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INFLUENCE OF INSTRUCTORS' EFFICACY AND ONLINE TEACHING ON STUDENTS' PRACTICAL PERFORMANCE IN LAGOS STATE TECHNICAL COLLEGES

Rafiu Oluwole Ajifowoke

Lagos State Technical and Vocational Education Board (LASTVEB)
Email: woleajifowoke@gmail.com,ajifowoke.wole@icloud.com
&
Adekunle Adetayo Adebanjo
Department of Educational Foundations, National Open University of Nigeria

ABSTRACT

This study examined the impact of instructors' efficacy and online teaching on students' practical performance in construction crafts during the pandemic in Lagos State Technical Colleges. It specifically assessed instructors' efficacy in online teaching, the effect of online teaching on practical performance, the influence of gender on practical performance, and the interaction between gender and teaching method. A descriptive and pretest-posttest control group quasi-experimental research design with a 2x2 factorial arrangement was employed. The study comprised 200 construction crafts students from two technical colleges in Lagos State. Data were collected using the Instructors' Efficacy Scale and Practical Performance Test, and analyzed through descriptive and inferential statistics. The findings indicated a high level of instructors' efficacy in using online teaching for construction crafts during the pandemic. The study also revealed a significant effect of the teaching method on students' practical performance in technical colleges, favoring the conventional hands-on training method. However, no significant difference was found in the practical performance between male and female students after exposure to the online teaching method. Furthermore, there was no significant interaction effect observed between gender and teaching method on practical performance. Based on these findings, it can be concluded that both teaching methods are effective, but the conventional hands-on training method is more beneficial for teaching construction crafts and improving students' practical performance compared to online teaching. To enhance online learning experiences for practical activities, resources should be allocated for acquiring technology tools and platforms such as virtual labs and simulation software. Additionally, the technical college curriculum should be periodically reviewed and updated to align with technological advancements. The integration of virtual reality, augmented reality, and simulation software into the teaching of construction crafts can further enhance learning experiences and provide students with opportunities to practice in a controlled environment.

Keywords: Instructors' Efficacy, Online Teaching, Construction Crafts, Pandemic, Practical Performance, Technical College

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I. Introduction

The ultimate goal of technical education is to prepare students for the workforce by equipping them with the necessary skills and knowledge. This means ensuring that students can perform tasks and solve problems in real-world situations (Nnadi & Saue, 2023). However, the shift to online teaching raised concerns about whether students' practical performance would be adversely affected (Iyanda & Opele, 2015). Students' practical performance can be defined as the ability of students to effectively apply the knowledge and skills they have acquired in a real-world context (Opele & Okunoye, 2019). It is a measure of students' ability to put theoretical concepts into practice, often evaluated through assessments, projects, experiments, and practical examinations. This form of assessment allows educators to gauge a student's competence in applying their knowledge, problem-solving skills, and adaptability in real-life situations. Practical performance is a critical aspect of education, especially in fields that require hands-on skills and real-world application of knowledge. It is an indispensable component of a well-rounded educational experience, allowing students to bridge the gap between theory and practice (Okwelle & Ojotule, 2018). Several factors influence students' practical performance. One significant factor is the instructors' efficacy and the teaching methods used.

Measuring students' practical performance in construction crafts is a multifaceted process (Opele, Adepoju & Adegbite, 2020). It involves assessing their ability to complete tasks, use tools and equipment safely, follow industry standards, troubleshoot issues, and work effectively as part of a team. It also requires evaluating their problem-solving skills, attention to detail, and ability to adapt to different construction scenarios. The effectiveness of online teaching was largely untested in this context, and the success of the transition depended on various factors, including the efficacy of the instructors (Alamri, 2023). The transition to online teaching of construction crafts was a significant departure from traditional hands-on training methods (Awogbami et al., 2020). Instructors and students had to find innovative ways to replicate the practical experience of working with construction materials and tools within the constraints of a digital environment (Awogbami et al., 2021). This challenge necessitated the development of new teaching materials, interactive simulations, and real-world case studies that could bridge the gap between theory and practice

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance

Ho^1: There will be no significant main effect of teaching method on practical performance of construction crafts students in Technical College.

