Vol.7 No.1 (2024)

Journal of Applied Learning & Teaching

ISSN : **2591-801X**

Content Available at : **http://journals.sfu.ca/jalt/index.php/jalt/index**

Evaluation of a research training workshop for academic staff in tertiary institutions: A Kirkpatrick model approach

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Keywords

Academic staff;
Kirkpatrick model;
publication strategies;
research skills;
research training workshop;
research visibility;
tertiary institutions.

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Article Info

Received 30 December 2023
Received in revised form 17 January 2024
Accepted 12 March 2024
Available online 8 April 2024

DOI: https://doi.org/10.37074/jalt.2024.7.1.32

Abstract

Quality research has a positive impact on the development of a country. Literature has shown that there is a limited quantity of quality African research articles in reputable journals. Training and workshops have consistently been shown to have a positive impact on the productivity of academic staff and researchers. If academic staff are trained in writing and publishing research articles, it will go a long way to improve the contribution of African research to reputable journals. Hence, the focus of this study is to evaluate the workshop conducted on writing and publishing academic papers in highly reputable journals for academic staff in tertiary institutions. The study's population consists of academic staff in tertiary institutions in Delta State, Nigeria. The sample comprised 59 academic staff who participated voluntarily in the workshop. Through a pre-questionnaire, a post-questionnaire, a participant satisfaction level questionnaire, and interviews, the four stages of the Kirkpatrick Model were used to assess the effectiveness of the workshop.

High levels of participant satisfaction and notable advancements in academic writing, publication, and research exposure were observed as a result of the workshop. As they established online research profiles, identified predatory journals, and improved paper preparation, participants actively were able to apply their newly gained abilities. A 12-month post-workshop evaluation found remarkable results, including 18 participants publishing articles in journals with a Scopus index and many more creating profiles on Google Scholar, ResearchGate, and Academic.edu. The study highlights the significance of customised workshops in advancing research abilities and academic recognition by demonstrating a favourable association between customised workshops and increased research capabilities. Future evaluations can use the evaluation model as a useful framework, allowing for well-informed judgments about institutional and educational improvements.

Introduction

Utilising modern scientific techniques to conduct research appropriately is a sign of quality research. Being prominent in the academic community and having publications in respectable journals are crucial requirements for receiving individual and institutional recognition (Alordiah et al., 2023; McGrail et al., 2006). Many accreditation bodies or organisations need academic personnel to remain engaged in their field, and publishing is a prominent and well-liked means to do so (Northcentral University, 2020; Tella & Onyancha, 2020). Academic publication is the process through which someone or a group makes intellectual content accessible to a general audience. Before findings are published and made publicly accessible, the research process must be followed (Owan & Asuquo, 2022). Skills (introduction, methods, findings, discussion, and references), evaluation (peer review), sharing (publishing of the scholarly materials), and preservation of the content are all necessary for the production of scholarly materials (databases and repositories). A journal is a piece of academic writing published by an accredited publisher, faculty, department, or university. It should have an editorial board and local, national, or worldwide readers, as the situation may be (Tella, 2015). However, a journal with a global reputation can help people and organisations gain more international renown and respect.

Many people think Nigeria's higher education institutions have fallen far behind in innovative research (Alordiah et al., 2023; Alordiah et al., 2021; Can et al., 2018). Two-thirds of articles published in predatory journals are reportedly written in Asia and Africa, primarily in Nigeria, India, Turkey, and Pakistan (Demir, 2018). Consequences of the development of these situations in Nigeria include low research quality, researchers and institutions having a poor standing, a lack of confidence in Nigerian research, and difficulties obtaining research funds (Briggs & Weathers, 2016). African researchers are however encouraged to publish in prestigious publications, including in Web of Science and Scopus (Owan et al., 2023; Alordiah et al., 2021).

The number of articles published in "high-impact " journals (journals indexed in Scopus and Web of Science) and the h-index thresholds are currently used by several tertiary institutions in Nigeria to assess promotion prospects. The management of these institutions argued that by making this move, they would deter academic staff from writing in predatory journals and encourage them to increase visibility for both their institutions and themselves (Owan & Asuguo, 2022). This decision implies that all academic staff members must have accounts on Academia.edu, Research Gate, and Google Scholar. Additionally, they are required to produce works in journals with high impact routinely and have an ORCID number. The reality is that for academic staff at higher institutions, writing for scientific publications remains a challenge and a significant difficulty (Tella & Onyancha, 2020; Habibie, 2015). When academics are putting up papers for publications that are indexed by Scopus or Web of Science (WoS), these difficulties become more glaring. To produce scholarly publications, academics need to have knowledge of how to conduct a literature search, establishing a suitable methodology, conducting an analysis of the data, and presenting the findings coherently. Academic staff members must also have the ability to write well and present their findings and arguments clearly before submitting to credible publications. Additionally, they require knowledge of how to publicise their articles to a wider audience (Inee et al., 2018).

When it comes to publishing their findings in reputed international peer-reviewed journals, researchers in underdeveloped nations frequently lack the necessary scientific writing abilities. These scholars are not well represented in these publications, and a rising number of their works appear in predatory and dubious journals.. African researchers have a little opportunity for mentorship and inadequate training in writing research articles (Alordiah et al., 2021; Shoko et al., 2021; Sumathipala et al., 2004). Access to university writing centres and research writing training is more prevalent in developed countries than in poorer nations (Shoko et al., 2021; Sumathipala et al., 2004). In most of Nigeria's higher institutions, preparing articles for publication in highly reputable journals is a relatively recent development. As such, it becomes important to plan training on academic writing and research visibility.

