



USE OF CLOUD COLLABORATIVE TOOLS FOR EFFECTIVE SOCIAL AND PROFESSIONAL ACTIVITIES BY LECTURERS IN SELECTED UNIVERSITIES IN LAGOS STATE

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Abstract

The study examined the use of cloud collaborative tools for effective social and professional activities by lecturers in universities in Lagos State and as well as contribution to knowledge. Correlational survey research design was adopted using two two-stage sampling techniques to select 301 lecturers out of 1,372 from 4 Universities in Lagos State. Data collected were analysed using descriptive statistics. Findings revealed high utilization of cloud collaborative tools by lecturers in selected universities in Lagos State ($\bar{x}= 3.17$). The tools used are WhatsApp (97.9%), Google Workspace (93.8%), Zoom (86.9%), Telegram (78.4%), and Yahoo Mail (76.6%). The lecturers use these tools for social and professional activities ($\bar{x}= 3.38$) as well as for knowledge and professional development ($\bar{x}= 3.37$). Findings identified message overload and high expectations of availability as challenges to the use of these tools at ($\bar{x}= 3.05$) and ($\bar{x}= 2.98$), respectively. It was recommended that universities capitalize on the high utilization of cloud collaborative tools by authorizing virtual lectures for large classes and creating a feedback mechanism for lecturers to share their experiences and suggest improvements related to the use of these tools.

Keywords: Cloud Collaborative Tools, Lecturers, Use of cloud collaborative tools, Universities in Lagos State.

Introduction

Collaboration is a fundamental requirement for the generation of valuable ideas, knowledge, and problem-solving across many disciplines. The use of cloud collaborative tools is the application of cloud collaborative tools such as Google Workspace, Whatsapp, Zoom, Telegram, and Yahoo mail to personal and professional activities. Zippa (2022) indicated that collaboration has been proven to increase job performance and reduce the chances of burnout and work-related stress. Most collaborative cloud tools are free, although some require an annual subscription for advanced features such as larger storage space, increased number of participants, longer meeting durations, and client support services, among others. As mentioned by Adamu (2021) effective collaboration should involve unbroken communication and constant

feedback between individuals with common goals, and these features are adequately catered for on the cloud.

According to Lutkevich and Sargent (2023) as well as Froehlich and Brush (2023), Cloud collaborative tools are online services and software applications used for communication, coordination, conferencing, and knowledge sharing. These tools are Google Workspace, Microsoft OneDrive, WhatsApp, WPS Office, Microsoft Teams, Telegram, Skype, Yahoo Mail, and Zoom. Cloud collaborative tools enable multiple individuals and organizations to create, edit, share, review, access, and store documents simultaneously in different locations. This facilitates lecturers from far and near to use cloud tools and easily collaborate with each other as well as students for effective teaching and learning as well as project management.



Research Questions

1. What are the cloud collaborative tools used by lecturers for effective social and professional activities in selected universities in Lagos State?
2. What is the extent of use of cloud collaborative tools by lecturers for social and professional activities in selected universities in Lagos State?
3. What is the extent of use of cloud collaborative tools by lecturers for knowledge and professional development in selected universities in Lagos State?
4. What are the challenges encountered by lecturers when using cloud collaborative tools for effective social and professional activities

Literature Review

Cloud Collaborative Tools for Social and Professional Activities

Cloud collaborative tools are technological innovations that ease professional development, improve workplace practices, and simulate partnership and cooperation in universities (Gregorio et al., 2019; Rahman et al., 2020). These tools include Google Workspace, Microsoft Teams, Zoom, Skype, Yahoo Mail, Microsoft OneDrive, WPS Office, and WhatsApp. Benefits of cloud collaborative tools include increased productivity, flexible work scheduling, document safety, improved communication between colleagues, easier access to files, reduced file duplicates, easier project management, increased creativity, easier brainstorming, mobility of work, higher participation of team members, increased technical skills, easier professional development, and enhanced learning experience of students (Gregorio et al., 2019; Rahmah, 2019; Rahman, et al., 2020).