Ho^2: There will be no significant interaction effect of gender and teaching method on construction crafts students' practical performance

II. Review of related studies

Instructors' Efficacy: The efficacy of instructors, as outlined in accordance with Bandura's Social Learning Theory, is linked to individuals' confidence in their capacity to effectively accomplish given tasks. Bandura defines efficacy as individuals' assessments of their abilities to organize and carry out actions necessary for achieving specific performances. Similarly, Alamri (2023) characterizes efficacy as the perception of one's own capabilities to plan and apply actions for the execution of particular tasks. The concept of self-efficacy originates from Bandura's social cognitive theory, widely utilized in diverse fields, including education. Instructors' efficacy functions as a cognitive mediator of action, providing individual instructors with insights into their self-appraisals or self-evaluations of their abilities (Bandura, 1986). Information about individuals' self-appraisals can be influenced by verbal persuasion, affective arousal, past experiences of success or failure, and observations of others' achievements or setbacks. Bandura's research suggests that individuals with high self-efficacy are more inclined to persist and invest greater effort in task accomplishment, while those with low self-efficacy are less likely to succeed, often experiencing feelings of hopelessness.

Instructors' efficacy represents a conceptual framework explaining instructors' belief in their capacity to teach students and support the growth of understanding, skills, and principles. The concept of online teaching efficacy is rooted in human-computer interaction, explored by numerous studies investigating factors influencing the incorporation computers and technologies into the processes of learning and teaching (Alamri, 2023). Instructors' efficacy plays a crucial role in shaping the emotions, cognitions, and drive of individuals, and behavior. Instructors possessing strong confidence in their abilities tend to act with determination in the pursuit of their goals, overcoming difficulties resulting from failure or defeat, thus enhancing personal satisfaction and success. On the contrary, instructors with low confidence in their abilities tend to avoid engaging in challenging tasks due to the potential for stress, tension, and dissatisfaction. They may refrain from putting in effort and are prone to giving up quickly (Yasemin, Eminoglu, Atila, Yildiz & Bozkurt, 2021). Within this context, efficacy emerges as a crucial concept applicable across various life domains, including the field of education. Instructors' efficacy beliefs encompass their assessments of teaching capabilities, proficiency in utilizing teaching strategies, effectiveness in classroom management, and ability to facilitate student participation. Instructor who possess a strong belief in her own capability, exhibit greater enthusiasm in the teaching and learning process, and demonstrate increased success pertaining to the management of a classroom (Tuckman & Sexton, 1990; Gibson & Dembo, 1984). Furthermore, instructors' efficcacy beliefs influence their choice of teaching methods and the time devoted to the teaching process. A robust sense of efficacy directly enhances the overall excellence in instructional delivery. Additionally, a heightened individuals' personal perception of efficacy can empower the instructor to carry out their

professional duties satisfactorily (Cakiroglu & Isiksal, 2009).

Overview of Online Teaching: Online instruction, a particular variant of distance or remote education, refers to the procedural aspect of acquiring knowledge, where certain or all educational materials are delivered through online. The instructor plays a crucial role in facilitating this procedure involving the organization and arrangement of online activities (DeCoito & Estaiteyeh, 2022). Tools for online teaching are broadly defined as online platforms, software applications, or computer-supported activities, deliberately designed to focus on and support learning through the Internet. According to DeCoito and Estaiteyeh, various online learning formats exist:
Technology Assisted: In this format, traditional face-to-face instruction occurs, incorporating the integration of technology within the classroom to enhance the learning experience.

Blended, Hybrid, or Flipped: This format involves a combination of in-person interaction and online learning, with a portion of the learning traditionally conducted in person now occurring within a digital or virtual setting.

Fully Online: In this format, presentations, conversations, and tasks occur within a digital setting, without any in-person engagement. Fully online teaching can further be categorized into asynchronous and synchronous learning.