In September 2022, a research workshop was held to assist participants who had little to no prior experience writing for highly regarded journals, had never published an article in one, had only recently begun the process of preparing an article for one, or were hoping to increase the visibility of their research articles on a global scale. The Carvimial Research Advisory (CRAD) group planned the workshop. The workshop's main objectives were publishing in respected journals, increasing research visibility, and writing research articles. The workshop had the following sections: introduction, methodology, results, discussion, and conclusion. It is good to conduct such workshops, but the most crucial thing is determining their impact.

One of the fundamental components of any programme or educational process is evaluation. A workshop or programme's objectives are evaluated to ascertain if they have been met. Information is gathered to assess the workshop's effectiveness (Abdulghani et al., 2014; Musal et al., 2008). In addition to ensuring that each trainee has achieved their educational goals, workshop organisers guarantee the programme's overall quality (Abdulyhani et al., 2014; Durning et al., 2007). To evaluate academic programmes, several evaluation models have been put forth. But for many years, the Donald Kirkpatrick model (Kirkpatrick & Kirkpatrick, 2006) has been the main organisational design for the assessments of training (Abdulghani et al., 2014; Smidt et al., 2009).

One of the complete methods for assessing training and workshops is Kirkpatrick's evaluation model. This model includes four fundamental evaluation stages, and each level influences the next. The first level is concerned with how the participants perceive the training programme. It gauges participant satisfaction and gathers data on their experiences with the training they received (Kirkpatrick & Kirkpatrick, 2006). The participants will most likely learn new things at Level 2, where they will modify their attitudes and behaviours. If the evaluation of the training programme

involves finding out what information and abilities have been acquired by the participant, the assessors might utilise a pre-questionnaire and post-questionnaire (Abdulghani et al., 2014). The third level assesses if the newfound information, abilities, and attitudes have been applied to the workplace to reflect improvements in conduct and productivity. The participants' enhanced performance results are measured at the fourth level. Kirkpatrick's model is a trustworthy evaluation model. It is valid, reliable, and reasonably cheap. Additionally, evaluators may use both qualitative and quantitative methods and subjective and objective indicators. In affluent nations, the use of the Kirkpatrick Model for reviews of educational initiatives that alter workplace dynamics are consistently reported (AlFaris et al., 2015; Abdulghani et al., 2014; Bailey & Hewison, 2014; Christopher & Young, 2015; Scott et al., 2013; Smidt et al., 2009). However, there are not many such reports from Nigeria.

This study aims to close this gap by using the Kirkpatrick Model to assess the workshop's effectiveness in terms of participant satisfaction, enhancement of their relevant conceptual knowledge and cognitive skills, participant behavioural changes, and the primary outcomes in the form of publications and visibility. As far as we know, this is one of the few studies to evaluate a training workshop in Nigeria for writing and publishing papers in respectable journals. This evaluation method would offer valuable guidance for how workshop developers can evaluate their workshop to determine the impact of their training on participants. It will encourage tertiary institutions to use this workshop on article writing and publications in their various institutions to promote quality research among academic staff.

Research questions

1. To what extent do participants find the training satisfactory? (Level 1 of Kirkpatrick model)
2. To what degree do the participants acquire the basic knowledge and cognitive skills taught during the training sessions? (Level 2 of the Kirkpatrick model)
3. To what extent did the participants apply what they learned during the training? (Level 3 of Kirkpatrick model)
4. What target outcomes occurred as a result of the training? (Level 4 of the Kirkpatrick model)

Hypothesis

There is no significant difference between the participants' pre-questionnaire and post-questionnaire scores on the basic knowledge and cognitive skills taught during the training sessions.

Method

In this evaluation study, an explanatory sequential mixed method (QUAN-qual) is used. A quantitative study was conducted to measure the first and second levels of the Kirkpatrick model. The third and fourth levels of the Kirkpatrick model were measured through qualitative research. The concept of explanatory sequential mixed methods, also known as QUAN-qual, refers to a research design that amalgamates both quantitative and qualitative components systematically. Generally, the quantitative aspect precedes the qualitative part in this design. Utilising an explanatory sequential mixed methods (QUAN-qual) approach within the scope of this study allows for the integration of both quantitative and qualitative elements throughout the research process, in a particular order (Liem, 2018).

Quantitative study

Participants

The study population comprises the academic staff of tertiary institutions in Delta State. Flyers and posters (e-copies and hardcopies) were sent to academic staff, who were encouraged to participate in the workshop. The sample comprised 59 academic staff who volunteered to participate in the workshop. However, only 33 of them completed the pre-questionnaire and post-questionnaire questionnaires. Of these 33 academic staff, 26 (79%) and 7 (21%) were female and male, respectively. Based on the area of specialisation, 13 (40%), 3 (9%), 4 (11%), and 13 (40%) were from the faculties of sciences/engineering, arts, social sciences, and education, respectively. About 25 (77%) have not published any article in a Scopus or Web of Science journal. However, 4 (11%), 1 (3%), 1 (3%), and 1 (3%) of the participants have published 1, 2, 3, 4, and 6 articles in journals indexed in Scopus and Web of Science databases.