Based on Cahill (2014), Google Workspace is a collection of network applications used for collaborative communication and productivity developed by Google; Users have 15GB of free

storage across all applications. It comprises Google Mail, Drive, Meet, Calendar, Chat, Jam board, Docs, Sheets, Slides, Keep, Sites, and Forms. It is easy to use but requires a subscription fee for advanced features. Microsoft Teams is an application designed by Microsoft for communication and coordination. It integrates well with other Microsoft applications such as Excel and PowerPoint. The application accommodates 300 participants per meeting and provides 10 gigabytes of free storage space per user (Al-Majali, 2022). Mahr et al. (2021) described Zoom as a video conferencing software capable of screen sharing, recording, virtual backgrounds, and live chats and it accommodates up to 1,000 participants for premium users and 100 for free users. Skype is a cloud communication software owned by Microsoft, popularly used for videoconferencing. It is used to make video and audio calls, send text messages; documents, audio or video messages and most of its services are free. It accommodates a maximum number of 100 participants and audio or video calls have a usage limit of 24 hours per day, every day (Novak & Watts, 2014).

Yahoo Mail as indicated by Qutab et al. (2022) is an online electronic mailing service with search and archive features. Users can create signature responses, create folders, save contacts, and have 1 terabyte free storage space. It enables multiple user accounts and shared inboxes from separate accounts. Wilson and Wilson (2019) described Microsoft OneDrive as a storage and collaborative web application that provides 5GB storage space for free. The application automatically saves files and version history of files and integrates well with other Microsoft software such as Word, PowerPoint, and Excel. WPS Office according to Aprilia (2022) is an office suite that performs tasks such as word processing, creating spreadsheets and presentations using pre-made templates, converting PDF files into



editable formats, and cloud storage. Users have 1 gigabyte of free storage space and can easily share documents, recover accidentally deleted or removed files, and record presentations. WhatsApp is a popular communication application used for instant audio and text messaging, file sharing, status updates, and group chat. Users can share live locations and the application is completely free (De Benedictis et al., 2019).

Extent Of Use of Cloud Collaborative Tools for Faculty Activities

Bawa and Baba (2020) and Anyim (2021) noted that lecturers use cloud collaborative tools for individual and collective research, scholarship, grants, awareness of trends and professional development. Rahmah (2019) stated that with cloud collaborative tools like Zoom, Skype, and Google Meet, university lecturers create virtual classrooms to lecture students, they can create groups for assignments or projects with deadlines, host meetings, share files, examine student's performance and quickly modify lecture content. Students can easily submit assignments, conduct peer reviews, access information resources, administer and respond to questionnaires at various locations and at different times using cloud collaborative tools. Similarly, Al-Samarraie and Saeed (2018) explained that the use of cloud collaborative tools by lecturers reduces the risk of losing data such as lecture notes, attendance, or performance registers through system crash, loss of document, or loss of device. Collaboration with professionals from different universities has become simple with tools like Zoom, Office, Dropbox, Microsoft OneDrive, Google Workspace, and Microsoft Teams. Wasteful spending is eliminated as universities organize virtual conferences and workshops with as many as 500 participants at minimal cost. Avci and Adiguzel (2017) stated that the use of cloud collaborative tools in universities improved scalability because curricular or extracurricular activities can be

reduced or increased as desired without many infrastructural changes since most academic and administrative activities can be carried out virtually.

