

Availability and Utilisation of E-Supervision of Instruction Facilities in the Post-COVID-19 Era



Omotayo Adewale Awodiji¹ , Musa Adekunle Ayanwale¹  & Michael Mayowa Oyedoyin² 

¹ University of Johannesburg, South Africa.

² University of Ibadan, Nigeria.

ABSTRACT

As a result of rapid globalisation, there have been some fundamental changes in education due to the rapid changes in knowledge, concepts, technology, and philosophy. COVID-19 has had devastating effects on the education sector. In Nigerian schools, supervisors, teachers, and students have always been required to interact face-to-face before this pandemic. This has led to using electronic facilities to carry out the instruction. Since supervision of instruction plays a vital role in the effective learning outcome. The study, therefore, seeks to investigate the availability and utilisation of electronic supervision of the instruction facilities after the COVID-19 era. A survey design was used to describe the state of e-supervision of instruction using a random sampling technique to select 226 participants from private secondary schools in Education District III, Lagos State. Descriptive and inferential statistics were adopted to establish the availability and utilisation of e-supervision instructions in the post-COVID-19 era. Most of the samples studied (principals, vice-principals, and teachers) demonstrated high levels of access to various tools (both synchronous and asynchronous) used for e-supervision. Effective supervision of teaching and learning will certainly occur in schools with the availability of these tools since COVID-19 has taught teachers how to continue their professions without being hindered by the surge in technology.

Correspondence

Omotayo Adewale Awodiji

Email: tayojss@gmail.com

Publication History

Received 31st July, 2022

Accepted 9th September, 2022

Published online 31st October, 2022

Keywords: *Asynchronous, E-supervision facilities, Instruction, Post-COVID-19, Synchronous*

INTRODUCTION

The outbreak of the COVID-19 pandemic in late 2019 caused a massive disruption in the social structures of many countries worldwide, leading to closures of schools, offices, and businesses and total lockdown in some countries. Several countries have been affected by the pandemic outbreak that originated in Wuhan, China.¹ Among many other institutions, schools were instructed to follow social

¹ Preeti Tarkar, "Impact Of Covid-19 Pandemic On Education System," *International Journal of Advanced Science and Technology* 29, no. 9 (2020): 3812–14, https://www.researchgate.net/publication/352647439_Impact_Of_Covid-19_Pandemic_On_Education_System.

distancing protocols to reduce the infection curve and fatality rates from the disease.² Apart from social distancing in public places, other measures were using face masks and hand sanitising, which became the talk of the world.³ Face-to-face instructional activities, including supervision, were banned and students were not allowed to return to the physical classroom without the government's approval.⁴ Apart from the ban on face-to-face teaching imposed by many governments, the disruption posed by the COVID-19 pandemic negatively influenced international education due to restrictions placed on immigration.⁵ In total, about 1.5 billion learners representing over 89% of all enrolled students, were affected by school closures all over the world.⁶

The lack of homogeneity in school calendars among different countries led to differences in response to the COVID-19 pandemic. Factors responsible for this lack of homogeneity in COVID-19 response include the beginning and end of academic years as well as the timings of school holidays.⁷ In South Africa, the closure of schools was initially in an attempt to bring forward the annual Easter vacation while making a corresponding response to controlling the spread of the virus.⁸ As the pandemic scoured on and lockdown measures persisted, its debilitating effects on education were becoming unbearable. Thus, educational institutions began to work ceaselessly to provide an alternative to face-to-face interactions that had been disrupted.⁹ Generally, the response of Africa to the COVID-19 pandemic came at a later stage than the rest of the world. This late response, identified by Tamarat and Teferra, can be viewed from two perspectives: the research activities embarked on to seek a cure and the search for an alternative to ensure continuity in education.¹⁰ Despite the low infection rate of COVID-19 among Africans, Marinoni et al. reported that 77% of higher educational institutions were closed down as a preventive measure against COVID-19. As a result, online learning became a major phenomenon in schools' response to overcoming education challenges in the middle of the pandemic.¹¹

Nigeria, and many other African nations, were spared from the spread of COVID-19 from China, with zero cases recorded as of January 2020. Nevertheless, by 28th February, Nigeria reported its first case, a Nigerian returning from the United Kingdom (UK). Almost two months later, 373 cases were confirmed, 99 recoveries were reported, and 11 deaths had occurred.¹² In response to this

² Shazia Rashid and Sunishtha Singh Yadav, "Impact of Covid-19 Pandemic on Higher Education and Research," *Indian Journal of Human Development* 14, no. 2 (August 23, 2020): 340–43, <https://doi.org/10.1177/0973703020946700>.

³ Labby Ramrathan, "School Curriculum in South Africa in the Covid-19 Context: An Opportunity for Education for Relevance," *Prospects* 51, no. 1–3 (October 6, 2021): 383–92, <https://doi.org/10.1007/s11125-020-09490-1>.

⁴ Xudong Zhu and Jing Liu, "Education in and After Covid-19: Immediate Responses and Long-Term Visions," *Postdigital Science and Education* 2, no. 3 (October 26, 2020): 695–99, <https://doi.org/10.1007/s42438-020-00126-3>.

⁵ T. Gonzalez et al., "Influence of COVID-19 Confinement on Students' Performance in Higher Education," *PLOS ONE* 15, no. 10 (October 9, 2020): e0239490, <https://doi.org/10.1371/journal.pone.0239490>.

⁶ Thanassis Karalis and Natassa Raikou, "Teaching at the Times of COVID-19: Inferences and Implications for Higher Education Pedagogy," *International Journal of Academic Research in Business and Social Sciences* 10, no. 5 (May 22, 2020), <https://doi.org/10.6007/IJARBS/v10-i5/7219>; Giorgio Marinoni and Hilligje van't Land, "The Impact of COVID-19 on Global Higher Education," *International Higher Education*, no. 102 (April 30, 2020): 7–9, <https://ejournals.bc.edu/index.php/ihe/article/view/14593>.

⁷ Gonzalez, et. al. "Influence of COVID-19 confinement on students' performance in higher education."

⁸ Ramrathan, "School curriculum in South Africa in the Covid-19 context."

⁹ Ramrathan, "School curriculum in South Africa in the Covid-19 context."; Mansi Babbar and Tushita Gupta, "Response of Educational Institutions to COVID-19 Pandemic: An Inter-Country Comparison," *Policy Futures in Education* 20, no. 4 (May 4, 2022): 469–91, <https://doi.org/10.1177/14782103211021937>.

¹⁰ Wondwosen Tamrat and Damte Teferra, "COVID-19 Threat to Higher Education," *International Higher Education*, no. 102 (April 30, 2020): 28–30, <https://ejournals.bc.edu/index.php/ihe/article/view/14615>.

¹¹ Zhu, and Liu, "Education in and After Covid-19: Immediate Responses and Long-Term Visions."; Marinoni, et.al. *The Impact of COVID 19 on Higher Education around the World.pdf*.

¹² Obiageri Bridget Azubuikwe, Oyindamola Adegboye, and Habeeb Quadri, "Who Gets to Learn in a Pandemic? Exploring the Digital Divide in Remote Learning during the COVID-19 Pandemic in Nigeria," *International Journal of Educational Research Open* 2 (2021): 100022, <https://doi.org/10.1016/j.ijedro.2020.100022>; Taibat Hussain, "Education and Covid-19 in Nigeria: Tackling the Digital Divide – SOAS Blog," SOAS - Blog, SOAS University of London. , 2022,

situation, on 19th March, the Ministry of Education of Nigeria announced a temporary suspension of school activities, effective 23rd March, to combat the spread of the coronavirus.¹³ This raised the following questions: Do Nigerian schools (private or public) have the technology to accommodate the approximately 46 million students affected?" Do Nigerian households have the resources to accommodate children who need to learn remotely? What facilities and skills do teachers and instructional supervisors have to deliver live lessons or record massive open online courses?¹⁴

The extent of private involvement in Nigeria's education system has been demonstrated through research. There are (71%) more privately-owned secondary schools than government-owned ones.¹⁵ In general, 75% of school children are enrolled in private schools. Privately owned schools were considerably more effective than government-run schools in terms of instructional activity.¹⁶ In most cases, private schools possessed more educational resources than public schools.¹⁷ Private schools have been the most patronised in Nigeria, especially in Lagos State, and profit-oriented institutions will not hesitate to make their schools run in the face of lockdown and post-lockdown to retain their control in the education business. Thus, the adoption of online instruction to reach out to their consumers (students) remotely. This informs the study's focus on private schools as major players in the education system.¹⁸ This study, however, explores the availability and utilisation of facilities for e-supervision instruction in the post-COVID-19 and fourth industrial era. Thus, a qualitative approach was used to collect data from the respondents to answer the following research questions:

- What is the level of availability of E-supervision tools post-COVID-19?
- Does gender cause variation in the utilisation of synchronous and asynchronous e-supervision tools?
- Does school heads' status cause variation in utilising synchronous and asynchronous e-supervision tools?