Materials

A pre-questionnaire titled "Writing, publication and visibility of academic papers in reputable journals A" and a post-questionnaire titled "Writing, publication and visibility of academic papers in reputable journals B" were used. They were developed based on the workshop's objectives and content. Both questionnaires contained the same items. Section One measured the personal information of the participants. Section Two measured the knowledge and skills needed to write articles publishable in reputable journals and had ten items. The third section measured the knowledge and skills required to publish articles in reputable journals. It contains eight items. Section Four measured the knowledge and skills needed to make your articles visible internationally. There were ten items in this section. A 7-point Likert scale was used to measure the items in Sections 2, 3, and 4. Such that Not at all, A little, A little below average, Moderately, A little above average, Well, and Very well were awarded 1, 2, 3, 4, 5, 6, and 7 points, respectively. The items in the pre-questionnaire and post-questionnaire were identical. Experts in measurement and evaluation validated these items. The

reliability of Sections 2, 3, and 4 using Cronbach Alpha were .71, .71, and .73, respectively. The overall reliability coefficient for the full scale was .72. The pre-questionnaire and post-questionnaire were used to measure Level 2 of the Kirkpatrick model. A third questionnaire titled "Participants' satisfaction level" was used to collect data to measure Level 1 of Kirkpatrick's model. This questionnaire has nine items with a 7-point Likert scale. Experts in measurement and evaluation also validated it, and it yielded a reliability coefficient of .76 using Cronbach Alpha.

Procedures

The pre-questionnaire was administered to the participants before the treatment (training sessions). The training sessions lasted for two days, covering about 14 hours. The topics covered were on writing a good research article 1 (introduction, literature review, discussion, and conclusion sections), Writing a good research article 2 (method and result sections), Writing a good title and abstract, Publishing in highly reputable journals, and having research visibility. After the the end of the training, the post-questionnaire and the third questionnaire (Participants' satisfaction level) were administered to the participants. The participants were free to decide if they wanted to complete the questionnaire.

Analysis

The data was checked to satisfy the assumptions needed for the specific analysis. The pre-questionnaire and post-questionnaire data contained outliers but were both normally distributed. The "Participants' satisfaction level" data did not have outliers but was not normally distributed. This information guided the researcher in determining the right statistical tool to use. Frequency count, percentage, and graphical illustration were used to answer Research Questions One and Two. The Wilcoxon Signed Rank test was used to test the hypothesis at a .05 level of significance.

Qualitative study

After the end of the workshop, the researcher contacted the participants via e-mail, over the phone, WhatsApp, face-to-face communication or observation to find out their research activities after the workshop. Over 30 of the participants responded to the calls and messages. The researcher asked them how they used the knowledge and skills they learned during the workshop. Also, the researcher observed those who were accessible to determine their present attitude in their place of work concerning the knowledge and skills they acquired during the workshop. The information gathered was used to answer Research Question Three. For Research Question Four, the researcher communicated with them about 12 months after the workshop to find out their current level of visibility and the articles they were able to publish. The information was verified by going to the various websites to confirm their reports. The qualitative data was analysed through content analysis.

Research question one

To what extent do participants find the training satisfactory?

