Development of a Blended Learning Package for Enhancing Students' Skills Performance in Workshop Practices in Colleges of Education in North-Central Nigeria

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Abstract- ***This study examined the role of digital learning tools, hands-on training, and blended learning packages in enhancing students' skill performance in workshop practices in Colleges of Education. Four research questions guided the study, focusing on digital and hands-on tools, the effectiveness of blended learning, associated challenges, and guidelines for adoption. A descriptive survey design was adopted, and data were collected using structured questionnaires administered to lecturers, instructors and students. Mean and standard deviation were used for analysis and decision-making. The findings revealed that digital learning tools such as instructional videos and e-simulations, when combined with hands-on training tools, significantly improve students' skill acquisition. Blended learning packages were found to be highly effective in improving students' practical skills, conceptual understanding, retention, and engagement. However, challenges such as poor connectivity, digital divide, inadequate lecturer training, infrastructural deficiencies, and weak institutional support hinder effective implementation. The study also established guidelines for successful adoption, emphasizing the need for clear policies, adequate infrastructure, comprehensive training, interactive content design, technical support, and phased implementation. It was concluded that both digital tools and blended learning packages are indispensable in strengthening workshop practices in Colleges of Education. The study recommended provision of adequate infrastructure, training for lecturers and students, formulation of clear institutional policies, and phased adoption strategies to ensure effective implementation and sustainability of blended learning packages.***

Keywords: Blended Learning Package, Digital Learning Tools, Hands-on Training tools, Students' Skill Performance, Workshop Practices, Colleges of Education.

I. INTRODUCTION

Educational institutions, including Colleges of Education, play a crucial role in preparing individuals with professional skills for various sectors. Colleges of Education in Nigeria are specifically mandated to train competent teachers for the nation's primary and secondary schools, focusing on both theoretical knowledge and practical skills in a range of disciplines. According to the National Commission for Colleges of Education (NCCE), the goal outlined in the minimum standard for Colleges of Education includes fostering skills acquisition and professional competency to meet the demands of the education sector (NCCE, 2020). However, poor performance in certain courses has been a recurring challenge in these institutions, which undermines the quality of teachers produced. One such challenge is workshop Practices, which is an integral part of technical courses offered in Colleges of Education. Poor performance in this aspect of the programme can hinder students' ability to effectively teach and transfer skills, thus impacting the workforce in the educational and industrial sector.

Technical Education plays a vital role in equipping students with the skills and knowledge required to succeed in today's rapidly evolving workforce. Workshop practices are essential component of Technical Education, providing students with hands-on experience and opportunities to develop practical skills. Workshop Practices are integral part of all trade and trade related courses offered by students of technical education for the Nigerian Certificate in Education (NCE) programme. As stipulated in the National Commission for Colleges of Education (NCCE) minimum standards, workshop practices aims to develop students' practical skills, focusing on

the hands-on technical competencies necessary for a successful career in all field of technical education (NCCE, 2020). The workshop activities allow students to gain real-world practical experience and prepare them to handle production, maintenance and repair work successfully. However, there are several challenges associated with teaching and learning of skills, including insufficient resources, outdated facilities, and limited access to up-to-date tools and instructional materials. These challenges significantly affect students' skill acquisition and proficiency, directly impacting their skills performance.

Students' skills performance is essential for their success as future technology educators. Enhanced skills performance is important as it ensures that students possess the required competencies to teach and operate within the industry effectively. Studies have shown that poor skills performance among students in technical education fields can lead to reduced confidence, low employability, and difficulty in meeting educational and industrial standards (Akinyemi, 2019). In North-Central Nigeria, there has been an observed trend of inadequate skills performance in workshop practices among NCE students, often attributed to ineffective instructional methods and limited practical engagement and others. (Yusuf & Aminu, 2021). These limitations underscore the need for innovative instructional solutions, such as blended learning packages, to enhance skills acquisition in workshop practices.