University lecturers increase collective learning through live chats, virtual laboratories, streamed lectures, and online assessments made possible through the use of cloud collaborative tools. Adamu (2021) stated that through the use of knowledge-sharing cloud collaborative tools like WPS Office and Google Docs, lecturers and students have access to large files that most email servers cannot easily manipulate. At the University of Michigan, Hershock and La Vaque (2012) reported that lecturers use Google Workspace effectively, and its use promotes interdisciplinary collaboration and provides adequate monitoring and timely feedback on group projects, thereby removing spatial barriers to teamwork. Records of documents related to course content and learning activities are often archived on cloud collaborative tools such as Google Docs, Microsoft OneDrive, and WPS Office so that students and staff can revisit them to meet their information needs (Oyeniran, et al., 2021). Similarly, Al-Samarraie and Saeed (2018) mentioned that cloud collaborative tools such as Google Workspace create opportunities for collaborative problem solving, peer instruction, evaluation of course content, and interactions with students and their lecturers before, during, or after physical classes which results in greater student engagement. Based on Hershock and La Vaque (2012) lecturers that use cloud collaborative tools to achieve course objectives indirectly prepare students for workplace experiences requiring the use of cloud collaborative tools.

Ibe, (2024) reported that cloud collaborative tools are used to a moderate extent in the teaching and learning of Chemistry in colleges of education in South East, Nigeria. Ogbuefi and Ile (2024) revealed that tertiary institutions in Anambra State use Google Classroom to a



small extent for instructional delivery. Saidu and Ibrahim (2021) had similar findings, stating that northern lecturers used cloud collaborative tools to a small extent despite their numerous benefits.

Contributions of Cloud Collaborative Tools for Knowledge and Professional Development

Tan and Kim (2015) revealed that lecturers found cloud collaborative tools such as Google Docs to be very useful in meeting their collaborative needs, and their usage expectations were met. This is similar to the findings of Nithya and Selvi (2017), which highlight Google Docs as a useful tool in students' academic activities such as data set preparation, project review presentation, and development of virtual knowledge-sharing attitudes. Cloud collaborative tools such as Skype, WPS Office, and Google Workspace were beneficial for real-time collaborative projects and workshops by engineering undergraduate students specializing in cloud-based computer-aided design (Barrie, 2016). Bawa and Bawa (2020) also stated that students who are exposed to audio or video information resources available on cloud collaborative tools have higher levels of creativity and innovation, are less frustrated, and are more prepared during lectures.

Cloud collaborative tools are used to increase productivity, promote networking and enhance professional development (Carroll et al., 2010). Tools like Google Docs and Microsoft Word Online allow multiple lecturers to collaborate on documents in real time, making it easier to co-author papers and reports (Yusuf & Balogun, 2021). Bezliudnyi, et al. (2022), however, found that the majority of lecturers in Ukraine considered the cloud collaborative tools they used (namely Google Meet, Skype, Zoom, and Viber) insufficient in meeting functional needs for lecture delivery.

Findings from Ilaria et al. (2022) revealed that the use of cloud collaborative tools by Italian lecturers was resourceful for personal and

professional development but the use of the tools brought about negative emotional experiences such as anger, irritability, mistrust, and incoherency due to a lack of proper training on using the tools. Gregorio et al. (2019) and Rahman et al. (2020), affirmed that cloud collaborative tools ease professional development, improve workplace practices, and simulate partnership and cooperation in universities. The use of cloud collaborative tools has become a crucial component of the professional development and capacity building of academic staff in Nigerian universities. The use of cloud collaborative tools for webinars, training programs and open online courses has provided opportunities for lecturers to constantly increase their knowledge (Oshebor & Okekeuche, 2024)

Challenges Militating Lecturers from Using Cloud Collaborative Tools for Effective Social and Professional Activities

Regardless of the numerous benefits of cloud collaborative tools, there are some challenges which limit their use in universities. Saidu and Kwadan (2020) identified some challenges to the use of cloud collaborative tools by lecturers in universities, such as unstable internet connection, inappropriate language, message flooding, eye strain, data security, data privacy, harassment issues, and attitudinal factors. Duong and Nguyen, (2021) identified lack of technical knowledge, unstable power supply and internet connection, lack of motivation, and poor digital skills as challenges in using cloud collaborative tools. Lecturers also expressed other challenges such as irregular participation, poor conduct or misdemeanour, skepticism about the overall effectiveness of the tools, computer anxiety, inadequate infrastructure and security for equipment, data security, data privacy, vendor lock-in, and reliability concerns (Alharthi, Yahya, Walters and Wills, 2015; Olutola and Olatoye, 2015; Oyeniran et al., 2021).