Asynchronous Learning: This refers to "learning or communication that occurs asynchronously that is not live. It is facilitated through video, audio, documents, programs, applications, or engagement tools like engaging in discussion board forums, virtual chat rooms, or email. In online classes with asynchronous delivery, students have the opportunity to actively engage while acquiring knowledge without the need for simultaneous present within the digital realm. Conversely, synchronous learning involves immediate and simultaneous engagement with an individual or a collective. Courses are structured to ensure that students are actively online and engaging in real-time communication. Illustrative tools for real-time interaction encompass online seminars, video conversations, live streaming, and those seamlessly incorporated into social media platforms (Tallent-sssRunnels et al., 2006).

Owing to technological progress, the practice of online instruction has experienced substantial transformations over the past two decades, resulting in widespread embraced by numerous higher education establishments globally. The pervasive use of technology, coupled with easy access to online resources and the emergence of new theories related to learning and instruction, has opened up new avenues for online education (Hung & Jeng, 2013). Consequently, many students opt for online learning modules, attracted by the accessibility to high-quality education at their convenience, enabling them to pursue degrees or acquire new skills without the need to travel to different cities or countries. However, the landscape of online education experienced a seismic shift with the global shutdown of educational facilities as a result

of the COVID-19 pandemic. What was once a choice for institutions and individuals became a mandatory transition to online teaching. This abrupt shift, occurring without adequate preparation, had a profound impact on methods employed by instructors and the learning of students, presenting numerous challenges for both institutions and individuals (Alamri, 2023). Fortunately, online learning infrastructure exists worldwide for the majority of higher education institutions, having been put into practice over the last two decades (Martin et al., 2019). Despite this, a considerable proportion of higher education instructors had not previously engaged in online teaching, potentially affecting their teaching effectiveness (Naik et al., 2021; Howard et al., 2021) and introducing difficulties in providing instructions of high quality in a remote setting (Adedoyin & Soykan, 2020). The sudden transition forced instructors to adapt to online teaching within weeks, lacking the preparation necessary for maintaining the quality of education. Successful online teaching demands intensive preparation in both pedagogical and technological aspects, as many instructors lack the customary knowledge and competencies for delivering effective online learning environments (Howard et al., 2021).

At the outset of the pandemic, Hodges et al. (2020) identified various terms linked to the practice of learning online that surfaced during the crisis. They determined that emergency remote teaching was the most fitting term to characterize instructional delivery amid the health emergency. Hodges et al. (2020) specifically defined emergency remote teaching as a temporary transition of instructional delivery to an alternative mode in response to crisis circumstances. This approach became prevalent in universities worldwide as a reaction to the COVID-19 pandemic. Nevertheless, several other studies conducted during the pandemic have utilized different terms such as online learning, online teaching, remote teaching, emergency remote teaching, distance education, and distance learning. These terms are often used interchangeably in the literature (Jung et al., 2021; Dietrich et al., 2020; Lorenza & Carter, 2021).

Designing and implementing effective online teaching requires careful planning to ensure a high-quality learning experience. However, the pandemic posed significant difficulties faced by institutions of higher education, hindering their ability to deliver satisfactory levels of online teaching quality. This emerged as a critical issue within the higher education sector. While some institutions successfully provided comprehensive "support for instructors in both technological and pedagogical aspects to transition to online or remote teaching, others offered minimal support. The variance in support levels resulted in confusion among instructors and a reduction in their effectiveness during the abrupt transition. Consequently, instructors faced challenges in maintaining the quality of their online teaching practices (Crawford et al., 2020). Crawford et al. underscored the widespread concerns among institutions concerning the excellence of teaching in an online environment as they navigated the shift to online education amidst and following the COVID-19 pandemic. Dagiene et al. (2022) delved into the enduring quality factors that

impacted online teaching in higher education amid the pandemic. Their research identified key contributors to the effectiveness of learning online, including administrative initiatives, assistance for students, oversight of the study process, academic support, collaboration within the academic community, and the technical foundation. These factors collectively played a crucial role in ensuring the effectiveness pertaining to the practice of learning and teaching online in higher education throughout the pandemic. The concept of quality in online teaching encompasses higher education institutions' ability to deliver successful online teaching and learning processes. This involves developing appropriate policies, establishing robust technical infrastructure, implementing effective instructional practices, and providing comprehensive support in both technological and pedagogical aspects, all within the challenging context of the pandemic (Dagiene et al., 2022).