A Blended Learning Package combines traditional face-to-face teaching with digital instructional resources to create an engaging and flexible learning environment. Features of a blended learning approach may include video tutorials, online assessments, simulations, and real-time feedback mechanisms that complement hands-on practice. The advantages of blended learning in technical education are widely documented, including improved student engagement, better retention of skills, and increased accessibility to learning resources (Khan, 2020). For technical education students a well-designed blended learning package has the potential to address challenges related to skills acquisition by providing interactive and varied learning experiences that cater for different learning styles and needs. Moreover, it allows students to review learning materials at their convenience, thereby reinforcing practical knowledge and skills.

Failure to address these challenges of instructional deliveries can lead to persistent issues of skills acquisition and overall student performance in institutions. With targeted approaches to address the limitations in traditional teaching methods, students will be able to overcome the challenges and gain necessary skills for productions and employments.

Statement of the problem

The main goal of Colleges of Education in Nigeria is to provide quality teacher training that ensures graduates possess both theoretical knowledge and practical skills to succeed in their respective fields. For students in Technical Education programs, practical skill acquisition is essential, particularly through workshop practices, where they are expected to develop hands-on competencies that align with institutional and industrial standards. However, the current situation reveals that many students in Technical Education programs in Colleges of Education in North-Central Nigeria exhibit inadequate skills performance in workshop practices, which limits their readiness for the workforce (Akinyemi, 2019). Studies have shown that students fail to meet the required practical standards due to factors such as limited resources, inadequate training materials, and inappropriate and outdated instructional methods (Yusuf & Aminu, 2021). These deficiencies not only hinder students' skills development but also reduce their confidence and competence as future educators in the Technical Education fields.

The primary challenge lies in the ineffective traditional instructional methods used in teaching, which do not adequately engage students or support the development of hands-on skills. This challenge can be attributed to lack of innovative instructional resources, such as blended learning packages that integrate both digital and practical components. Blended learning has been identified as a potentially effective approach to enhance skills acquisition by combining face-to-face instruction with online resources and interactive tools (Khan, 2020). Despite recognition of this need, there has been limited effort to integrate blended learning in workshop Practices within Colleges of Education. Efforts to address this challenge have included sporadic attempts to update teaching materials and occasional workshops aimed

at enhancing instructional methods. However, these interventions have not been comprehensive or sustained, leading to continued gaps in students' skills performance. The persistence of these issues has had serious consequences, including reduced student competency, lower employability, and a lack of skilled graduates to meet schools and industries demands in the Technical Education sector (Okeke, 2018).

Given the critical role of practical skills in Technical Education and the consequences of continued inadequate skills training, there is a pressing need for this study to address these challenges. Developing a blended learning package tailored for workshop practices to provide a more effective instructional approach, enabling students to improve their skills performance and be better prepared for their roles as educators and industrialists.

Objectives of the Study

The aim of the study is to develop a blended learning package for enhancing students' skills performance in workshop practices in Colleges of Education in North-Central Nigeria.

Specifically, the objectives of the study seek to:

1. Determine the digital learning tools and hands-on training tools to enhance students' skills performance in workshop practices in Colleges of Education.
2. Ascertain the effectiveness of the developed blended learning package in enhancing students' skills performance in workshop practices in Colleges of Education.
3. Determine the challenges of using blended learning package to enhance students' skill performance in workshop practices in Colleges of Education.
4. Suggest guidelines for the effective adoption of the blended learning package to enhance students' skill performance in workshop practices in Colleges of Education.

Research Questions

The following research questions guided the study:

1. What Digital Learning Tools and Hand-on-Training Tools will enhance students' skill performance in workshop practices in Colleges of Education?
2. How effective is the blended learning package in enhancing students' skill performance in workshop practices in Colleges of Education?
3. What are the challenges of using blended Learning package to enhance students' skill performance in workshop practices in Colleges of Education?
4. What guidelines will be used to adopt the blended Learning package to enhance students' skill performance in workshop practices in Colleges of Education?