Methodology

The Media Richness Theory (MRT) by Daft and Lengel (1986) was used to comprehend this study. MRT postulates that communication media can be evaluated based on four criteria: ability to provide timely feedback, ability to transmit multiple signals such as audio, video, and text, variety of languages available on the medium and personal or customized features available. These criteria determine the richness or leanness of a communication medium, and individuals primarily decide to use a communication tool based on its richness. Most cloud collaborative tools are rich channels of communication that can quickly deliver accurate information without ambiguity.

A survey research design of the correlational type was adopted for the study. A two-stage sampling technique, namely purposive sampling and stratified sampling, was used for sample selection. Purposive sampling was used for the selection of universities in Lagos State. This selection was carried out based on the year of establishment and the similarity of available faculties. Hence, four (4) universities were selected for this study, namely Lagos State University, University of Lagos, Anchor University and Caleb University. The lecturers

Results

1. Cloud collaborative tools used by lecturers for effective social and professional activities in selected universities in Lagos State.

common to these Universities are Science, Arts/ Humanities, and Social and Management Sciences. Secondly, the four selected universities formed the stratification, and from each stratum, Krejcie and Morgan (1970) sample size table was adopted such that a sample size of 301 was determined and proportionately distributed to the stratum based on a 0.22 sample ratio.

The Use of Cloud Collaborative Tools Questionnaire was developed as an instrument to gather data from the lecturers, and 301 copies were administered. The questionnaire had a reliability index of 0.72. Data obtained from the research instrument was analysed using SPSS version 22 as well as descriptive statistics. 96.7% of the questionnaires were retrieved, and these were used for data analysis of this study. was used to answer the research questions.

The researcher acknowledged all authors whose findings were cited during this study. The purpose of the study was explained to all respondents, and participation was voluntary with adequate consent. All data obtained from the respondents was used only for research purposes, and the identity of respondents remained anonymous.



Table 4.1: Cloud collaborative tools used by lecturers.

Cloud collaborative tools	N	Frequency	Percentage (%)
WhatsApp	291	285	97.9
Google workspace	291	273	93.8
Zoom	291	253	86.9
Telegram	291	228	78.4
Yahoo mail	291	223	76.6
WPS office	291	223	76.6
Microsoft teams	291	117	40.2
Microsoft OneDrive	291	112	38.5
Skype	291	61	21.0

Analysis of data showed that the cloud collaborative tools used by lecturers in selected universities in Lagos State are: WhatsApp (97.9%), Google workspace (93.8%), Zoom (86.9%), Telegram (78.4%), Yahoo mail (76.6%) and WPS office (76.6%).

2. Extent of use of cloud collaborative tools by lecturers for social and professional activities in selected universities in Lagos State

Table 4.2: Use of cloud collaborative tools for social and professional activities

Use of cloud collaborative tools	VHE	HE	ME	LE	Mean \bar{x}	Std. Dev.
I use cloud collaborative tools for research activities and academic group discussions	248 85.2%	32 11%	8 2.8%	3 1.0%	3.80	.53
I use cloud collaborative tools for formal and informal discussions	231 79.4%	40 13.8%	15 5.2%	5 1.7%	3.71	.5
My ability to use cloud collaborative tools effectively contributes to my professional development	205 70.5%	57 19.6%	19 6.5%	10 3.4%	3.57	.61
I rely on cloud collaborative tools for professional updates and trends in the society	204 70.1%	54 18.6%	25 8.6%	8 2.8%	3.56	.58
I use cloud collaborative tools to create my social and professional identity	122 41.9%	131 45.0%	30 10.3%	8 2.8%	3.26	.82
The engagements I get on cloud collaborative tools reflect on my attitude and activities	109 37.5%	138 47.4%	34 11.7%	10 3.4%	3.19	.69