The Concept of Students Practical Performance: Tafida, Abba and Saidu (2019), described practical skill as manipulative skills involving body movement or tool usage to enhance performance, especially in operating machines. The acquisition of skills serves as a means to enhance the nation's production capacity. The implementation of technical education in schools curricula, particularly in technical colleges, has focused on emphasizing utilising hands-on experiences to promote the development of practical skills (Opele et al., 2021). Similarly, Sabiru (2014) stressed the importance of providing necessary facilities in workshops for effective training to ensure students receive adequate training in skills acquisition within their respective subject areas. Similarly, Monich (2013) highlighted that for to make the acquisition of practical skills in schools more authentic, it is essential to create a learning environment conducive to the practical and applied aspects of technical and vocational education programs to closely resemble or simulate the work environment. In the field of technical education, practical performance holds significant importance in a student's learning journey. Construction crafts courses offered in technical colleges, for instance, demand students to showcase their practical skills and abilities in various construction-related tasks. Practical performance, in this context, involves a wide range of skills, knowledge, and behaviors extending beyond mere theoretical understanding.

Practical experience serves as a valuable conduit for applying theoretical knowledge to real-world scenarios, a crucial demand in the construction industry where professionals must seamlessly transition from theory to practice. Students' engagement in practical activities acts as a vital link between the classroom and the construction site, fostering the acquisition of skills essential for future careers. Construction crafts courses, like many other fields, benefit significantly from a hands-on approach as it allows students to gain a profound understanding of construction materials, tools, and techniques (Tafida, Abba, & Saidu, 2019).

Moreover, practical experiences contribute to the enhancement of problem-solving skills. In the construction industry, unforeseen challenges are routine, and students excelling in practical performance are better equipped

to tackle these issues, adapt to changing circumstances, and devise creative solutions. Practical performance also plays a pivotal role in cultivating teamwork and communication skills. Collaborative efforts are inherent in construction projects, involving professionals such as architects, engineers, project managers, and skilled tradespeople. Through hands-on activities, students learn effective communication, task delegation, and harmonious collaboration with peers (Tafida, Abba & Saidu, 2019). To possess a skill is to demonstrate a habitual and natural proficiency in a specific activity via repeated practice. The progression of skills differs based on the intricacy and nature of the task. Adyemo (2009) emphasized that people pursuing skill training requires certain characteristics, including genuine interest, inherent ability, aptitude, patience, and various other human and physical attributes, essential for success in skill development.

According to Robinson (2017), the evaluation of student' performance in workshops is based on their proficiency in carrying out realistic activities. Poor performance, as defined by Abdullahl (2013), occurs when results fall below a specified standard. For example, excellence might be set at 70%, while anything below 40% is considered a failure. Abdullahi emphasizes that to improve workshop performance, it is crucial to have access to workshop materials. This includes tools, consumables, equipment, and system parts. Without these resources, practical learning is hindered, leading to inevitable poor performance. Liberman (2013) adds that students play a pivotal role in enhancing practical performance in schools.

Theoretical review

Social Learning Theory also places a significant emphasis on self-efficacy, confidence in one's capability (for both instructors and students) to execute specific tasks or achieve goals. Bandura argues that self-efficacy plays a vital role in determining an individual's motivation, effort, and persistence in learning and skill development. In the case of construction crafts, instructor's self-efficacy is critical to students' practical performance. Online teaching during the pandemic can influence instructors and students' self-efficacy in construction crafts in multiple ways. First, the absence of direct supervision and feedback can lead to doubts and uncertainties about their abilities. When students cannot easily consult with instructors or peers, they may become hesitant and less confident in their practical skills, hindering their overall self-efficacy. Second, the shift to remote learning may limit opportunities for students to receive positive reinforcement and praise for their achievements. In a traditional classroom, students may receive immediate acknowledgment for their progress, which can boost their efficacy. Online teaching, with its delayed and often less personalized feedback, may not provide the same level of positive reinforcement, potentially diminishing students' self-belief.