II. METHODOLOGY

The study employed a descriptive survey design. Descriptive survey design was considered appropriate because the study sought to develop a blended learning package for enhancing students' skill performance in workshop practices in Colleges of Education. Gall, Gall and Borg (2007) stated that a survey is a method of data collection using questionnaires or interviews to collect data from a sample that has been selected to represent a population to which the findings of the data analysis can be generalized. The area of study was the North Central Nigeria, which consisted of seven states, namely Benue, Kogi, Kwara, Nasarawa, Niger, Plateau, and Abuja, Federal Capital Territory. The population of the study consisted of all lecturers, instructors, and students in the participating Colleges of Education in the North-Central Nigeria. The total population for the study was 1,200 subjects consisting of 225 Technical Education lecturers, 25 instructors, and 950 students. Convenience sampling technique was adopted and used to select 10 Technical Education lecturers and instructors and 10 students of Colleges of Education from each of the six states of the North Central Nigeria. A total of 120 respondents were sampled for the study. Convenience sampling technique was adopted because the researchers administered the instrument to only Technical Education lecturers, instructors, and students who were the appropriate respondents for the study (Gall, Gall & Borg, 2007).

A blended learning package was developed and given to both the students and the lecturers to guide them during workshop practices in the participating institutions. The instrument used for data collection on the development of the blended learning package for enhancing students' skills performance in workshop practices in Colleges of Education in North

Central Nigeria was a 40-item structured questionnaire constructed by the researchers. The questionnaire consisted of two sections; Section A and Section B. Section A was designed to collect respondents' personal information, while Section B was designed with question items to answer the research questions in the study. The scale of responses for the instrument was based on an adapted 4-point Likert Scale rating, namely, Strongly Agreed (SA) – 4 points, Agreed (A) – 3 points, Disagreed (D) – 2 points, and Strongly Disagreed (SD) – 1 point.

The instrument and the blended learning package used for the study were face validated by three lecturers in the field of Technical Education, Federal University of Technology, Minna, and comments and recommendations were used to prepare the final questionnaire and the package. The blended learning package and the instrument were pilot tested with the Center for Continuing Education (CCE) lecturers, instructors, and students of the Technical Education programme of Niger State College of Education, Minna, Niger State. The result of the pilot test of the instrument conducted was used to determine the reliability of the instrument. The Cronbach alpha formula was used to calculate the reliability coefficient of the instrument and obtained a 0.88 coefficient.

The questionnaire was administered on the lecturers and the students from the participating Colleges who were the respondents to collect data for the study through Google platform. The data for the study were analyzed using the standard deviation (SD) and mean scores of the respondents. The mean score of 2.50 was used as the cutoff point to answer the research questions in the study. Questionnaire items that obtained 2.50 mean score and above were agreed while those with less than 2.50 mean score were disagreed.

III. RESULTS

Research Question One

What digital learning tools and hands-on training tools will enhance students' skill performance in workshop practices in colleges of education?

Table 1: Mean and Standard Deviation of Respondents on Digital Learning Tools and Hands-On Training Tools for Enhancing Students' Skill Performance in Workshop Practices

S/N	Item	Mean	SD	Remark
1	Digital tools like instructional videos and e-simulations enhance students' skills performance and assist in workshop practice.	3.42	0.65	Agree
2	Digital tools significantly improve practical skills in workshop activities.	3.36	0.71	Agree
3	Hands-on training, such as workshop equipment and models, is effective in enhancing students' workshop practice.	3.55	0.59	Agree
4	Digital learning tools and resources are available in the workshop.	2.41	0.92	Disagree
5	Hand tools are important for the development of the workshop, and are readily available in the workshop.	2.83	0.88	Agree
6	Digital learning tools increased understanding and adherence to workshop safety.	3.28	0.73	Agree
7	Hands-on training greatly enhances problem-solving skills.	3.47	0.61	Agree
8	Combining digital tools with hands-on training tools improves overall skills performance in the workshop.	3.63	0.57	Agree
9	Instructors/Lecturers always incorporate digital learning tools into workshop practice.	2.38	0.95	Disagree
10	Digital tools are important when carrying out workshop practices.	3.4	0.69	Agree