LITERATURE REVIEW

This section deals with a review of related studies on online learning and theoretical framework.

Online Learning

The pace at which schools all over the world adapted to online facilities to ensure continuity in learning and supervision of instruction activities despite the COVID-19-inflicted total lockdown was quite

<https://study.soas.ac.uk/covid-19-nigeria-digital-divide/?ref=dishapages>; Wasii Oyeleke Oyediran et al., "Prospects and Limitations of E-Learning Application in Private Tertiary Institutions amidst COVID-19 Lockdown in Nigeria," *Heliyon* 6, no. 11 (November 2020): e05457, <https://doi.org/10.1016/j.heliyon.2020.e05457>.

¹³ Hussain, *Education and Covid-19 in Nigeria: tackling the digital divide – SOAS Blog*; Oyediran, et.al "Prospects and limitations of e-learning application in private tertiary institutions amidst COVID-19 lockdown in Nigeria."

¹⁴ Hussain, *Education and Covid-19 in Nigeria: tackling the digital divide – SOAS Blog*.

¹⁵ James Tooley, Pauline Dixon, and Olanrewaju Olanriyan, "Private and Public Schooling in Low-Income Areas of Lagos State, Nigeria: A Census and Comparative Survey," *International Journal of Educational Research* 43, no. 3 (January 2005): 125–46, <https://doi.org/10.1016/j.ijer.2006.05.001>.

¹⁶ Tooley, Dixon, and Olanriyan.

¹⁷ Donald R. Baum, Husein Abdul-Hamid, and Hugo T. Wesley, "Inequality of Educational Opportunity: The Relationship between Access, Affordability, and Quality of Private Schools in Lagos, Nigeria," *Oxford Review of Education* 44, no. 4 (July 4, 2018): 459–75, <https://doi.org/10.1080/03054985.2017.1421153>; Tooley, et.al. "Private and public schooling in low-income areas of Lagos State, Nigeria.;" Tayo O. George et al., "Effective Service Delivery in Nigeria's Public Primary Education: The Role of Non-State Actors," *Journal of African Development* 15, no. 1 (2013): 221–45, <https://econpapers.repec.org/RePEc:afe:journl:v:15:y:2013:i:1:p:221-245>; Emmanuel Jimenez, Marlaine E. Lockheed, and Vicente Paqueo, "The Relative Efficiency of Private and Public Schools in Developing Countries," *The World Bank Research Observer* 6, no. 2 (1991): 205–18, <https://doi.org/10.1093/wbro/6.2.205>.

¹⁸ Esther O. Jatto et al., "School Proprietors' Perception and Attitude Towards the Adoption of Online Classes in the Covid-19 Era in Ibadan, Oyo State, Nigeria," *Nigerian School Library Journal* 20, no. 2 (September 13, 2022): 106–21, <https://www.ajol.info/index.php/nslj/article/view/231859>.

dramatic and transformative, even though it was referred to as “emergency e-learning protocols.”¹⁹ The term “emergency e-learning” or “emergency remote education” was applicable given the adoption of the facilities in the similitude of e-learning, online learning, homeschooling, or m-learning.²⁰ Despite the emergency nature of the adoption of e-learning facilities to bridge the gap of disruption created by COVID-19, online facilities became rapidly integrated into the fabric of the education system and other aspects of social life, such as remote working and virtual conferences.

E-learning, a new technology associated with the 21st century and the fourth industrial revolution instructional delivery, came with various facilities causing a total shift in the teaching and learning process.²¹ An electronic learning system is the adoption of technology facilities typically used in schools or training centres for delivering classroom instruction and learning.²² These new technologies eclipsed the epoch of learning facilities such as chalkboards, photocopiers, overhead projectors, videos, calculators, correspondence, and on-air classes to newly adopted resources like iPads, social media, the internet, Youtube, learning management systems (LMS), smartboards and microcomputers among others.²³ Prior to the advent of the COVID-19 Pandemic in early 2020, e-facilities, which feature as an aspect of the fourth industrial revolution in education, faced the challenges of adoption and acceptance due to a lack of requisite skills and technical difficulties for teaching and supervision.²⁴ This hampered students’ and teachers’ perspectives on the ability of e-facilities to aid instructional delivery.²⁵

Aside from this, many other challenges have been associated with e-learning instructional facilities pre-COVID-19. In many developing countries, perennial problems associated with e-learning include inadequate infrastructure, lack of stable internet connectivity and penetration into remote places, lack of ICT skills, and high cost of procurement and maintenance, aside from other challenges involving learning pedagogy and policy problems.²⁶ With COVID-19, however, came a forceful utilisation of virtual learning to maintain continuity in education delivery.²⁷ This prompted Dhawan to

¹⁹ Rashid, and Yadav, "Impact of Covid-19 Pandemic on Higher Education and Research."

²⁰ Aras Bozkurt et al., “A Global Outlook to the Interruption of Education Due to COVID-19 Pandemic: Navigating in a Time of Uncertainty and Crisis,” *Asian Journal of Distance Education* 15, no. 1 (June 6, 2020): 1–126, <http://www.asianjde.com/ojs/index.php/AsianJDE/article/view/462>.

²¹ Michael Agyemang Adarkwah, “‘I’m Not against Online Teaching, but What about Us?’: ICT in Ghana Post Covid-19,” *Education and Information Technologies* 26, no. 2 (March 16, 2021): 1665–85, <https://doi.org/10.1007/s10639-020-10331-z>.

²² Omotayo Awodiji and Ogbudinkpa Ijeoma Charity, “Exploring Offline and Online Educational Resources for Primary School Instruction in Nigeria,” *West African Journal of Education (WAJE)* 36 (2016), https://www.researchgate.net/publication/353002692_Exploring_offline_online_educational_resources_for_primary_school_instruction.

²³ Vanessa Chang, Christian Gütl, and Martin Ebner, “Trends and Opportunities in Online Learning, MOOCs, and Cloud-Based Tools,” in *Second Handbook of Information Technology in Primary and Secondary Education*, ed. Voogt J. et al. (Springer International Handbooks of Education. Springer, Cham, 2018), 1–19, https://doi.org/10.1007/978-3-319-53803-7_64-1.

²⁴ Ping Qiao et al., “The Development and Adoption of Online Learning in Pre- and Post-COVID-19: Combination of Technological System Evolution Theory and Unified Theory of Acceptance and Use of Technology,” *Journal of Risk and Financial Management* 14, no. 4 (April 5, 2021): 162, <https://doi.org/10.3390/jrfm14040162>.

²⁵ Sari Famularsih, “Students’ Experiences in Using Online Learning Applications Due to COVID-19 in English Classroom,” *Studies in Learning and Teaching* 1, no. 2 (August 31, 2020): 112–21, <https://doi.org/10.46627/SILET.V1I2.40>.

²⁶ Adarkwah, “I’m not against online teaching, but what about us?”; Shivangi Dhawan, “Online Learning: A Panacea in the Time of COVID-19 Crisis,” *Journal of Educational Technology Systems* 49, no. 1 (September 20, 2020): 5–22, <https://doi.org/10.1177/0047239520934018>.