I encourage friends and colleagues to use cloud collaborative tools frequently.	109 37.5%	136 46.7%	35 12.0%	11 3.8%	3.18	.71
I feel disconnected from colleagues and friends when I have not logged into any cloud collaborative tool.	87 29.9%	80 27.5%	100 34.4%	24 8.3%	2.79	.97
Average Mean					3.38	0.68

Decision rule of $\bar{x} < 2.5 = \text{Low}$, $\bar{x} = 2.5 - 2.7 = \text{Moderate}$ and $\bar{x} = > 2.8 = \text{High}$

Findings in table 4.2 show that lecturers in selected universities in Lagos State use cloud collaborative tools for social and professional activities to a high extent. This result attests to the findings of Hershock and La Vaque (2012) as well as Basilaia, et al., (2020) who confirmed to the usefulness of cloud collaborative tools in meeting academic goals and social desires of university lecturers. The lecturers use cloud collaborative tools for

research activities and academic group discussions, formal and information discussions, professional development and professional updates and trends in society. Social connectedness to cloud collaborative tools is however moderate as indicated by low feelings of disconnection from colleagues and friends when they have not logged into any of these tools.

3. Extent of use of cloud collaborative tools by lecturers for knowledge and professional development in selected universities in Lagos State

Table 4.3: Use of cloud collaborative tools for knowledge and professional development.

Use of cloud collaborative tools	VHE	HE	ME	LE	Mean \bar{x}	Std. Dev.
I have made significant contributions to my profession while using cloud collaborative tools	205 70.5%	57 19.6%	19 6.5%	10 3.4%	3.57	.54
I am able to establish relationships and collaborate with colleagues through cloud collaborative tools	191 65.6%	59 20.3%	30 10.3%	11 3.8%	3.48	.58
I respond quickly to information obtained from cloud collaborative tools.	120 41.2%	143 49.1%	18 6.2%	10 3.4%	3.28	.67
I can attest to trustworthiness of information sent and received on cloud collaborative tools	103 35.4%	139 47.8%	39 13.4%	10 3.4%	3.15	.69
Average Mean					3.37	0.62

Decision rule of $\bar{x} < 2.5 = \text{Low}$, $\bar{x} = 2.5 - 2.7 = \text{Moderate}$ and $\bar{x} = > 2.8 = \text{High}$

Table 4.3 shows that lecturers have made significant contributions to their profession while using cloud collaborative tools ($\bar{x}=3.57$). This finding supports the assertion of

Bawa and Baba (2020) and Anyim (2021) who noted that lecturers use cloud collaborative tools for individual and collective research, scholarship, and grants as well as awareness of



trends and professional development. Lecturers signified that they can establish relationships and collaborate with colleagues through cloud collaborative tools. They

respond quickly to information obtained from the tools and are confident in the information obtained via these tools.

4. Challenges encountered by lecturers when using cloud collaborative tools for effective social and professional activities

Table 4.4: Challenges encountered using cloud collaborative tools.

Challenges encountered	Strongly agree	Agree	Disagree	Strongly Disagree	Mean \bar{x}	Std. Dev.
Message overload	96 33%	135 45.4%	39 13.4%	21 7.2%	3.05	1.06
High expectation of availability	89 30.6%	131 45.0%	47 16.2%	24 8.3%	2.98	.72
Poor Internet connectivity	83 28.5%	118 40.6%	59 20.3%	31 10.7%	2.87	.76
Average Mean					2.97	0.85

The outcome of the study, as shown in Table 4.4 indicates a high level of discouragement to use the tools due to message overload, high expectation of availability and poor internet connectivity. Hence, the major challenge encountered while using cloud collaborative tools is message overload. This finding is in line with that of Gon and Rawekar (2017), who indicated unstable internet connection, inappropriate language, and message flooding as challenges limiting the use of cloud collaborative tools.