The results in Table 1 used to answer research question one showed that respondents mean scores were mostly above 2.50 and agreed, except two items with less than 2.50 which were disagreed as the digital learning tools (instructional videos, e-simulations, and safety resources) and hands-on training tools (equipment, models, and hand tools) that enhance students' skill performance. The high

mean scores across items suggest that the integration of digital and physical tools is essential, with a combined approach providing the greatest improvement in skill acquisition. However, availability and consistent use of these learning tools by both lecturers and students in workshop practices remain limited, as indicated by lower means on accessibility-related items.

Research Question Two

How effective are blended learning packages in enhancing students' skills performance in workshop practices at colleges of education?

Table 2: Mean and Standard Deviation of Respondents on the Effectiveness of Blended Learning Packages in Enhancing Students' Skill Performance in Workshop Practices

S/N	Item	Mean	SD	Remark
1	Blended learning packages improved practical skills in workshop practice.	3.44	0.66	Agree
2	Blended learning materials make it easier to understand skills in workshop practice.	3.38	0.7	Agree
3	A combination of online and hands-on activities enhances the overall learning experience.	3.61	0.58	Agree
4	The blended learning package provides adequate instructional guidance for workshop practice.	3.29	0.72	Agree
5	The blended learning package helps the learners to complete the workshop assignment quickly and effectively.	3.26	0.75	Agree
6	A blended learning approach helps to retain workshop skills better than traditional methods.	3.41	0.69	Agree
7	A blended learning package can address the learning needs of students in workshop practices.	3.33	0.73	Agree
8	Using a blended learning package increases interest and engagement in workshop activities.	3.5	0.64	Agree
9	Feedback received through the blended learning package helped to improve the skill performance in the workshop.	3.22	0.76	Agree
10	The blended learning package supports an effective self-paced learning approach to improve problem-solving skills.	3.35	0.71	Agree

Results in Table 2 used to answer research question two showed that respondents mean scores were all above 2.50 and indicated that blended learning packages are effective in improving students' practical skills, understanding of concepts, retention of skills, and problem-solving abilities. Respondents affirmed that blended learning increases engagement, provides instructional guidance, and supports both assignment completion and self-paced learning. Overall, blended learning was perceived as a superior approach compared to traditional methods, especially when online activities are combined with hands-on practice.

Research Question Three

What are the challenges of blended learning package for enhancing students' skill performance in workshop practices in Colleges of Education?

Table 3: Mean and Standard Deviation of Respondents on the Challenges of Blended Learning Packages in Enhancing Students' Skill Performance in Workshop Practices.

S/N	Item	Mean	SD	Remark
1	Technical issues such as connectivity, platform compatibility issues, and software glitches disrupt the learning experiences of students.	3.47	0.63	Agree
2	The digital divide, like unequal access to technology and internet connectivity, creates disparities in student learning.	3.52	0.61	Agree
3	Lecturers and instructors lack adequate training to effectively integrate blended learning packages.	3.36	0.7	Agree

4	Students are not adequately motivated and engaged in blended learning environment due to minimal human contacts.	3.19	0.77	Agree
5	Development of high-quality and engaging content for blended learning packages is time-consuming and resource-intensive.	3.43	0.65	Agree
6	Designing an intuitive and user-friendly interface for blended learning packages is crucial but difficult.	3.28	0.72	Agree
7	Developing effective assessment and evaluation methods for blended learning packages is complex and difficult.	3.31	0.69	Agree
8	Institutions have infrastructural deficiencies such as servers, learning management systems and other resources.	3.49	0.64	Agree
9	Institutions are not providing adequate policies, technical supports, mentoring, tutoring and resources.	3.41	0.68	Agree
10	Students face difficulties with the self-directed nature of blended learning, requiring strong time management and technical skills.	3.22	0.74	Agree

The results in Table 3 used to answer research question three showed that respondents mean scores were all above 2.50 and agreed on the challenges hindering the effective use of blended learning packages in Colleges of Education. These include technical issues such as poor connectivity, unequal access to technology, inadequate lecturer/instructor training, and lack of institutional support. Additionally, infrastructural deficiencies, high resource demands for developing quality content, and students' difficulties in adapting to self-directed learning were emphasized. These findings highlight that while blended learning is beneficial, its success depends on overcoming significant systemic and institutional barriers.