²⁷ Barbara B. Lockee, “Online Education in the Post-COVID Era,” *Nature Electronics* 4, no. 1 (January 25, 2021): 5–6, <https://doi.org/10.1038/s41928-020-00534-0>.

refer to online learning as “a panacea in the time of crisis,” particularly teleconferencing software like Zoom, Skype, WebEx, and LMS software such as Google Classroom, Edmodo, and Schoology.²⁸

Online learning covers the broad terms of the 21st-century technological facilities rapidly improving the understanding of education worldwide. Other similar terms include open learning, web-based learning, m-learning, computer-mediated learning, online learning, and e-learning.²⁹ The opportunities and challenges provided by these facilities further became emboldened in the wake of the COVID-19 pandemic when mass adoption became grossly inevitable for universities, secondary and primary schools from all over the world.³⁰ With the adoption of e-learning in schools during the heat of COVID-19, e-supervision became highly important in monitoring academic activities. E-supervision or online supervision is a web-assisted model for academic supervision designed using web-assisted technology to overcome geographical barriers and assist teachers.³¹ Supervision of academic activities is role expected of the principal, who has the authority to design and develop school programs and conduct supervisory roles in ensuring their attainment.³² With the surge in the COVID-19 pandemic, face-to-face supervision became impracticable, especially since instructional activities were moved to online mode.³³

There is considerable evidence regarding gender differences in online learning outcomes, but the results are inconsistent and even paradoxical. Among users of online platforms, females show a more significant degree of commitment and engagement than males, while males have a more stable mindset toward online engagement. However, males have better technical skills and can use more learning strategies than females in virtual environments, even though females have better self-regulation than males.³⁴ An examination of gender differences in perceived ease of use, suspected external control, behavioural intention, and the use of e-learning platforms has been published. Variation favoured females with higher scores than males.³⁵ Considering the adoption of new

²⁸ Famularsih, *Students' Experiences in Using Online Learning Applications Due to COVID-19 in English Classroom*. Dhawan, "Online Learning : A Panacea in the Time of COVID-19 Crisis."

²⁹ Dhawan, "Online Learning: A Panacea in the Time of COVID-19 Crisis."

³⁰ Qiao, et.al. "The Development and Adoption of Online Learning in Pre- and Post-COVID-19."

³¹ G Habibi et al., "E-Supervision Using Web: Elementary School Teachers' Reaction," in *Proceedings of the International Conference on Education, Science and Technology - ICESTech 2020* (Jakarta: Redwhite Press, 2020), 25–30, <https://doi.org/10.32698/tech3230>.

³² Happy Fitria, Syarwani Ahmad, and Dewi Novita, "The Effectiveness of Internet-Based Supervision on The Covid 19 Pandemic Situation," *Tadbir : Jurnal Studi Manajemen Pendidikan* 5, no. 1 (April 29, 2021): 19, <https://doi.org/10.29240/jsmp.v5i1.2174>.

³³ Rupiah Rupiah, "Utilization of Information and Communication Technology (ICT) in Academic Supervision during the COVID-19 Pandemic," *Jurnal As-Salam* 5, no. 2 (November 21, 2021): 120–28, <https://doi.org/10.37249/assalam.v5i2.304>.

³⁴ Jorge Arenas Gaitán, Francisco Javier Rondán Cataluña, and Patricio Ramírez Correa, "Gender Influence in Perception and Adoption of E-Learning Platforms," in *Advances in Data Networks, Communications, Computers. 9th WSEAS International Conference on Data Networks, Communications, Computers*, ed. Nikos E. Mastorakis and Valeri Mladenov (Faro: WSEAS, 2010), 30–35; David Eshun Yawson and Fred Amofa Yamoah, "Gender Variability in E-Learning Utility Essentials: Evidence from a Multi-Generational Higher Education Cohort," *Computers in Human Behavior* 114 (January 2021): 106558, <https://doi.org/10.1016/j.chb.2020.106558>; Ricarda Corinna, Svea Isabel, and Matthias Wilde, "The Influence of Gender and Interest on the Use of Learning Strategies in Biology Lessons," *European Journal of Educational Research* 11, no. 1 (January 15, 2022): 587–97, <https://doi.org/10.12973/eu-jer.11.1.587>; Atika Qazi et al., "Gender Differences in Information and Communication Technology Use & Skills: A Systematic Review and Meta-Analysis," *Education and Information Technologies* 27, no. 3 (April 21, 2022): 4225–58, <https://doi.org/10.1007/s10639-021-10775-x>; Sebastián Benítez Larghi, "Gender Dimension of Digital Technologies," in *Consejo Nacional de Ciencia y Tecnología (CONICET)* (Argentina: GenderInSITE, 2021); Zhonggen Yu, "The Effects of Gender, Educational Level, and Personality on Online Learning Outcomes during the COVID-19 Pandemic," *International Journal of Educational Technology in Higher Education* 18, no. 1 (December 2, 2021): 14, <https://doi.org/10.1186/s41239-021-00252-3>.

³⁵ Patricio E. Ramírez-Correa, Jorge Arenas-Gaitán, and F. Javier Rondán-Cataluña, "Gender and Acceptance of E-Learning: A Multi-Group Analysis Based on a Structural Equation Model among College Students in Chile and Spain," *PLOS ONE* 10, no. 10 (October 14, 2015): e0140460, <https://doi.org/10.1371/journal.pone.0140460>.

technologies in education, this is an encouraging development because it shows that the traditional gap between males and females has disappeared.³⁶ Thus, gender could significantly influence the usage of asynchronous and synchronous devices for instructional supervision.

Teaching and learning in the classroom are two-sided activities. Instruction changes behaviour, so it is useful to imagine a unit of instruction as being geared toward a particular desired behaviour, which is the learning outcome. Thus, the role of instruction cannot be overestimated. Supervision of instruction is an integral part of educational institutions' teaching and learning processes through assisting, directing, stimulating, and motivating teachers. The goal of supervision is to develop the teacher into the most effective, efficient, and ethical person they can be.³⁷ E-supervision of instruction involves using technology to direct, monitor, and coordinate teaching and learning activities. As part of distance education environments, e-supervision (synchronous and asynchronous) was developed for e-instruction.³⁸ An e-supervision system offers opportunities for enhanced collaboration between supervisors, head teachers, and teachers in geographically remote areas.³⁹ Teachers' preparation level for digital teaching has been associated with their gender, previous experience with online teaching, or a varying level of readiness.⁴⁰ Thus, school supervisors with prior preparation for digital instruction will play a significant role in using e-supervision platforms.

Rupiah further explained that instructional supervision was implemented with the principal serving the role of a supervisor and a teacher with implications for both the learners and the teachers.⁴¹ The role of academic supervisors during the COVID-19 pandemic further stretched towards ensuring that educators stay safe and healthy while carrying out their instructional activities.⁴² Before the advent of the pandemic, supervision is strictly referred to as the ongoing activities which aimed to coordinate, stimulate and guide the development of teachers at schools collectively and individually to ensure the optimal running of the learning process and achieve stated learning objectives.⁴³ With online supervision or e-supervision (synchronous and asynchronous), however, supervising academic activities as observed during the pandemic involved utilising ICT facilities in the form of Google Classroom, Google form, WhatsApp groups, Google Meet, and Telegram to carry out these hitherto conventional school supervision.⁴⁴ Aside from desktop software and applications with teleconferencing capabilities, other methods used by principals to conduct supervision during the

³⁶ Qazi, et.al. "Gender differences in information and communication technology use and skills: a systematic review and meta-analysis."; Ramírez-Correa, et. al. "Gender and Acceptance of E-Learning.

³⁷ A. O. Abari et al., *Supervision of Instruction Accountability and School Principalship*. (Ibadan: His Lineage Publishing House , 2018).

³⁸ Christianna Alger and Theodore J. Kopcha, "ESupervision: A Technology Framework for the 21st Century Field Experience in Teacher Education.," *Issues in Teacher Education* 18, no. 2 (2009): 31–46; Osman Vaiz et al., "The Supervision in Distance Education" E-Supervision," *The Online Journal of New Horizons in Education* 11, no. 3 (2021): 106–9.

³⁹ Adnan Mustafa AlBar, "An Electronic Supervision System Architecture in Education Environments," *European Journal of Business and Management* 4 (2012): 140–48; Yunus Adebunmi Fasasi, Omotayo Adewale Awodiji, and Sulaimon Adewale, "E-Supervision of Students' Research Writing in Nigerian Open and Distance Educational Institutions: Challenges and Prospects," *International Journal of Distance Education and E-Learning*, 2, no. 1 (2016): 1–8, <https://www.openaccessjournal.com/abstract/483>; Hanadi Omar Merdah, "An E-Supervision System in Education Environments," 2009, <https://doi.org/10.13140/RG.2.1.4489.6169>.

⁴⁰ Ronny Scherer et al., "Profiling Teachers' Readiness for Online Teaching and Learning in Higher Education: Who's Ready?," *Computers in Human Behavior* 118 (May 2021): 106675, <https://doi.org/10.1016/j.chb.2020.106675>.

⁴¹ Rupiah, "Utilization of information and communication technology (ICT) in academic supervision during the COVID-19 pandemic."

⁴² Siti Sanisah et al., "The Effectiveness of Educational Supervision in Pandemic Era Covid-19," *Jurnal Tatsqif* 19, no. 2 (December 9, 2021): 155–74, <https://doi.org/10.20414/jtq.v19i2.4226>.