III. Research Method

This study adopted a descriptive research design and a quasi-experimental research design. A descriptive research design using the survey technique was used to gather data on the instructors' efficacy in using online

teaching of construction crafts during the pandemic, and it does not involve the manipulation of any variable. The study also adopted a pretest-posttest control group quasi-experimental research design involving 2x2 factorial. Two groups involved in the study are designated experimental and control groups respectively, and the two levels of the instructional method are Online Teaching and Traditional hands-on training method. The population of this study comprised all students of construction trades in the five Lagos State Technical Colleges. The Technical Colleges are Government Technical College Ado-Soba; Government Technical College Agidingbi; Government Technical College Epe; Government Technical College Ikorodu; and Government Technical College Ikotun. The sample for this research consisted of 200 students of construction crafts from two intact classes selected from two Government Technical Colleges (Government Technical College Agidingbi and Government Technical College Epe). The two colleges were purposively selected based on the criteria that the researcher observed similarities in their characteristics, and the colleges were not closer to each other to avoid experimental contamination. Government Technical College Agidingbi was the designated experimental group, while Government Technical College Epe was the control group. Both the experimental and the control groups had 100 participants each of a varied number of males and females. The two groups were then taught a construction crafts course involving a practical Online Teaching Method and a Traditional hands-on training method respectively for four weeks.

After the conduct of the study was approved by the authorities of the selected technical colleges in Lagos State, the objectives of the research were clearly explained to the instructors and sought their assistance toward its success. Students in both the experimental and control groups were pretested with the practical performance test before treatment. Following that, the researcher appointed a technologically savvy instructor who taught the experimental group with the online teaching method using the prepared lesson plans, and another experienced instructor who taught the control group using the usual traditional hands-on training method to teach the same topic. The researcher monitored the experimental and control groups to ensure that the appropriate method was employed throughout the teaching process by the instructors. The normal period of two hours was used in both the experimental and control groups. The experiment lasted for 4 weeks. At the end of the treatment, a post-test was administered to the students in both control and experimental groups. To avoid cheating during the test, the researcher employed the services of additional instructors in the colleges to assist in the invigilation and collection of scripts. The answer scripts were then scored and analyzed. The study employed both descriptive and inferential statistics to analyze the data collected. The descriptive +statistics used were simple percentages with mean and standard deviation, while ANCOVA was used as the inferential statistics to test the formulated hypotheses at 0.05 significance level. The average mean value of 2.50 was used as a benchmark to determine whether the respondents' response was high or low.

The mean score above the benchmark is considered high, while that below the benchmark is low.

IV. Presentation of Results

Table 1: Descriptive statistics of participants' distribution by strategy and gender

Strategy	Gender	N	Mean	Std. Deviation
Online Method	Male	75	68.37	9.724
	Female	25	66.42	7.688
	Total	100	**67.84**	9.267
Conventional Method	Male	89	75.17	10.135
	Female	11	74.00	7.321
	Total	100	**75.04**	9.841

Table 1 shows that the Conventional method has a higher mean practical performance score (75.04) than the Online method, with a mean practical performance score of (67.84). It also shows that male students have the higher mean practical performance score of (68.37) than the female students with mean practical performance score of (66.42).

Table 2: Descriptive analysis on the level of instructors' efficacy in the use of online teaching of construction crafts during the pandemic