DISCUSSION

The cloud collaborative tools used by lecturers for effective social and professional activities in selected universities in Lagos State are WhatsApp, Google Workspace, Yahoo Mail, Telegram, WPS Office, and Zoom. Over 75% of respondents in this study use six (6) out of the nine (9) cloud collaborative tools investigated. The high utilization of cloud collaborative tools can be attributed to the vast benefits these tools offer. Cloud collaborative tools provide affordable and seamless

communication, knowledge sharing, and virtual conferencing among lecturers. The high utilization can also be attributed to the successful adoption of technological developments by lecturers in selected universities in Lagos state, such as online teaching and CBT examinations. Ogwunte and Amadi (2020) as well as Ayolugbe et al. (2021) and Anyim (2021) had comparable results indicating high use of cloud collaborative tools, particularly Zoom, Google Workspace, and WhatsApp by lecturers of Nigerian universities.

Findings from this study indicate that lecturers in selected universities in Lagos State do not utilize Microsoft Teams, Microsoft OneDrive, and Skype at significant levels. Al-Majali (2022) declared Microsoft Teams contributes significantly to the productivity of lecturers in Jordanian universities; however, usage of Microsoft Teams by lecturers in selected universities in Lagos State is low. This may be due to the complexity of the tool compared to other communication and coordination cloud collaborative tools such as Google Workspace. Social influence may also contribute to the



underutilization of Microsoft Teams; if the tool is widely used by the general public and many persons attest to its benefits and effectiveness in conveying information, there might be a significant increase in its use. Akande et al., (2022) concluded that Skype is used by lecturers of tertiary institutions in Osun State but findings from this study which is limited to selected universities in Lagos State indicate otherwise. This underutilization of Skype may be attributed to the availability of similar conferencing cloud collaborative tools such as Zoom which offers similar services with increased features. Microsoft One Drive is also underutilized by lecturers in selected universities in Lagos State probably due to the availability of similar storage and knowledge-sharing services on Google Workspace which offers free 15GB storage space to users as opposed to 5GB offered by Microsoft OneDrive.

Just as Hershock and La Vaque (2012) as well as Basilaia, et al., (2020) attested to the usefulness of cloud collaborative tools in meeting academic goals and social desires of lecturers in universities, it was revealed during the course of this study that lecturers in selected universities in Lagos State use cloud collaborative tools for social and professional activities. The lecturers indicated that the cloud collaborative tools of interest in this study are highly used for research activities and academic group discussions ($\bar{x} = 3.80$). This is not surprising as cloud collaborative tools such as WhatsApp, Google Workspace, WPS Office, and Zoom, are extremely beneficial for communication between individuals and groups, research survey, data gathering as well as documentation.

Cloud collaborative tools are used for formal and information discussions among lecturers, they rely on these tools for professional updates and trends in society and the adequate use of cloud collaborative tools contributes to their professional development. This is also not surprising because the cloud collaborative

tools mostly used by lecturers namely WhatsApp, Google Workspace, Yahoo mail, Telegram, WPS Office, and Zoom, enable real-time yet flexible communication, documentation, coordination, and project management. Adequate knowledge of the use of these tools contributes to digital literacy and productivity of lecturers which is necessary for professional development (Carroll et al., 2010).

Lecturers in selected universities in Lagos State have moderate social connection to cloud collaborative tools as indicated by moderate feelings of disconnection from colleagues and friends when they have not logged into any cloud collaborative tool. This shows lecturers can manage their online and offline relationships and they have moderate chances to be addicted to any cloud collaborative tool.