⁴³ Hasri Fendi et al., "Online-Based Academic Supervision during the Covid-19 Pandemic," *Journal of Physics: Conference Series* 1779, no. 1 (February 1, 2021): 012027, <https://doi.org/10.1088/1742-6596/1779/1/012027>.

⁴⁴ Rupiah, "Utilization of information and communication technology (ICT) in academic supervision during the COVID-19 pandemic."

COVID-19 lockdown period included pictures and video recordings of teachers principals can use to view and assess learning implementation carried out by teachers.⁴⁵ Online supervision or e-supervision (synchronous and asynchronous) came with the promise of helping school principals guide and train teachers to improve professional competence despite the heat of COVID-19 when offline instructional-related activities were impossible.⁴⁶

A study conducted by Fendi et al. in assessing online supervision during the pandemic discovered that 60% of supervisory tools for the pandemic period in a senior high school in Bangkinang, Indonesia, was based on teachers sending classroom recording via e-mail or instant messaging software like WhatsApp and Telegram. Based on these findings, they summed up the strengths of e-supervision as flexibility and adaptability, while technical challenges play out as the weaknesses of online-based academic supervision.⁴⁷ Reiterating the challenges faced by school principals in virtual or e-supervision activities, Brock et al., in their case study involving two school principals in Texas, discovered that problem solving was an essential aspect that supervisors must undertake with teachers to overcome the technical glitches that confronted e-supervision in the pandemic.⁴⁸

The findings of Brock et al. show that many school leaders and teachers perceive that online learning and supervision are comfortable to implement as an alternative to physical and academic activities.⁴⁹ However, Adarkwah asserted that developing countries such as Ghana have many crippling issues regarding online supervision. He argued that software and hardware problems must be critically examined and the provision of technical assistance by ICT personnel to ensure the supply of essential tools needed for school supervisors to evaluate instructional activities properly.⁵⁰ The unpreparedness of developing nations to combat educational challenges before and after the COVID-19 pandemic cannot be said of developed countries, which though unprepared for COVID-19, did not find the implementation of online learning and supervision too sudden.⁵¹ This may be due to the availability of infrastructural and ICT facilities as essential tools in the fourth industrial revolution compliant world. The results of studies conducted on online supervision were based on many factors assessing the availability of e-supervision resources, technical know-how of teachers and principals, and readiness of students to utilise ICT facilities to learn.⁵² Some of these studies concluded that e-supervision and other forms of related instructional activities were quite successful during the

⁴⁵ Dedi Prestiadi, Ahmad Nurabadi, and Wildan Zulkarnain, "Implementation of Instructional Supervision During the Covid-19 Pandemic," in *Proceedings of the International Conference on Information Technology and Education (ICITE) 609* (Atlantis Press, 2021), 1–5.

⁴⁶ Fendi, et. al. "Online Based Academic Supervision during the Covid19 Pandemic."

⁴⁷ Fendi, et. al. "Online Based Academic Supervision during the Covid19 Pandemic."

⁴⁸ Jesse D. Brock et al., "Instructional Supervision and the COVID-19 Pandemic: Perspectives From Principals," *Journal of Educational Research and Practice* 11, no. 1 (June 30, 2021), <https://doi.org/10.5590/JERAP.2021.11.1.12>.

⁴⁹ Brock, et. al. "Instructional Supervision and the COVID-19 Pandemic."

⁵⁰ Adarkwah, "I'm not against online teaching, but what about us?"

⁵¹ Beby Masitho Batubara, "The Problems of the World of Education in the Middle of the Covid-19 Pandemic," *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences* 4, no. 1 (January 21, 2021): 450–57, <https://doi.org/10.33258/birci.v4i1.1626>.

⁵² Fritia et. al., "The Effectiveness of Internet-Based Supervision on the COVID 19 Pandemic Situation."; Rupiah, "Utilization of information and communication technology (ICT) in academic supervision during the COVID-19 pandemic."; Nining Purwati and Mohammad Viktor Farid Hakim, "Primary School Teachers' Perception of Supervision Through the Use Google Form Application During the Covid-19 Pandemic," *AL-ISHLAH: Jurnal Pendidikan* 13, no. 3 (December 30, 2021): 2417–24, <https://doi.org/10.35445/alishlah.v13i3.1247>; Hasnah Yulianti, Dedi Prestiadi, and Ali Imron, "Implementation of Academic Supervision in Improving Teachers Teaching Performance in the Covid-19 Pandemic Era at Elementary School," in *7th International Conference on Education and Technology (ICET)* (Atlantis Press, 2021), 85–90.

pandemic,⁵³ while others highlighted the challenges that must be overcome to ensure efficiency in online supervision.⁵⁴

THEORETICAL FRAMEWORK

Instructional Supervision Model

Several scholars from the early 1900s theorised different approaches to instructional leadership in teaching and learning processes, including John Dewey's democratic leadership, Crabb's model of academic supervision as social efficiency,⁵⁵ and Barr and Burton's approach, which is considered to be more scientific.⁵⁶ In this study, however, the focus is related to Burton and Bruckner's instructional supervision model.^{57,58} The Burton and Bruckner instructional supervision is classified into:

- i. Laissez-Faire Supervision: According to McKimm and Swanwick, the laissez-faire supervisor is not a constructive supervisor. They allow teachers to carry out instructional activities as they please. Thus, teachers are not afforded mentorship or guidance on handling daily classroom challenges.⁵⁹ Relating this type of supervision to the online education system makes obvious the numerous challenges of ensuring effective e-supervision.
- ii. Democratic Supervision: democratic supervision is a deliberative method of instructional supervision that allows teachers to express their individuality through instructional supervision. In Burton and Brueckner's discourse, the ideals of democracy believe in the appreciation of the dignity of the common citizens and their differences in carrying out their daily tasks.⁶⁰ Thus, democratic supervision gives teachers a sense of participation in educational leadership. Applying this to e-supervision, democratic supervision implies that teachers have a voice in selecting the most appropriate instructional strategy based on their individuality and the peculiarity of their respective subjects. In light of this, teachers.
- iii. Training and Guidance: Burton and Brueckner's model was designed when active participation of learners in their learning, based on their interests, was advocated for.⁶¹ This development impacted instructional supervision such that training and guiding teachers to keep learners interested in learning became essential. The uniqueness of e-learning and its emergent adoption in schools worldwide necessitated that this approach to instructional supervision be adopted, especially in schools and communities where human resources and technical know-how in online instructional facilitation are at their rudimentary level.
- iv. Coercive Supervision: Coercive supervision is another term used to describe the authoritarian style of leadership instructional supervision. Coercive supervision "gives teachers order and instructions"⁶² rather than giving room for deliberation and individuality in instructional delivery. In the emergent online learning curriculum, the coercive

⁵³ Prestiadi, et. al. "Implementation of Instructional Supervision during the Covid-19 Pandemic."; Purwati, and Hakim, "Primary School Teachers' Perception of Supervision through the Use Google Form Application during the Covid-19 Pandemic."

⁵⁴ Adarkwah, "I'm not against online teaching, but what about us?"; Fendi et. al. "Online-Based Academic Supervision during the Covid-19 Pandemic."

⁵⁵ Stephen Gordon, "Lessons from the Past: Ideas from Supervision Books Published from 1920 through 1950," *Journal of Educational Supervision* 3, no. 2 (June 2020): 51–82, <https://doi.org/10.31045/jes.3.2.4>; William Henry Burton, Leo J. Brueckner, and Arvil Sylvester Barr, *Supervision, a Social Process* (New York: Appleton-Century-Crofts, 1955).

⁵⁶ Gordon, "Lessons from the Past: Ideas from Supervision Books Published from 1920 through 1950."

⁵⁷ Burton, Brueckner and Barr, *Supervision: a Social Process*.

⁵⁸ Burton, Brueckner, and Barr, *Supervision, a Social Process*.

⁵⁹ Judy McKimm and Tim Swanwick, "Educational Leadership and Management," in *Understanding Medical Education* (Chichester, UK: John Wiley & Sons, Ltd, 2018), 549–68, <https://doi.org/10.1002/9781119373780.ch37>.

⁶⁰ Burton, and Brueckner, *Supervision: a Social Process*.

⁶¹ McKimm, and Swanwick, "Educational leadership and management."

⁶² McKimm, and Swanwick, "Educational leadership and management."

supervisor gives teachers orders on which learning platform to use, when, and how. Teachers are not allowed to select a situation-based approach to deliver instructions online. Coercive supervision might have been disadvantageous when teachers grappled with technical hitches that characterised online learning at the commencement of the COVID-19 lockdown.