	N	Mean	Std.D
▪ The instructors demonstrate a good understanding of using technology for teaching	200	3.16	0.779
▪ The instructors adapt well to technical issues that arises during online classes	200	3.07	0.726
▪ The online teaching format is not suitable for learning construction crafts	200	2.90	0.780
▪ The instructors provide clear instructions and explanations during online classes	200	3.04	0.682
▪ The instructors effectively address questions and concerns raised during online classes	200	2.91	0.824
▪ The instructors use real-world examples to illustrate concepts during online instruction	200	2.96	0.739
▪ The instructors use multimedia resources effectively to support online instruction	200	3.06	0.727
▪ Online classes provide flexibility that benefits my learning in construction crafts	200	3.07	0.658
▪ The instructors effectively integrate practical demonstrations into online classes	200	2.94	0.973
▪ I feel confident in the instructors' ability to teach construction crafts through online methods	200	3.03	0.712
▪ The instructors encourage interactive participation during online classes	200	3.04	0.879
▪ The instructors provide timely and constructive feedback on online assignments	200	2.89	0.825
▪ Online discussions and assessments accurately reflect my understanding of construction craft topics	200	2.97	0.865
▪ The instructors effectively utilise online platforms for teaching construction crafts	200	2.79	0.909
Grand Mean		**2.99**	**0.791**

Table 2 shows the descriptive analysis of the level of instructors' efficacy in the use of online teaching of construction crafts during the pandemic in Lagos State Technical

College. The result revealed that all the variables had mean values which are greater than the benchmark value of 2.5($\bar{X}$>2.50). The calculated average mean value ($\bar{X}$ =2.99, SD=0.791) is greater than the critical value/benchmark of 2.50, indicating that the level of instructors' efficacy in the use of online teaching of construction crafts during the pandemic is high. This implied that the instructors in Lagos State Technical Colleges possess high level of efficacy in the use of online teaching of construction crafts during the pandemic.

Test of Hypotheses: There is no significant main effect of teaching method on practical performance of construction crafts students in Technical College.

Table 3: Analysis of covariance (ANCOVA) showing the effect of teaching method on practical performance of construction crafts students in Technical College

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2873.999[a]	4	718.500	7.868	.000	.139
Intercept	21822.932	1	21822.932	238.974	.000	.551
Pretest	183.297	1	183.297	2.007	.158	.010
Method	1449.009	1	1449.009	15.867	.000	.075
Gender	90.062	1	90.062	.986	.322	.005
Method * Gender	1.527	1	1.527	.017	.897	.000
Error	17807.281	195	91.319			
Total	1041416.000	200				
Corrected Total	20681.280	199				

a. R Squared = .139 (Adjusted R Squared = .121)

The result in Table 3 shows a significant main effect of teaching method (Online and conventional method) on the practical performance of construction crafts students in Technical College ($F_{(1,195)}$ = 15.867, p=0.000<0.05). This result means that the post-test mean practical performance scores of students exposed to the Online and the conventional method differ significantly. The reported Eta Squared which measures the percentage of variance in the dependent variable accounted for by the independent variable, indicates that the teaching method accounted for 0.075 (7.5%) variance in students' practical performance in Technical Colleges. Therefore, the null hypothesis that there is no significant main effect of teaching method on practical performance of construction crafts students in Technical College is rejected.

Table 4: Pairwise comparisons of mean difference in students' practical performance by teaching method

(I) Method	(J) Method	Mean Difference (I-J)	Std. Error	Sig.
Online Method	Conventional Method	-7.541*	1.893	.000
Conventional Method	Online Method	7.541*	1.893	.000

Table 4 shows that the mean difference in practical performance score of students in the experimental group (Online Method= -7.541), is significantly lower than those in the control group (Conventional Method= 7.541). This result implies that the Conventional method, which is the traditional hand-on training method, is more to teach construction crafts students in Technical College than the online method.

Discussion of Findings

The result indicates no significant difference in the practical performance of male and female construction crafts students after exposure to the online teaching method ($F_{(1,195)} = 0.986$, $p=0.322>0.05$). This result implies no significant difference in the mean practical performance scores of male and female construction crafts students after exposure to Online teaching method. Therefore, the null hypothesis that there is no significant difference in the practical performance of male and female construction crafts students after exposure to the online teaching method is affirmed. The result indicates no significant interaction effect of gender and teaching method on construction crafts students' practical performance ($F_{(1,195)} = 0.017$, $p=0.897>0.05$). This result means no significant difference in the mean practical performance scores of male and female construction crafts students across the two instructional method levels (Online and Conventional method). So, there is no significant interaction effect of gender and teaching method on the students' practical performance. Hence, the hypothesis that there is no significant interaction effect of gender and teaching method on construction crafts students' practical performance is retained. These findings tallies with the findings of other authors (Opele, Adeyeye, Iyanda, & Olagoke, 2020).