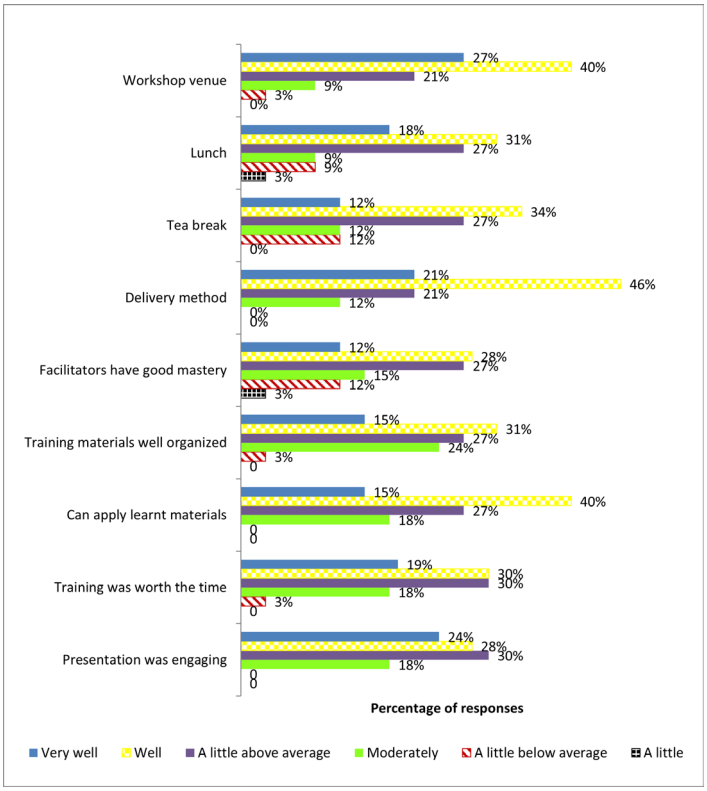


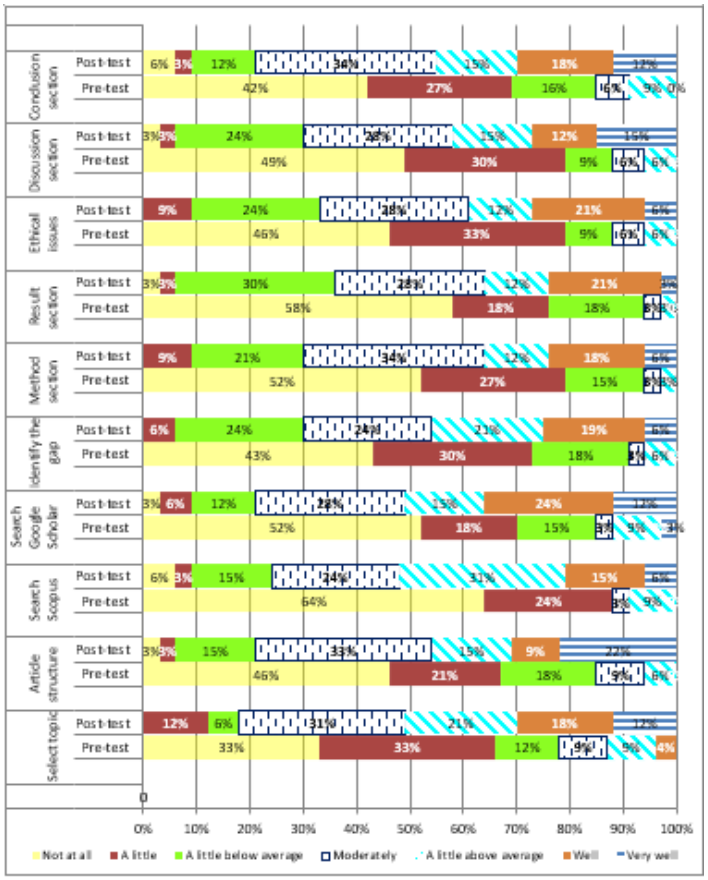
Figure 1: Extent of participants' satisfaction.

The majority of the lecturers were satisfied with the level of engagement of the presentation (very well=24%, well=28%, and a little above average=28%); the training was worth the time (very well=19%, well=30%, and a little above average=30%); and the materials learnt can be applied to their research (very well=15%, well=40%, and a little above average=27%). Many of the lecturers were satisfied with the level at which the training materials were well organised (very well=15%, well=31%, a little above average=27%); facilitators' mastery of the subject matter (very well=12%, well=28%. a little above average=27%); and the delivery method (very well=21%, well=46%, a little above average=21%). A large number of the lectures were satisfied with the tea break (very well=12%, well=34%; a little above average=27%); lunch (very well=18%, well=31%, a little above average=27%); and the workshop venue (very well=27%, well=40%, a little above average=21%).

Research question two

To what degree do the participants acquire the basic knowledge and cognitive skills taught during the training?

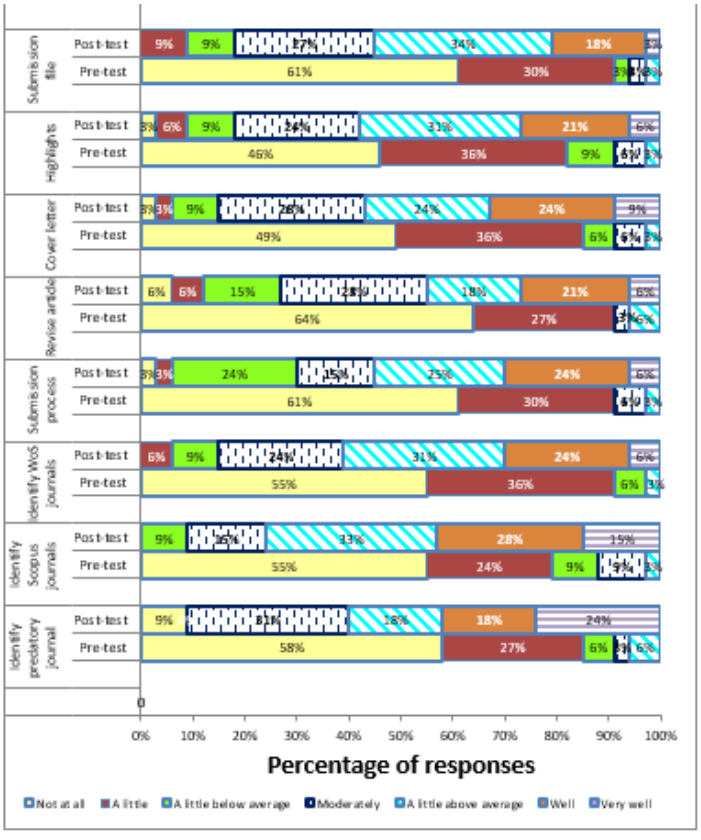
Writing academic papers



Pre-test=Pre-questionnaire, Post-test=Post-questionnaire

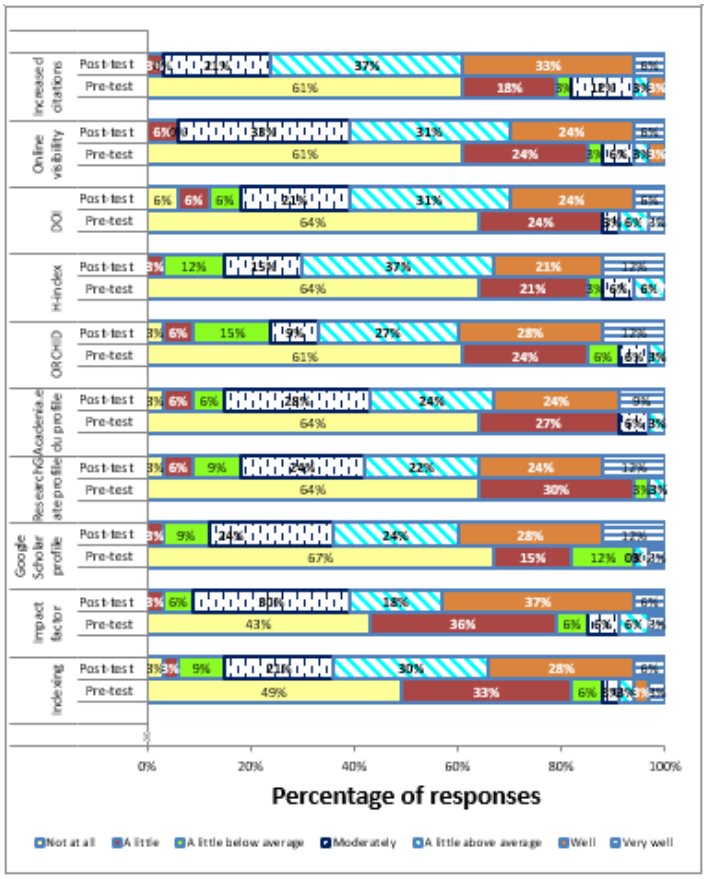
Figure 2: Participants' level of acquisition of knowledge and skills for writing academic papers.