- v. Inspection: This has been described as the earliest form of instructional supervision where a school inspector only inspected teachers in an authoritarian style of determining teachers' performance in instructional delivery.⁶³ This supervision style is inappropriate for the fourth industrial revolution and the post-COVID-19 world because it depends on the physical inspection of instructional activities.

This study considers democratic supervision and the training and guidance method most appropriate for online supervision. Democratic supervision gives teachers flexibility in ensuring that instructional delivery is effective based on their confidence in online instructional activities, while the training and guidance style ensures up-skilling of and guidance of teachers to meet the demands and cope with the challenges of the fourth industrial revolution instructional activities.

RESEARCH METHOD

In this study, the objective was to describe the availability and utilisation of e-supervision facilities in the post-COVID-19 era using a survey research design. Therefore, the design was suitable for this study because data were obtained from principals, vice-principals, and heads of departments (HODs). Principals, vice-principals, and heads of departments of all private secondary schools within Education District III, Lagos State, made up the population of this study. A random sampling of 45 private secondary schools was conducted within the district as part of this study. In total, 270 participants were surveyed, comprising 40 principals, 95 vice principals, and 135 HODs. Over two hundred seventy copies of the "Electronic Supervision of Instruction Questionnaire (ESIQ)" were administered, but only 226 correctly completed and returned forms were analysed. ESIQ has three sections. Section A provided the profile of the respondents, which included gender, rank, highest qualification, and years of experience, among others. Meanwhile, section B of the instrument has items to elicit the e-supervision tool available in their school and section C has items on the level of utilising the available e-supervision tools in the selected schools. The e-supervision tools used in this study were based on the researchers' personal experience and what is available in the literature.⁶⁴

Using JAMOVI version 2.1.2 software, the researchers employed a descriptive statistic of median to answer question one, and an independent t-test and one-way ANOVA to answer questions two and three, respectively. The Shapiro-Wilk test was used to provide insight into the univariate normality assumption. The Shapiro-Wilk test was used to test the univariate normality of the dependent variables (e-supervision tools in synchronous and asynchronous mode after Covid-19). The Shapiro-Wilk test was used to determine the distribution's normality since fewer than 2,000 items were in the dataset. A Shapiro-Wilk test based on the univariate normality assumption showed that the data were normally distributed for the synchronous e-supervision tools ($W = 3.887$, $p = 0.631$) and the asynchronous e-supervision tools ($W = 2.863$, $p = 0.215$). In addition, the assumption was tested using the Mahalanobis distance, which was found to be a maximum of 8.795. According to the Mahalanobis distance, the value of 8.795 is less than the critical value of 13.82; therefore, it can be assumed that the univariate normality assumption is met.⁶⁵ Using Levene's test for equality of variances, the researchers

⁶³ McKimm and Swanwick, "Educational leadership and management."

⁶⁴ Famularsih, *Students' Experiences in Using Online Learning Applications Due to COVID-19 in English Classroom*; Dhawan, "Online Learning : A Panacea in the Time of COVID-19 Crisis."

⁶⁵ Felix Boakye Oppong and Senyo Yao Agbedra, "Assessing Univariate and Multivariate Normality. A Guide for Non-Statisticians," *Mathematical Theory and Modeling* 6, no. 2 (2016): 26–33, <https://core.ac.uk/download/pdf/234680353.pdf>; Hun Myoung Park, "Univariate Analysis and Normality Test Using

established another assumption of homogeneity of variances using synchronous and asynchronous e-supervision tools after COVID-19 by comparing the variances of each group participant. A non-significant result was obtained for synchronous and asynchronous ($F(1,224) = 1.73, p = 0.210$; $F(1,224) = 1.14, p = 0.287$). Hence, the non-significant p-value indicates that the variances are homogeneous. Further analysis was conducted since assumptions for the statistical tools were met.

The omega coefficient has always been reported to be a better choice than the alpha coefficient as well as the glb coefficient in the presence of skew data with small sample size.⁶⁶ MacDonald Omega and Omega were used to establish the reliability coefficient of the scale via the R-program package. The results indicated 0.877 and 0.858, respectively. It could be deduced that the scale is highly reliable since the two tests were above 0.80.⁶⁷

RESULTS AND DISCUSSION

Research Question One: What is the level of availability of E-supervision tools post-COVID-19? Descriptive statistics implemented in JAMOV version 2.1.2 software was used to answer research question one. Median statistics describing the availability of E-supervision tools at basic schools post-COVID-19 were adopted. This descriptive statistic provides more information about the sample than the mean, which many researchers in the literature predominantly report. Also, the measurement scale is ordinal, whereby there is no standard scale on which the difference in each rating is measured. There is a clear order to these categories, but it cannot be said that the difference between "very available" and "available" is the same as that between "fairly available" and "not available." For easy interpretation of the question, a median value less than 2.5 signifies half of the sample gave a rating to the item below 2.5, indicating a 'low level' of availability of E-supervision tools post-COVID-19. In addition, a median value greater than 2.5 signifies that half of the sample rated the item above 2.5, indicating a 'high level' of availability of E-supervision tools post-COVID-19. Table 1 presents the result.

Table 1. Level of availability of e-supervision tools for post-COVID-19

E-supervision tools	Tools type	Median	Remarks
Zoom	Synchronous	4	High
WhatsApp	asynchronous	4	High
Google Meet	Synchronous	4	High
Skype	Synchronous	3	High
YouTube	Synchronous	3	High
Google Classroom	asynchronous	4	High
Telegram	asynchronous	3	High
Edmodo	asynchronous	2	Low
E-mails	asynchronous	3	High
Discussion boards	asynchronous	3	High
CCTV	asynchronous	3	High

SAS, Stata, and SPSS," *The University Information Technology Services (UITS) Center for Statistical and Mathematical Computing, Indiana University*, 2015, <https://scholarworks.iu.edu/dspace/handle/2022/19742>.

⁶⁶ Italo Trizano-Hermosilla and Jesús M. Alvarado, "Best Alternatives to Cronbach's Alpha Reliability in Realistic Conditions: Congeneric and Asymmetrical Measurements," *Frontiers in Psychology* 7 (May 26, 2016), <https://doi.org/10.3389/fpsyg.2016.00769>.

⁶⁷ Haradhan Mohajan, "Two Criteria for Good Measurements in Research: Validity and Reliability," *Annals of Spiru Haret University* 17, no. 4 (October 1, 2017): 56–82, <https://mpr.ub.uni-muenchen.de/83458/>.

Institution web-based applications	asynchronous	2	Low
Tape-recorder	asynchronous	3	High

Table 1 presents median values for each tool of E-supervision. It was revealed that the majority of sampled subjects (principals, vice-principals, and teachers) showed high enthusiasm toward various tools used for E-supervision in the post-COVID-19 era. However, items 8 and 12 had a low level of availability from the sampled subjects. Overall, it is evidenced that different tools are on the ground to monitor the progress of the teaching and learning process at the basic schools. However, many of them are asynchronous (such as WhatsApp, Google Classroom, Telegram, Edmodo, E-mails, Discussion boards, CCTV, Institution web-based applications and Tape-recorder), while few of them are synchronous (such as Zoom, Skype, Google meet and YouTube). These tools imply that there will be effective supervision of teaching and learning in the schools since COVID-19 has taught instructional supervisors how to discharge their duties without being hindered by the upsurge. Nonetheless, COVID-19 resulted in increased use of virtual learning tools for maintaining continuity in education delivery.⁶⁸

Research Question Two: Does gender cause variation in the utilisation of synchronous and asynchronous e-supervision tools?

Also, research question two was answered using an independent sample t-test. The result is presented in Table 2.

Table 2. Independent t-test statistics for synchronous and asynchronous supervision tools across gender.

Tools	Group	N	Mean	SD	SE	Statistic		
						s	df	P
Synchronous	Male	111	13.800	2.200	0.209	-2.91	224	0.004
	Female	115	14.600	1.770	0.165			
Asynchronous	Male	111	22.300	1.920	0.182	-2.60	224	0.01
	Female	115	23.000	1.930	0.180			

Table 2 showed that female school heads had a higher mean score of ($M = 14.60$, $SD = 1.77$) compared with their male counterparts with ($M = 13.80$, $SD = 2.20$) in the utilisation of synchronous e-supervision tools. This shows that female school heads had a better experience using synchronous E-supervision tools in the post-covid era. Also, an independent sample t-test was conducted to assess the observed difference in the gender experience using synchronous E-supervision tools; the result yielded a statistically significant difference between the male and female school heads' utilisation with ($t = -2.91$, $df = 224$, $p = 0.004$). Thus, gender cause variation in the use of synchronous E-supervision tools for the teaching and learning process post-COVID-19. This implies that the acquired skills and experience to use synchronous tools differ between male and female heads. This might allude to the fact that female school heads develop more interest in synchronous technology-driven tools for supervision of teaching and learning than male colleagues. Also, using asynchronous e-supervision tools, female school heads had a higher mean score ($M = 23.00$, $SD = 1.93$) than their male colleagues, who had a mean score ($M = 22.30$, $SD = 1.92$). Female school heads have had better experiences using asynchronous e-supervision tools post-COVID-19.