This study also found that lecturers in selected universities in Lagos State utilize cloud collaborative tools for knowledge and professional development. This finding supports the assertion of Bawa and Baba (2020) and Anyim (2021) who noted that lecturers use cloud collaborative tools for individual and collective research, scholarship, and grants as well as awareness of trends and professional development. The lecturers signified high utilization of cloud collaborative tools has enabled them to make significant contributions to their profession, establish relationships with other professionals, and collaborate for various purposes. Lecturers of the selected universities in Lagos State respond quickly to information received on cloud collaborative tools and they are confident in the credibility of information transmitted on these tools. These results are in line with Gregorio, et al., (2019) and Rahman, et al. (2020) who opined that cloud collaborative tools are ease professional development, improve workplace practices, simulate partnership and cooperation among universities lecturers.



This study identified message overload, high expectations of availability, and poor internet connectivity as challenges encountered by lecturers in selected universities while using cloud collaborative tools. This finding is in line with that of Gon and Rawekar (2017) who indicated unstable internet connection, inappropriate language, and message flooding as challenges limiting the use of cloud collaborative tools. Message overload was indicated as a major challenge to the use of cloud collaborative tools by lecturers in this study. Message overload is a situation in which a user receives multiple messages from various groups and individuals simultaneously. This situation can accumulate into a pile of unread messages and consequently increase the already high workload of faculty. The study showed that lecturers are discouraged by high expectations of digital availability, which creates a psychological burden on the user as a result of multiple messages demanding attention. Poor internet connection was also indicated as a significant challenge affecting the use of cloud collaborative tools. All cloud collaborative tools require a stable internet connection for swift operations, but this appears to be unavailable in most parts of Nigeria due to inadequate infrastructure and resource management.

Conclusion

Findings from this study have shown that the use of cloud collaborative tools by lecturers in selected universities in Lagos State is high and frequent. This implies that the lecturers are in tune with beneficial technologies such as cloud collaborative tools. Lecturers utilize these tools for social and professional reasons despite the challenges associated with the use of cloud collaborative tools. The fact that cloud collaborative tools help build a knowledge base and enhance the professional skills of lecturers demonstrates that Nigerian academics actively participate in the use of developmental technologies and can add value to the system.

Recommendations

- High utilization of cloud collaborative tools by lecturers should be further promoted by the University Management by ensuring large classes are taken online using these tools.
- To further improve the use of cloud collaborative tools, a feedback mechanism can be created by cloud service providers and university management for lecturers to share their positive or negative experiences and suggest improvements related to the use of cloud collaborative tools.
- Constant training should be given to all members of the university community to promote the use of the cloud collaborative tool. The training can be sponsored by university management, faculties or associations of knowledge.
- The challenge of message overload can be overcome by prioritizing messages based on urgency or importance, using labels and filters to group similar messages, unsubscribing from unnecessary groups and mailing lists and establishing a healthy work-life balance.



