2YjrLf4>
- Naumescu, A. K. (2008). Science Teacher Competencies in a Knowledge Based Society. *Acta Didactica Napocensia*, 1(1), 25-31. <https://bit.ly/3iqhWY>
- Nicholas, D., & Huntington, P. (2006). Electronic journals: are they really used? *Interlending & Document Supply*, 34(2), 74 – 77. <https://bit.ly/3iqQFQ6>
- Niemi, H., & Nevgi, A. (2014). Research studies and active learning promoting professional competences in Finnish teacher education. *Teaching and Teacher Education*, 43, 131-142. <https://bit.ly/3hNkhh8>
- Obuh, A. O., & Bozimo, D. O. (2012). Awareness and use of open access scholarly publications by LIS lecturers in Southern Nigeria. *International Journal of Library Science*, 1(4), 54-60. <https://bit.ly/2Tnz8Qn>
- Okello-Obura, C., & Magara, E. (2008). Electronic information access and utilization by Makerere University students in Uganda. *Evidence Based library and information practice*, 3(3), 39-56. <https://bit.ly/2Tlznv8>
- Oloruntoba, A., & Ajayi, M. T. (2006). Gender and research attainment in Nigerian agricultural universities. *Journal of Higher Education in Africa/Revue de l'enseignement supérieur en Afrique*, 4(2), 83-98. <https://bit.ly/3ipMns5>
- Oogarah-Pratap, B., Bholah, R., Cyparsade, M., & Mathoor, K. (2004). Influence of home economics on the nutrition knowledge and food skills of Mauritian school adolescents. *Nutrition & Food Science*, 34(6), 264-267. <https://bit.ly/3wQc7mS>
- Oyedapo, R. O., & Ojo, R. A. (2013). A survey of the use of electronic resources in Hezekiah Oluwasanmi library, Obafemi Awolowo university, Ile-Ife, Nigeria. *Library Philosophy and Practice (e-journal)*. <https://bit.ly/3wRpD9y>
- Razdevšek Pučko, C., & Rugelj, J. (2006). Kompetenec v izobraževanju učiteljev [Competencies in teacher education]. *Vzgoja in izobraževanje*, 37(1), 34-41.
- Sethi, B. B., & Panda, K. C. (2012). Use of e-resources by life scientists: a case study of Sambalpur University, India. *Library Philosophy and Practice*, 681. <https://bit.ly/3kAdH9Z>
- Shadrikov, V. D. (2006). Personal qualities of the teacher as components of professional competence. *Vestnik YGU named after PG Demidov*, 1, 15-21.
- Skornyakova, A. Y. (2013). Formation of research competences of training in mathematics of future bachelors of pedagogical education with use of the information and communication environment. *Author's abstract of the candidate of pedagogic sciences*.
- Struyven, K., Blicke, Y., & De Roeck, V. (2014). The electronic portfolio as a tool to develop and assess pre-service student teaching competences: Challenges for quality. *Studies in Educational Evaluation*, 43, 40-54. <https://doi.org/10.1016/j.stueduc.2014.06.001>
- Tigelaar, D. E., Dolmans, D. H., Wolfhagen, I. H., & van der Vleuten, C. P. (2005). Quality issues in judging portfolios: Implications for organizing teaching portfolio assessment procedures. *Studies in Higher Education*, 30(5), 595-610. <https://doi.org/10.1080/03075070500249302>
- Ülger, M., Yiğittir, S., & Ercan, O. (2014). Secondary school teachers' beliefs on character education competency. *Procedia-Social and Behavioral Sciences*, 131, 442-449. <https://bit.ly/3Bn8nN9>
- Verburgh, A. (2013). Research integration in higher education: prevalence and relationship with critical thinking. PhD thesis, University of Leuven (KU Leuven), Faculty of Psychology and Educational Sciences, Leuven. <https://bit.ly/3hStLCd>
- Wahab, E., Shamsuddin, A., Abdullah, N. H., & Hamid, N. A. (2016). Users' satisfaction and return on investment (ROI) for online database library databases: a Malaysian technical university perspective. *Procedia-Social and Behavioral Sciences*, 219, 777-783. <https://bit.ly/3rknmCN>
- Wiek, A., Withycombe, L., & Redman, C. L. (2011). Key competencies in sustainability: a reference framework for academic program development. *Sustainability science*, 6(2), 203-218. <https://bit.ly/3rm8WBZ>
- Wildová, R. (2014). Training of elementary school teachers – Issues and Trends Republic. *Procedia - Social and Behavioral Sciences*, 141(25), 1112-1115. DOI: <https://doi.org/10.1016/j.sbspro.2014.05.187>