To assess the observed gender difference, an independent sample t-test was conducted; the result yielded a statistically significant difference between the utilisation of asynchronous e-supervision tools by male and female school heads ($t = -2.60$, $df = 224$, $p = 0.01$). Thus, gender affects

⁶⁸ Lockee, "Online education in the post-COVID era."

the use of asynchronous e-supervision tools for teaching and learning after COVID-19. Male and female heads used asynchronous tools differently. Possibly this is an indicator that female school heads are more interested in asynchronous technologies when supervising teaching and learning. According to Qazi et al., Sebastián, and Yu, females are more committed and engaged than males, whereas males are more stable in their approach to achieving online objectives.⁶⁹

Research Question Three: Is there any significant difference in utilising synchronous and asynchronous e-supervision tools based on school heads' status?

Table 3a. One-Way ANOVA utilisation of Synchronous and Asynchronous E-supervision tools based on school heads' status

Tools	Status	N	Mean	SD	SE	F	df1	df2	p	
Synchronous	Principal	31	13.300	1.900	0.342	5.19	2	223	0.006	
	Vice-principal	97	14.100	2.330	0.237					
	Head of department	98	14.600	1.600	0.162					
Asynchronous	Principal	31	21.300	2.730	0.489	21.0	8	2	223	< .001
	Vice-principal	97	22.300	1.510	0.153					
	Head of department	98	23.500	1.690	0.171					

*The mean difference is significant at the 0.05 level.

Table 3a depicts that those with the head of a department status had a higher mean score of (M = 14.60, SD = 1.60) in using synchronous tools for effective monitoring of teaching and learning after Covid-19, followed by vice-principal with (M = 14.10, SD = 2.33) and principal with (M = 13.30, SD = 1.90) respectively. More so, a one-way analysis of variance was used to establish whether there was a difference in their mean scores or not. The result remarked a statistical significant value with (F (2,223) = 5.19, p = 0.01). Consequently, school heads' status causes variation in utilising synchronous E-supervision tools. This implies that school heads' status contributes significantly to utilising different e-supervision tools in the post-COVID-19 teaching and learning process. Though, the head of a department played a more significant role in using these tools. This might lend credence to the fact that teachers work directly under the HODs, so monitoring their activities using the tools will be more efficient than principals and vice-principals.

Also, Table 3a illustrates the highest mean score (M = 23.50, SD = 1.69) for the head of a department in using asynchronous tools in monitoring teaching and learning after Covid-19, followed by vice-principal (M = 22.30, SD = 1.51) and principal (M = 21.30, SD = 2.73). The one-way analysis of variance was used to establish whether the mean scores differed. There was a statistically significant difference with (F (2,223) = 21.08, p = 0.001). Thus, school heads' status affects how they use asynchronous E-supervision tools. Therefore, school heads' status influences different e-supervision tools in the post-COVID-19 teaching and learning process. The department head had a greater say in using these tools. Teachers are directly under the HODs, so using the tools to monitor their performance is more efficient than using principals and vice-principals.

Furthermore, since the difference is significant, it is essential to determine the significance (post hoc analysis). To do so, a pairwise comparison of the turkey method was used. Results are presented in Tables 3b and 3c:

⁶⁹ Qazi, et.al. "Gender differences in information and communication technology use and skills: a systematic review and meta-analysis."; Sebastián, *Gender Dimension of Digital Technologies*; Yu, "The effects of gender, educational level, and personality on online learning outcomes during the COVID-19 pandemic."

Table 3b. Pairwise comparison of the utilisation of synchronous e-supervision tools based on school heads' status

Status		Principal	Vice-principal	Head of department
Principal	Mean difference	—	-0.729	-1.269
	p-value	—	0.18	0.006
Vice-principal	Mean difference	—	—	-0.54
	p-value	—	—	0.142
Head of department	Mean difference	—	—	—
	p-value	—	—	—

*The mean difference is significant at the 0.05 level.

Table 3c. Pairwise comparison of the utilisation of asynchronous e-supervision tools based on school heads' status

Status		Principal	Vice-principal	Head of department
Principal	Mean difference	—	-0.945	-2.16
	p-value	—	0.031	< .001
Vice-principal	Mean difference	—	—	-1.21
	p-value	—	—	< .001
Head of department	Mean difference	—	—	—
	p-value	—	—	—

*The mean difference is significant at the 0.05 level.

Table 3b shows a significant difference in synchronous e-supervision tools after COVID-19 between the principal and head of the department (mean diff = -1.27, $p = 0.006$). This result implies that heads of departments were positively disposed to utilising synchronous tools for monitoring teachers' teaching activities better after post-COVID-19. Also, Table 3c shows a significant difference in the use of asynchronous e-supervision tools after COVID-19 between principal and vice-principal with (mean diff = -0.95, $p = 0.031$) as well as head of the department with (mean diff = -2.16, $p = 0.001$). Also, there was a significant difference between the vice-principal and head of the department (mean diff = -1.21, $p = 0.001$).

This result implies that the vice-principal and head of the department were positively disposed to utilising asynchronous tools for monitoring teachers' teaching activities adequately after post-COVID-19. According to Scherer et al., online teaching effectiveness has been correlated with instructional supervisors' level of digital preparation for teaching.⁷⁰ Therefore, the readiness of school-based instruction will promote their effective utilisation of e-supervision tools.

RECOMMENDATIONS

Based on the findings of this study, it is therefore recommended that:

- Instructional supervisors should be trained and retrained on the use of e-supervision platforms to facilitate effective supervision of instruction and promote effective learning outcomes in the post-COVID-19 era.
- By implications, government, school owners, and private individuals could provide capacity-building programmes for school-based supervisors to equip them for post-COVID challenges.

⁷⁰ Scherer, "Profiling teachers' readiness for online teaching and learning in higher education: Who's ready?"

- Also, institutions of higher learning should revisit their curriculum to accommodate the e-supervision of instruction skills that will prepare future instructional supervisors with relevant skills.

CONCLUSION

In conclusion, the study indicates that digital devices are highly available (asynchronous and synchronous) for continuous supervision of instruction in the post-COVID-19 era. This prepared instructional supervisors to be ready for any unforeseen situation that might want to disrupt them from executing their roles. Also, it can be gender plays an important role in the utilisation of e-supervision platforms to enhance instruction. Lastly, it was observed that the rank/status of school-based supervisors is related to their utilisation of e-supervision of instruction tools.

BIBLIOGRAPHY

- Abari, A. O., R. O. Lawal, I. A. Akinyemi, and N. O. Orunbon. *Supervision of Instruction Accountability and School Principalship*. Ibadan: His Lineage Publishing House, 2018.
- Adarkwah, Michael Agyemang. "I'm Not against Online Teaching, but What about Us?": ICT in Ghana Post Covid-19." *Education and Information Technologies* 26, no. 2 (March 16, 2021): 1665–85. <https://doi.org/10.1007/s10639-020-10331-z>.
- AlBar, Adnan Mustafa. "An Electronic Supervision System Architecture in Education Environments." *European Journal of Business and Management* 4 (2012): 140–48.
- Alger, Christianna, and Theodore J. Kopcha. "ESupervision: A Technology Framework for the 21st Century Field Experience in Teacher Education." *Issues in Teacher Education* 18, no. 2 (2009): 31–46.
- Arenas Gaitán, Jorge, Francisco Javier Rondán Cataluña, and Patricio Ramírez Correa. "Gender Influence in Perception and Adoption of E-Learning Platforms." In *Advances in Data Networks, Communications, Computers. 9th WSEAS International Conference on Data Networks, Communications, Computers*, edited by Nikos E. Mastorakis and Valeri Mladenov, 30–35. Faro: WSEAS, 2010.
- Awodiji, Omotayo, and Ogbudinkpa Ijeoma Charity. "Exploring Offline and Online Educational Resources for Primary School Instruction in Nigeria." *West African Journal of Education (WAJE)* 36 (2016). https://www.researchgate.net/publication/353002692_Exploring_offline_online_educational_resources_for_primary_school_instruction.
- Azubuike, Obiageri Bridget, Oyindamola Adegboye, and Habeeb Quadri. "Who Gets to Learn in a Pandemic? Exploring the Digital Divide in Remote Learning during the COVID-19 Pandemic in Nigeria." *International Journal of Educational Research Open* 2 (2021): 100022. <https://doi.org/10.1016/j.ijedro.2020.100022>.
- Babbar, Mansi, and Tushita Gupta. "Response of Educational Institutions to COVID-19 Pandemic: An Inter-Country Comparison." *Policy Futures in Education* 20, no. 4 (May 4, 2022): 469–91. <https://doi.org/10.1177/14782103211021937>.
- Batubara, Beby Masitho. "The Problems of the World of Education in the Middle of the Covid-19 Pandemic." *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences* 4, no. 1 (January 21, 2021): 450–57. <https://doi.org/10.33258/birci.v4i1.1626>.
- Baum, Donald R., Husein Abdul-Hamid, and Hugo T. Wesley. "Inequality of Educational Opportunity: The Relationship between Access, Affordability, and Quality of Private Schools in Lagos, Nigeria." *Oxford Review of Education* 44, no. 4 (July 4, 2018): 459–75. <https://doi.org/10.1080/03054985.2017.1421153>.