REFERENCES

- Adamu, S. U. (2021). A review on the benefits of cloud computing in education. *KASU Journal of Mathematical Science*, 2(1), 21-27.
- Ahmad, S., Kamba, A., & Usman, M. (2012, September). Technophobia versus ICT acceptance and use in teaching and learning among academic staff of universities in northern Nigeria [Paper presentation]. *British Educational Research Association Annual Conference 2012*, University of Manchester, George Kenyon Hall.
- Akande, A. R., & Ademiluyi, A. B. (2022). Perceived influence of social media on teaching and learning of business education courses in tertiary institutions in the post-COVID-19 era. *KWASU International Journal of Education*, 4(1).
- Anyim, O. W. (2021). Use of academic social networking sites among lecturers in state universities. *Journal of Media, Culture and Communication*, 1(1), 1–13.
- Ayolugbe, C. J., Jidere, A. J., & Ogwo, U. (2021). Utilization of Zoom as an interactive platform in repositioning library administration/management for effective service delivery in academic libraries in Nigeria. *Library Philosophy and Practice (e-journal)*, Article 6514.
- Basilaia, G., Dgebuadze, M., Kantaria, M., & Chokhonelidze, G. (2020). Replacing the classic learning form at universities as an immediate response to the COVID-19 virus infection in Georgia. *International Journal for Research in Applied Science and Engineering Technology*, 8(3), 101-108.
- Bawa, N., & Baba, N. (2020). Flipping the classroom using simple technologies by lecturers in Nigerian universities. *United International Journal for Research & Technology*, 2(2).
- Bezliudnyi, O., Komar, O., Kolisnichenko, A., & Kapeliushna, T. (2022). Academic staff adaptation to the challenges of the COVID-19 pandemic: A case of Pavlo Tychyna Uman State Pedagogical University. *Advanced Education*, 20.
- Etodike, E. C., Okeke, H. C., Nnaebue, C. I., & Nwangwu, N. I. (2022). Working in the pandemic: Evaluating user-factors in Zoom meeting app usage among the academic staff of selected tertiary institutions in Anambra State, Nigeria. *Global Scientific Journal*, 10(4).
- Gon, S., & Rawekar, A. (2017). Effectiveness of e-learning through WhatsApp as a learning tool. *MVP Journal of Medical Sciences*, 4(19).
- Gregorio, J. M., Jörg-Henrik, H., & Markus, G. (2019). Does teacher collaboration improve student achievement? Analysis of the German PISA 2012 sample. *Frontiers in Education*, 4.
- Hershock, C., & LaVaque-Manty, M. (2012). Teaching in the cloud: Leveraging online collaboration tools to enhance student engagement. *Center for Research on Learning and Teaching, Occasional Paper 31*.
- Ibe, F. N. (2024). Assessing the integration of e-learning platforms in achieving effective teaching and learning of chemistry in colleges of education in



- South-East Nigeria: A case study of Anambra and Imo States. *International Journal of Research Publication and Reviews*, 5(2), 1948-1956. <https://doi.org/10.55248/gengpi.5.022.4.0525>
- Moghavvemi, S. (2014). Media richness theory for social media: Research, opportunities, and challenges.
- Ogbuefi, T. O., & Ile, C. M. (2024). Utilization of Zoom technologies and Google Classroom for instructional delivery by business educators in tertiary institutions in Anambra State. *International Journal of Innovative Education Research*, 12(2), 129-140.
- Ogwunte, P. C., & Amadi, E. A. (2020). Perceived influence of Zoom Cloud and WhatsApp technologies on instructional delivery in university business education classrooms in Rivers State. *International Journal of Innovative Information Systems & Technology Research*, 8(4), 15-21.
- Okeji, C. C., & Alex-Nmecha, J. C. (2022). Online LIS teaching and learning during COVID-19 in Nigeria: A case study. *Global Knowledge, Memory and Communication*, 71(3), 155-173.
- Oshebor, P. E., & Okekeuche, E. C. (2024). The role of digital technologies in enhancing research and innovation in Nigerian universities. *Journal of Education in Developing Areas*, 32(2).
- Owan, V. J., Asuquo, M. E., Makuku, V., & Etudor-Eyo, E. (2021). The extent of online platform utilization for scholarly research dissemination: A survey of academic staff in African universities. *Library Philosophy and Practice (e-journal)*, Article 5585.
- Rahman, M. M., Suhaimi Adam, M., & Abdul Rahim, N. H. (2020). Exploring the perceptions of faculty members and students on cloud computing adoption in higher educational institutions of Bangladesh. *IEEE 7th International Conference on Engineering Technologies and Applied Sciences (ICETAS)*, 1-5.
- Ugwoke, E., Edeh, N. I., & Ezemma, J. C. (2019). Business education lecturers' perception of learning management systems for effective teaching and learning accounting in universities in South-East Nigeria. *Library Philosophy and Practice (e-journal)*.
- Zippa. (2022). Workplace collaboration statistics. *Zippa*. Retrieved from <https://www.zippia.com/advice/workplace-collaboration-statistics/>



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