The study found that the level of instructors' efficacy in the use of online teaching of construction crafts during the pandemic in Lagos State Technical Colleges was high. This outcome implies that instructors in Lagos State Technical Colleges possess high level of instructional efficacy needed to effectively integrate practical demonstrations into online teaching of construction crafts to facilitate students learning. This result align with the findings of (Opele et al., 2015), (Culp-Roche et al. 2021) who reported a high efficacy of nursing instructors who transitioned from face-to-face course to an online teaching during the pandemic. The result is also closely aligned with the findings

of Noor, Isa and Mazhar (2020) who investigated the perception of Pakistani school instructors regarding their online teaching practices during the pandemic (Opele & Iyanda, 2015). Their findings reported that despite the issues and challenges confronted by school instructors in delivering online instructions, they demonstrated exemplary creativity and dedication in working with very limited educational facilities. However, the result negates the findings of Coman et al. (2020) who reported that higher institutions of learning in Romania were not prepared for sudden transition to online learning. Thus, technical challenges and low instructors' technical skills were found to be the most important issues in the online environment.

The study also found a significant effect of teaching method on practical performance of construction crafts students in Technical College. The result of the findings showed that both methods are good, but the conventional method of hand-on training is more to teach construction crafts and improves students' practical performance than the online teaching method. This result supported the findings of Kemp and Grieve (2014), which compare undergraduates' preference for face-to-face traditional classrooms and online teaching in Australian university as well as (Adewole & Opele, 2019). They reported that undergraduate students preferred to complete activities in face-to-face traditional method rather than online, but they found no significant difference in the performance of students in the two strategies (Rosaline, 2020). The result is also related to the findings of Amer and Nemenqani (2020), who reported no significant difference in the performance of students taught practical Histology during distance education, and the students taught using traditional method (Alarape et al., 2016). They concluded that virtual microscopy is an effective method in teaching histology. However, the result negates the findings of Nnadi and Saue (2023) who reported that carpentry and joinery craft students in technical colleges in Anambra State taught joint and jointing as well as scaffolding through mobile learning method performed higher than students taught through the traditional hand on experience method.

Another finding of the study is that there was no significant difference in the practical performance of male and female construction crafts students after exposure to the online teaching method. This outcome implies that the mean performance scores of male and female students did not differ statistically after exposure to the online teaching method. This result indicates that the method adequately catered for the gender consideration of construction crafts students. This finding align with the findings of El-Said (2021) who investigated the effect of the sudden shift from face-to-face to online distance learning due to pandemic in Egypt universities. The author reported no significant difference in the performance of students before and after exposure to online teaching.

V. Conclusion

The study has been able to fill an important knowledge gap in the literature by establishing that instructors in Lagos State Technical Colleges possess high level of

instructional efficacy needed to effectively integrate practical demonstrations into online teaching of construction crafts to facilitate students learning. There was a significant effect of teaching method on practical performance of construction crafts students in Technical Colleges. Also, no significant difference was found in the practical performance of male and female construction crafts students after exposure to the online teaching method. Lastly, no significant interaction effect of gender and teaching method was found. In conclusion, both methods are good, but the conventional method of hand-on training is more to teach construction crafts and improves students' practical performance than the online teaching method.

VI. Recommendations

The following recommendations are made:

i. Resources should be allocated for the acquisition of technology tools and platforms that enhance online learning experiences of practical activities, such as virtual labs and simulation software.
ii. Instructors should be offered professional development opportunities to enhance their online teaching skills and stay updated on the latest educational technologies in the field of construction crafts.
iii. The curriculum of technical colleges should be periodically review and update to align with technological advancements. The integration of virtual reality, augmented reality, and simulation software into the teaching of construction crafts can enhance the learning experiences and allow students to practice in a controlled environment.
iv. Students should be encouraged to take initiative in their learning by providing additional resources and suggesting self-directed study.

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