- Bozkurt, Aras, Insung Jung, Junhong Xiao, Viviane Vladimirschi, Robert Schuwer, Gennady Egorov, Sarah Lambert, et al. "A Global Outlook to the Interruption of Education Due to COVID-19 Pandemic: Navigating in a Time of Uncertainty and Crisis." *Asian Journal of Distance Education* 15, no. 1 (June 6, 2020): 1–126.
<http://www.asianjde.com/ojs/index.php/AsianJDE/article/view/462>.
- Brock, Jesse D., Don M. Beach, Mandy Musselwhite, and Ikie Holder. "Instructional Supervision and the COVID-19 Pandemic: Perspectives From Principals." *Journal of Educational Research and Practice* 11, no. 1 (June 30, 2021). <https://doi.org/10.5590/JERAP.2021.11.1.12>.
- Burton, William Henry, Leo J. Brueckner, and Arvil Sylvester Barr. *Supervision, a Social Process*. New York: Appleton-Century-Crofts, 1955.
- Chang, Vanessa, Christian Gütl, and Martin Ebner. "Trends and Opportunities in Online Learning, MOOCs, and Cloud-Based Tools." In *Second Handbook of Information Technology in Primary and Secondary Education*, edited by Voogt J., Knezek G, Christensen R., and Lai K.W., 1–19. Springer International Handbooks of Education. Springer, Cham, 2018.
https://doi.org/10.1007/978-3-319-53803-7_64-1.
- Corinna, Ricarda, Svea Isabel, and Matthias Wilde. "The Influence of Gender and Interest on the Use of Learning Strategies in Biology Lessons." *European Journal of Educational Research* 11, no. 1 (January 15, 2022): 587–97. <https://doi.org/10.12973/eu-jer.11.1.587>.
- Dhawan, Shivangi. "Online Learning: A Panacea in the Time of COVID-19 Crisis." *Journal of Educational Technology Systems* 49, no. 1 (September 20, 2020): 5–22.
<https://doi.org/10.1177/0047239520934018>.
- Eshun Yawson, David, and Fred Amofa Yamoah. "Gender Variability in E-Learning Utility Essentials: Evidence from a Multi-Generational Higher Education Cohort." *Computers in Human Behavior* 114 (January 2021): 106558. <https://doi.org/10.1016/j.chb.2020.106558>.
- Famularsih, Sari. "Students' Experiences in Using Online Learning Applications Due to COVID-19 in English Classroom." *Studies in Learning and Teaching* 1, no. 2 (August 31, 2020): 112–21.
<https://doi.org/10.46627/SILET.V1I2.40>.
- Fasasi, Yunus Adebunmi, Omotayo Adewale Awodiji, and Sulaimon Adewale. "E-Supervision of Students' Research Writing in Nigerian Open and Distance Educational Institutions: Challenges and Prospects." *International Journal of Distance Education and E-Learning*, 2, no. 1 (2016): 1–8. <https://www.openaccessjournal.com/abstract/483>.
- Fendi, Hasri, Imam Hanafi, Fenny Ayu Monia, Sudarman, M. Aries Taufiq, and Rahmi Eka Putri. "Online-Based Academic Supervision during the Covid-19 Pandemic." *Journal of Physics: Conference Series* 1779, no. 1 (February 1, 2021): 012027. <https://doi.org/10.1088/1742-6596/1779/1/012027>.
- Fitria, Happy, Syarwani Ahmad, and Dewi Novita. "The Effectiveness of Internet-Based Supervision on The Covid 19 Pandemic Situation." *Tadbir : Jurnal Studi Manajemen Pendidikan* 5, no. 1 (April 29, 2021): 19. <https://doi.org/10.29240/jsmp.v5i1.2174>.
- George, Tayo O., W.K. Olayiwola, M.A. Adewole, Evans Osabuohien, Tayo O. George, W.K. Olayiwola, M.A. Adewole, and Evans Osabuohien. "Effective Service Delivery in Nigeria's Public Primary Education: The Role of Non-State Actors." *Journal of African Development* 15, no. 1 (2013): 221–45. <https://econpapers.repec.org/RePEc:afe:journal:v:15:y:2013:i:1:p:221-245>.
- Gonzalez, T., M. A. de la Rubia, K. P. Hincz, M. Comas-Lopez, Laia Subirats, Santi Fort, and G. M. Sacha. "Influence of COVID-19 Confinement on Students' Performance in Higher Education." *PLOS ONE* 15, no. 10 (October 9, 2020): e0239490.
<https://doi.org/10.1371/journal.pone.0239490>.
- Gordon, Stephen. "Lessons from the Past: Ideas from Supervision Books Published from 1920 through 1950." *Journal of Educational Supervision* 3, no. 2 (June 2020): 51–82.
<https://doi.org/10.31045/jes.3.2.4>.

- Habibi, G, M Mandasari, K Rukun, and Hadiyanto Hadiyanto. "E-Supervision Using Web: Elementary School Teachers' Reaction." In *Proceedings of the International Conference on Education, Science and Technology - ICESTech 2020*, 25–30. Jakarta: Redwhite Press, 2020. <https://doi.org/10.32698/tech3230>.
- Hussain, Taibat. "Education and Covid-19 in Nigeria: Tackling the Digital Divide – SOAS Blog." SOAS - Blog, SOAS University of London. , 2022. <https://study.soas.ac.uk/covid-19-nigeria-digital-divide/?ref=dishapages>.
- Jatto, Esther O., Oluwabunmi D. Bakare, Mutiat Y. Salvador, and Sunday M. Fakunle. "School Proprietors' Perception and Attitude Towards the Adoption of Online Classes in the Covid-19 Era in Ibadan, Oyo State, Nigeria." *Nigerian School Library Journal* 20, no. 2 (September 13, 2022): 106–21. <https://www.ajol.info/index.php/nslj/article/view/231859>.
- Jimenez, Emmanuel, Marlaine E. Lockheed, and Vicente Paqueo. "The Relative Efficiency of Private and Public Schools in Developing Countries." *The World Bank Research Observer* 6, no. 2 (1991): 205–18. <https://doi.org/10.1093/wbro/6.2.205>.
- Karalis, Thanassis, and Natassa Raikou. "Teaching at the Times of COVID-19: Inferences and Implications for Higher Education Pedagogy." *International Journal of Academic Research in Business and Social Sciences* 10, no. 5 (May 22, 2020). <https://doi.org/10.6007/IJARBS/v10-i5/7219>.
- Larghi, Sebastián Benítez. "Gender Dimension of Digital Technologies." In *Consejo Nacional de Ciencia y Tecnología (CONICET)*. Argentina: GenderInSITE, 2021.
- Lockee, Barbara B. "Online Education in the Post-COVID Era." *Nature Electronics* 4, no. 1 (January 25, 2021): 5–6. <https://doi.org/10.1038/s41928-020-00534-0>.
- Marinoni, Giorgio, and Hilligje van't Land. "The Impact of COVID-19 on Global Higher Education." *International Higher Education*, no. 102 (April 30, 2020): 7–9. <https://ejournals.bc.edu/index.php/ihe/article/view/14593>.
- McKimm, Judy, and Tim Swanwick. "Educational Leadership and Management." In *Understanding Medical Education*, 549–68. Chichester, UK: John Wiley & Sons, Ltd, 2018. <https://doi.org/10.1002/9781119373780.ch37>.
- Merdah, Hanadi Omar. "An E-Supervision System in Education Environments," 2009. <https://doi.org/10.13140/RG.2.1.4489.6169>.
- Mohajan, Haradhan. "Two Criteria for Good Measurements in Research: Validity and Reliability." *Annals of Spiru Haret University* 17, no. 4 (October 1, 2017): 56–82. <https://mpru.ub.uni-muenchen.de/83458/>.
- Opong, Felix Boakye, and Senyo Yao Agbedra. "Assessing Univariate and Multivariate Normality. A Guide for Non-Statisticians." *Mathematical Theory and Modeling* 6, no. 2 (2016): 26–33. <https://core.ac.uk/download/pdf/234680353.pdf>.
- Oyediran, Wasiu Oyeleke, Ayodeji Motunrayo Omoare, Maryam Adebusola Owoyemi, Abayomi Olatoke Adejobi, and Rafiat Bolanle Fasasi. "Prospects and Limitations of E-Learning Application in Private Tertiary Institutions amidst COVID-19 Lockdown in Nigeria." *Heliyon* 6, no. 11 (November 2020): e05457. <https://doi.org/10.1016/j.heliyon.2020.e05457>.
- Park, Hun Myoung. "Univariate Analysis and Normality Test Using SAS, Stata, and SPSS." *The University Information Technology Services (UITS) Center for Statistical and Mathematical Computing, Indiana University*, 2015. <https://scholarworks.iu.edu/dspace/handle/2022/19742>.
- Prestiadi, Dedi, Ahmad Nurabadi, and Wildan Zulkarnain. "Implementation of Instructional Supervision During the Covid-19 Pandemic." In *Proceedings of the International Conference on Information Technology and Education (ICITE) 609*, 1–5. Atlantis Press, 2021.
- Purwati, Nining, and Mohammad Viktor Farid Hakim. "Primary School Teachers' Perception of Supervision Through the Use Google Form Application During the Covid-19 Pandemic." *AL-ISHLAH: Jurnal Pendidikan* 13, no. 3 (December 30, 2021): 2417–24. <https://doi.org/10.35445/alishlah.v13i3.1247>.