Publishing in reputable journals



Pre-test=Pre-questionnaire, Post-test=Post-questionnaire

Figure 3: Participants' level of acquisition of knowledge and skills for publishing in highly reputable journals.



Pre-test=Pre-questionnaire, Post-test=Post-questionnaire

Figure 4: Participants' level of acquisition of knowledge and skills for research visibility.

Writing academic papers

From the pre-questionnaire, more than 60% of the workshop participants had little or no knowledge of how to select a good topic, structure an article, search for articles in Scopus and Google Scholar databases, identify the gap in a study, write a good methodology and result sections, handle ethical issues, and write the discussion and conclusion sections. This percentage was reduced to 13% in the post-questionnaire. Hence, based on the lecturers' pre-questionnaire and post-questionnaire scores, the lecturers gained more basic knowledge and skills in writing academic papers for reputable journals at the end of the workshop (Figure 2).

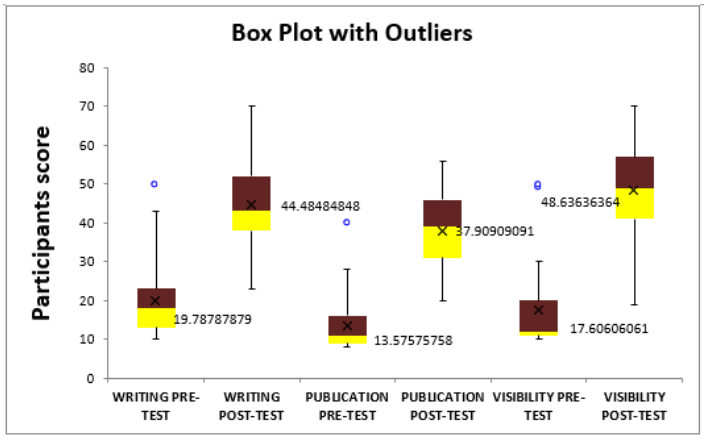
Publishing in reputable journals

From the pre-questionnaire, more than 70% of the workshop participants had little or no knowledge of how to identify predatory, Scopus, and WoS journals, understand the submission process for reputable journals, revise an article, write cover letters and highlights for reputable journals, and prepare the submission files needed by reputable journals. This percentage was reduced to 13% in the post-questionnaire. Hence, based on the lecturers' pre-questionnaire and post-questionnaire scores, the lecturers gained more basic knowledge and skills in publishing in reputable journals at the end of the workshop (Figure 3).

Research visibility

From the pre-questionnaire, more than 75% of the workshop participants had little or no knowledge of journal indexing and impact factor, Google Scholar, ResearchGate, Academia.edu profiles, ORCID, DOI, making articles visible online, and strategies to attract more citations. This percentage was reduced to 12% in the post-questionnaire. Hence, based on the lecturers' pre-questionnaire and post-questionnaire scores, the lecturers gained more basic knowledge and skills in research visibility at the end of the workshop (Figure 4).

The box plot in Figure 5 showed that the mean scores for the pre-questionnaire for writing academic articles (19.79), publishing in reputable journals (13.50), and research visibility (17.61) were lower than the mean scores for the post-questionnaire for writing academic article (44.48), publishing in reputable journals (37.91), and research visibility (48.64).



Pre-test=Pre-questionnaire, Post-test=Post-questionnaire

Figure 5: Box plot of participants' pre-questionnaire and post-questionnaire scores.

Table 1: Descriptive statistics for writing, publication, and visibility of articles.

		Percentiles		
	N	25th	50th(Median)	75th
Writing Post-questionnaire	33	37.50	43.00	53.00
Writing Pre-questionnaire	33	12.50	18.00	23.50
Publishing Post-questionnaire	33	30.50	39.00	47.00
Publishing Pre-questionnaire	33	8.50	11.00	16.00
Visibility Post-questionnaire	33	40.50	49.00	57.50
Visibility Pre-questionnaire	33	10.50	12.00	20.50

Table 1 shows the descriptive statistics of pre-questionnaire and post-questionnaire scores. The pre-questionnaire's median (50th percentile) score for writing an article is 18.00, publishing in reputable journals is 11.00, and research visibility is 12.00. While the median score of the post-questionnaire for writing an article is 43.00, publishing in reputable journals is 39.00, and research visibility is 49.00. The difference between these pre-questionnaire and post-questionnaire scores is quite big. The p-values of the Wilcoxon

Table 2: Wilcoxon signed rank test for writing, publication, and visibility of articles.