- Qazi, Atika, Najmul Hasan, Olusola Abayomi-Alli, Glenn Hardaker, Ronny Scherer, Yeahia Sarker, Sanjoy Kumar Paul, and Jaafar Zubairu Maitama. "Gender Differences in Information and Communication Technology Use & Skills: A Systematic Review and Meta-Analysis." *Education and Information Technologies* 27, no. 3 (April 21, 2022): 4225–58. <https://doi.org/10.1007/s10639-021-10775-x>.
- Qiao, Ping, Xiaoman Zhu, Yangzhi Guo, Ying Sun, and Chuan Qin. "The Development and Adoption of Online Learning in Pre- and Post-COVID-19: Combination of Technological System Evolution Theory and Unified Theory of Acceptance and Use of Technology." *Journal of Risk and Financial Management* 14, no. 4 (April 5, 2021): 162. <https://doi.org/10.3390/jrfm14040162>.
- Ramírez-Correa, Patricio E., Jorge Arenas-Gaitán, and F. Javier Rondán-Cataluña. "Gender and Acceptance of E-Learning: A Multi-Group Analysis Based on a Structural Equation Model among College Students in Chile and Spain." *PLOS ONE* 10, no. 10 (October 14, 2015): e0140460. <https://doi.org/10.1371/journal.pone.0140460>.
- Ramrathan, Labby. "School Curriculum in South Africa in the Covid-19 Context: An Opportunity for Education for Relevance." *Prospects* 51, no. 1–3 (October 6, 2021): 383–92. <https://doi.org/10.1007/s11125-020-09490-1>.
- Rashid, Shazia, and Sunishtha Singh Yadav. "Impact of Covid-19 Pandemic on Higher Education and Research." *Indian Journal of Human Development* 14, no. 2 (August 23, 2020): 340–43. <https://doi.org/10.1177/0973703020946700>.
- Rupiah, Rupiah. "Utilization of Information and Communication Technology (ICT) in Academic Supervision during the COVID-19 Pandemic." *Jurnal As-Salam* 5, no. 2 (November 21, 2021): 120–28. <https://doi.org/10.37249/assalam.v5i2.304>.
- Sanisah, Siti, Abdul Kadir, Lukman Lukman, and Edi Edi. "The Effectiveness of Educational Supervision in Pandemic Era Covid-19." *Jurnal Tatsqif* 19, no. 2 (December 9, 2021): 155–74. <https://doi.org/10.20414/jtq.v19i2.4226>.
- Scherer, Ronny, Sarah K. Howard, Jo Tondeur, and Fazilat Siddiq. "Profiling Teachers' Readiness for Online Teaching and Learning in Higher Education: Who's Ready?" *Computers in Human Behavior* 118 (May 2021): 106675. <https://doi.org/10.1016/j.chb.2020.106675>.
- Tamrat, Wondwosen, and Damtew Teferra. "COVID-19 Threat to Higher Education." *International Higher Education*, no. 102 (April 30, 2020): 28–30. <https://ejournals.bc.edu/index.php/ihe/article/view/14615>.
- Tarkar, Preeti. "Impact Of Covid-19 Pandemic On Education System." *International Journal of Advanced Science and Technology* 29, no. 9 (2020): 3812–14. https://www.researchgate.net/publication/352647439_Impact_Of_Covid-19_Pandemic_On_Education_System.
- Tooley, James, Pauline Dixon, and Olanrewaju Olaniyan. "Private and Public Schooling in Low-Income Areas of Lagos State, Nigeria: A Census and Comparative Survey." *International Journal of Educational Research* 43, no. 3 (January 2005): 125–46. <https://doi.org/10.1016/j.ijer.2006.05.001>.
- Trizano-Hermosilla, Italo, and Jesús M. Alvarado. "Best Alternatives to Cronbach's Alpha Reliability in Realistic Conditions: Congeneric and Asymmetrical Measurements." *Frontiers in Psychology* 7 (May 26, 2016). <https://doi.org/10.3389/fpsyg.2016.00769>.
- Vaiz, Osman, Hüseyin Minalay, Ayhan Türe, Pelin Ülgener, Hasan Yaşar, and Anıl M. Bilir. "The Supervision in Distance Education" E-Supervision." *The Online Journal of New Horizons in Education* 11, no. 3 (2021): 106–9.
- Yu, Zhonggen. "The Effects of Gender, Educational Level, and Personality on Online Learning Outcomes during the COVID-19 Pandemic." *International Journal of Educational Technology in Higher Education* 18, no. 1 (December 2, 2021): 14. <https://doi.org/10.1186/s41239-021-00252-3>.

- Yulianti, Hasnah, Dedi Prestiadi, and Ali Imron. "Implementation of Academic Supervision in Improving Teachers Teaching Performance in the Covid-19 Pandemic Era at Elementary School." In *7th International Conference on Education and Technology (ICET)*, 85–90. Atlantis Press, 2021.
- Zhu, Xudong, and Jing Liu. "Education in and After Covid-19: Immediate Responses and Long-Term Visions." *Postdigital Science and Education* 2, no. 3 (October 26, 2020): 695–99. <https://doi.org/10.1007/s42438-020-00126-3>.

ABOUT AUTHORS

Dr. Omotayo Adewale Awodiji is currently a Post-doctoral Research Fellow at the University of Johannesburg, South Africa. He holds a PhD in Education Management. His research focuses on Professional Development, Teacher Education, Leading School For 4IR, Leadership, Educational Management, ICT in Education, and Research Methods.

Dr. Musa Adekunle Ayanwale is a Post-Doctoral Research Fellow at the University of Johannesburg, South Africa. He holds a PhD in Educational Research, Measurement and Evaluation. His research focuses on Application of test theories; development and validation of measurement instruments; research/assessment/evaluation capacity building; Psychometrics; Generalisability Theory-based Reliability Analysis, programme development, monitoring, and evaluation; Q-Methodology; structural modelling and computerized adaptive testing research, respectively.

Michael Mayowa Oyedoyin is an Independent Researcher at the University of Ibadan, Nigeria. He holds a Bachelor of Education (B.Ed). His research focuses on Interdisciplinary Issues in Education, Educational Psychology, Early Childhood Education, Teen and Adolescent Education and the Fourth Industrial Revolution through the lens of Education.