		N	Mean Rank	Sum of Ranks	Z	Sig
WRITING POST-QUESTIONNAIRE – WRITING PRE-QUESTIONNAIRE	Negative Ranks	0[a]	.00	.00	5.016	.000
	Positive Ranks	33[b]	17.00	561.00		
	Ties	0[c]				
	Total	33				
PUBLISHING POST-QUESTIONNAIRE – PUBLISHING PRE-QUESTIONNAIRE	Negative Ranks	0[d]	.00	.00	5.014	.000
	Positive Ranks	33[e]	17.00	561.00		
	Ties	0[f]				
	Total	33				
VISIBILITY POST-QUESTIONNAIRE – VISIBILITY PRE-QUESTIONNAIRE	Negative Ranks	0[g]	.00	.00	5.015	.000
	Positive Ranks	33[h]	17.00	561.00		
	Ties	0[i]				
	Total	33				

a. WRITING POST-QUESTIONNAIRE < WRITING PRE-QUESTIONNAIRE
b. WRITING POST-QUESTIONNAIRE> WRITING PRE-QUESTIONNAIRE
c. WRITING POST-QUESTIONNAIRE = WRITING PRE-QUESTIONNAIRE
d. PUBLISHING POST-QUESTIONNAIRE < PUBLISHING PRE-QUESTIONNAIRE
e. PUBLISHING POST-QUESTIONNAIRE > PUBLISHING PRE-QUESTIONNAIRE
f. PUBLISHING POST-QUESTIONNAIRE = PUBLISHING PRE-QUESTIONNAIRE
g. VISIBILITY POST-QUESTIONNAIRE < VISIBILITY PRE-QUESTIONNAIRE
h. VISIBILITY POST-QUESTIONNAIRE> VISIBILITY PRE-QUESTIONNAIRE
i. VISIBILITY POST-QUESTIONNAIRE = VISIBILITY PRE-QUESTIONNAIRE

Signed Rank test are 0.000 for writing the article, publishing in reputable journals, and research visibility. These p-values indicate that the pre-questionnaire and post-questionnaire scores (medians) differ significantly. Therefore, the training has significantly improved the participants' knowledge and skills in writing articles, publishing in reputable journals, and research visibility because the median of the post-questionnaire scores is significantly higher than the pre-questionnaire scores (Table 2).

Research question three

To what extent did the participants apply what they learned during the training?

The post-workshop follow-up revealed that many participants have started preparing articles to be published in Scopus or Web of Science journals. Here are some of the participants' comments in Figure 6:

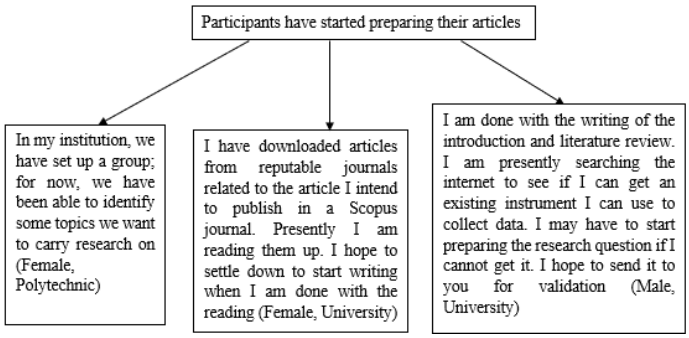


Figure 6: Participants' preparation for article writing after the workshop.

The majority of the participants can now verify whether a journal is predatory or not. A female College of Education lecturer has this to say:

> "O! I feel so bad that I wasted so many resources publishing in predatory journals. I can now identify a predatory journal. In recent times I have taken

my time to look at the composition of the editorial board and the time between when you submit and when your paper will be accepted for publication. I also check whether the journal is indexed in Scopus, DOAJ, AJOL, and other reputable databases. I cannot be fooled again."

The participants also said they had started the process of opening their Academic.com, ResearchGate, and Google Scholar accounts. A sample of the participant responses is shown in Figure 7.

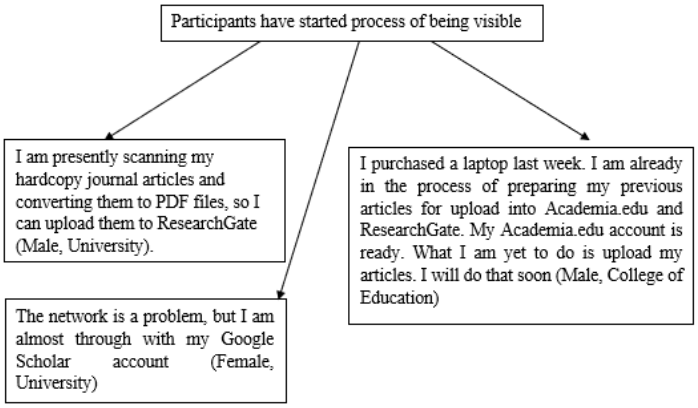


Figure 7: Participants' preparation for research visibility after the workshop.

Research question four

What targeted outcomes occur as a result of the training?

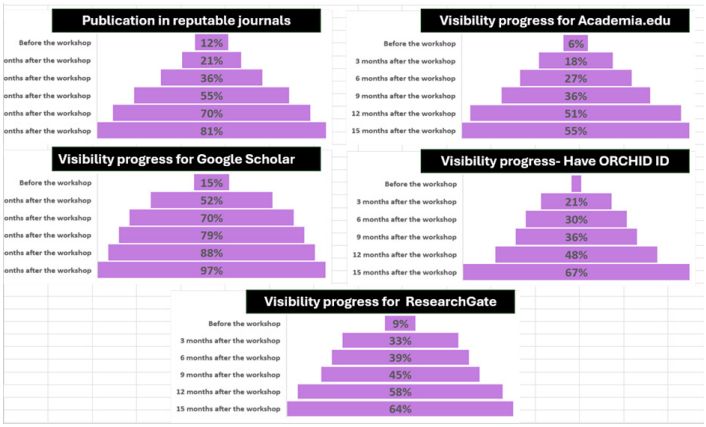


Figure 8: Impact metrics of post-research training workshop.

The primary objective of this segment is to decipher the target outcomes resulting from the research training workshop, employing Level 4 of the Kirkpatrick Model, which emphasises the measurement of results. The data sets collected at various intervals post-workshop shed light on multiple facets: publication in reputable journals, visibility progress on platforms like Google Scholar, ResearchGate, Academia.edu, and the acquisition of an ORCID ID.

Publication in reputable journals

The tabulated data delineates a significant escalation in the number and percentage of participants publishing in reputable journals post-workshop. Initially, a mere 4 participants, constituting 12%, were engaged in such scholarly activities. However, as time progressed, there was a conspicuous amplification: 15 months post-training witnessed a commendable 81% of participants (n=27) making contributions to reputable journals (Figure 8). Such a trajectory underscores the efficacy of the workshop in fostering academic productivity and dissemination of scholarly output.

Visibility progress for Google Scholar

The progression of visibility on Google Scholar manifests a palpable upward trend. Prior to the workshop, a modest 15% (n=5) were visible on this platform. Yet, post-training intervals reveal an exponential surge, culminating in an impressive 97% (n=32) visibility 15 months post-workshop (Figure 8). This remarkable augmentation accentuates the workshop's instrumental role in enhancing academic visibility, thereby augmenting the dissemination and impact of research endeavours.

Visibility progress for ResearchGate

Analogous to the trends observed on Google Scholar, visibility on ResearchGate witnessed a robust ascent after the workshop. A mere 9% (n=3) of participants exhibited visibility on this platform pre-workshop. However, the ensuing months showcased a consistent elevation, with 15 months post-training registering a commendable 64% (n=21) visibility (Figure 8). This trajectory corroborates the workshop's efficacy in augmenting the digital footprint and scholarly interaction of participants on ResearchGate.

Visibility progress for Academia.edu

The visibility progression on Academia.edu mirrored the trends observed across other platforms, albeit with slight variations. Initial pre-workshop engagement stood at a modest 6% (n=2). Nevertheless, subsequent evaluations portrayed a steady ascent, culminating in 55% (n=18) visibility 15 months post-training (Figure 8). Such a trajectory underscores the workshop's efficacy in fostering an active scholarly presence on diverse digital platforms, thereby enhancing academic collaboration and dissemination.

Visibility progress - possession of ORCID ID

The acquisition of an ORCID ID, a pivotal identifier for academic recognition, exhibited a consistent and substantial growth trajectory post-workshop. Merely 3% (n=1) of participants possessed an ORCID ID pre-workshop. However, subsequent intervals showcased a remarkable augmentation, with 67% (n=22) acquiring this essential identifier 15 months post-training (Figure 8). This trajectory underscores the

workshop's efficacy in equipping participants with essential tools for academic recognition and collaboration.

Discussion

The study results revealed positive findings for the writing and publishing of articles in reputable journal workshops at all four levels of the Kirkpatrick model. The present workshop programme was valuable in contributing to the writing and publication of articles in reputable journals and the visibility of the participants. The research outcomes have shown that the participants were willing to produce articles to be published in reputable journals. Previous studies have shown that such hand-on-training programmes also support learners to improve their research (Fuller et al., 2005) and reinforce changes at the institutional level (Abdulghani et al., 2014; Nestel et al., 2004).

Kirkpatrick's first level of evaluation assesses participants' reactions to the facilitators' delivery method, the training materials, the workshop venue, lunch, and learning activities. The majority of the participants were satisfied with the workshop. This result was in line with that of Abdulghani et al. (2014). Many institutions used the first level of the Kirkpatrick model as the sole means of workshop evaluation (Abdulghani et al., 2014). Positive satisfaction does not ensure learning and subsequent application of the workshop content. Kirkpatrick's second level evaluates the extent of learning among the participants (Kirkpatrick & Kirkpatrick, 2006). The participants' basic knowledge and cognitive skills were high for writing the academic paper, publishing in reputable journals, and research visibility. The post-questionnaire scores were significantly higher than the pre-questionnaire scores for writing academic papers, publishing in reputable journals, and research visibility. This improvement may be attributed to the quality delivery of the training materials by the experienced resource specialists and the interactive sections that followed each training session. This improvement is similar to findings reported in previous studies (Abdulghani et al., 2014).

The evaluation of Kirkpatrick's third and fourth levels also showed marked improvement in the participants' article writing, publishing, and research visibility skills and knowledge. The data reveals a notable transformation from passive consumers of knowledge to active contributors to the academic discourse and a heightened visibility on Google Scholar, ResearchGate, and Academic.com platforms. Also, there was an exponential growth in ORCID ID acquisition This transformation is indicative of the workshop's success in not only imparting theoretical knowledge but also inculcating practical skills essential for navigating the intricate landscape of academic publishing. It signifies that participants' research endeavours are not confined to the boundaries of their respective institutions but resonate across global academic communities, fostering interdisciplinary collaboration and knowledge exchange. It also implies that the workshop's curriculum, pedagogical approaches, and resources resonated with participants' evolving academic aspirations and professional paths. Research training is an important strategy for improving researchers' skills, productivity, and visibility (Vinnikova et al., 2021; Devlin & Radloff, 2014; Francis et al., 2009).

The multifaceted outcomes elucidated herein accentuate the workshop's transformative impact on participants' academic trajectories, institutional profiles, and scholarly activities. However, future endeavours may necessitate additional longitudinal evaluations that may elucidate sustained impacts, emergent trends, and evolving academic landscapes, thereby informing iterative refinements, strategic interventions, and transformative initiatives within tertiary institutions.

The findings showed that the participants could use the knowledge and skills acquired during the workshop and yielded results. If this improvement was recorded just 15 months after the workshop, there is hope that there may be a more remarkable improvement in the next 3 years. Several studies evaluating workshops, training, and programmes using Kirkpatrick's model did not effectively measure the third and fourth levels (Cahapay, 2021; Dewi & Kartowagiran, 2018; Aryadoust, 2017; Steele et al., 2016). This study has shown results for the 3rd and 4th levels. This is an additional improvement to what some previous works have found.

However, there are some limitations associated with this study. The sample size was small. The reason for this was that both the workshop attendance and filling in of the pre-questionnaire and post-questionnaire were voluntary. Another limitation was that the researcher did not receive feedback through the institutions because the participants were drawn from several institutions. It is easier to collect information for the fourth level of Kirkpatrick's model if the participants of the workshop were from the same institution. In addition, observation of the activities and behaviours of the participants was limited to only the institution to which the researcher had access. Other factors, like the researchers' previous knowledge, may have contributed to the findings in Level Four of Kirkpatrick's model. Nevertheless, the knowledge and skills learnt during the workshop have significantly contributed to the study's results in the fourth level of Kirkpatrick's model.

The researcher believes that the findings of this study could significantly influence the higher education publication landscape in Nigeria, as well as potentially benefit other regions in Africa and beyond. By showcasing the success of tailored training programmes in improving academic staff members' research skills and knowledge of reputable publishing practices, this study encourages the implementation and refinement of similar initiatives across different institutions. These efforts can lead to enhanced overall research output and international collaboration opportunities, ultimately elevating the global standing of participating universities and countries.

Possible future research directions include conducting longitudinal studies on the lasting impacts of targeted workshops, investigating variation in effectiveness due to factors such as discipline, career stage, gender, and location, examining challenges in scaling up personalised workshops, comparing various research skill development techniques, studying industrial collaborations for real-world application of research, focusing on capacity building for

early-career researchers from underrepresented groups, and incorporating technology like text prediction software, AI-driven plagiarism detection, and VR simulations for immersive data analysis in research training.

Conclusion

Participants' feedback is important and useful for improving and conducting academic workshops. In addition, this workshop was found to be effective and meet the needs of the participants who can improve institutional research capacity and visibility. There is a need to re-evaluate the fourth level after six months to get a true picture of the impact of this workshop on the participants. Furthermore, academic workshops, training, and programmes should be evaluated using evaluation models like Kirkpatrick's model.

Implications of the findings

Theoretical implications:

This study carries several theoretical implications that contribute to the understanding of research training workshops and their impact on academic staff in tertiary institutions.

1. The study showcases the effectiveness of Kirkpatrick's four-level evaluation model in comprehensively assessing the outcomes of a research training workshop.

2. This study extends the understanding of how workshops influence participants' learning and subsequent actions.

3. The study emphasises the importance of participant feedback for designing effective workshops.

4. The high participant satisfaction levels highlight the workshop's success in meeting participant expectations.

5. This understanding can guide future workshop organisers in tailoring their content and delivery methods to align with participants' needs and preferences.

Empirical implications:

Empirically, this study has practical implications for workshop organisers, academic staff, and institutions:

1. The findings offer valuable insights for designing and delivering effective research training workshops.

2. Workshop organisers can take cues from the participants' reported satisfaction and improved knowledge to refine their training content, methods, and delivery, ultimately enhancing the workshop's impact.

3. The study showcases the potential of workshops to empower academic staff in underdeveloped regions with vital skills for successful research endeavours.

4. Participants' improved skills in academic writing, publishing, and research visibility demonstrate the practical benefits of targeted training initiatives.

5. Institutions can leverage the study's outcomes to enhance their research capacity and visibility.

6. The 12-month follow-up assessment offers a novel approach to gauging the long-term impact of workshops.

7. Future evaluations can adopt similar longitudinal approaches to gain a deeper understanding of how workshops influence participants over time.

Recommendations

Based on the findings and implications of the study, several recommendations are suggested to enhance the effectiveness of research training workshops for academic staff in tertiary institutions:

1. Workshop organisers should ensure that the content is well-aligned with the specific needs and challenges faced by academic staff in the given context.

2. Customising the training content to address participants' existing knowledge gaps and research requirements can enhance the relevance and impact of the workshop.

3. Incorporating interactive learning methods, such as hands-on exercises, case studies, and group discussions, active engagement and deeper understanding among participants can facilitated.

4. Implementing a long-term follow-up mechanism, similar to the 12-month assessment in this study, is recommended.

5. Institutions should recognise the value of research training workshops and actively support their staff's participation.

6. Ensuring that the workshop is facilitated by experienced and knowledgeable trainers is crucial. Continuous assessment and refinement of workshop content and methods are essential.

7. Collaborating with academic institutions can enhance the workshop's reach and impact.

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