Research Question Four

What are the guidelines to adopt a blended learning package for enhancing students' skill performance in workshop practices in Colleges of Education?

Table 4: Mean and Standard Deviation of Respondents on the guidelines to adopt Blended Learning Package in Enhancing Students' Skill Performance in Workshop Practices.

S/N	Item	Mean	SD	Remark
1	The policies and learning objectives of the blended learning package are clearly defined.	3.39	0.68	Agree
2	Availability of adequate infrastructural facilities, resources, and internet connectivity.	3.46	0.64	Agree
3	Adequate training for lecturers, instructors, and students on implementation and sustainability.	3.41	0.66	Agree
4	The blended learning packages include interactive learning activities such as videos, simulations, and practices.	3.52	0.61	Agree
5	The blended learning packages provide regular and immediate feedback for assessments.	3.36	0.7	Agree
6	The blended learning package is flexible in terms of time and place of training.	3.44	0.67	Agree
7	Provision for collaborations among students and lecturers, online discussions, and peer reviews.	3.29	0.73	Agree
8	Availability of adequate technical support to students with technical issues.	3.38	0.71	Agree
9	Provision for personalized learning for each student.	3.31	0.74	Agree
10	Adoption of blended learning in phases, prioritizing teacher training, infrastructure, and support.	3.57	0.6	Agree

Results in Table 4 used to answer research question four showed that respondents mean scores were all above 2.50 and agreed on the guidelines for successful adoption of blended learning package in Colleges of Education. These include clearly defined policies and learning objectives, adequate

infrastructure and internet access, comprehensive training for staff and students, interactive and flexible learning design, and continuous technical support. Other important guidelines identified were collaborative activities, personalized learning opportunities, and phased implementation strategies. The findings confirm that adoption of blended learning requires a holistic approach that integrates institutional readiness, staff capacity, and learner support systems.

IV. FINDINGS OF THE STUDY

1. Digital and hands-on tools significantly enhance students' skill performance in workshop practices, though availability and consistent use remain limited.
2. Blended learning packages are highly effective in improving practical skills in workshop practices, understanding, retention, engagement, and self-paced learning.
3. Challenges of blended learning package to enhance students' skill performance in workshop practices include poor connectivity, digital divide, inadequate training, infrastructural deficiencies, lack of institutional support, and student adaptation issues.
4. Adoption guidelines of blended learning package to enhance students' skill performance in workshop practices include, clear policies, adequate infrastructure, training, interactive design, technical support, collaboration, personalization, and phased implementation.

V. DISCUSSION OF FINDINGS

The findings of this study in research question one revealed that both digital learning tools and hands-on training tools are essential for enhancing students' skill performance in workshop practices. Respondents strongly agreed that digital tools such as instructional videos and e-simulations, when combined with hand tools and workshop models, significantly improve students' skill acquisition. This aligns with the study by Oladipo and Bello (2023), who found that digital technological tools in Technical and Vocational Education and Training (TVET) promote skill development though their availability and utilization remain low. Similarly, Ayeni (2025) reported that blended learning promotes collaborative learning and improves engagement among pre-service teachers in Ilorin, but infrastructural gaps hinder effective implementation. This confirms that while digital and hands-on tools are effective, accessibility and consistent integration in Nigerian Colleges of Education remain a challenge.

The findings of this study in research question two established that blended learning packages are highly effective in improving students' practical skills, conceptual understanding, retention, and engagement. Respondents indicated that combining online activities with hands-on experiences provides superior outcomes compared to traditional lecture-based methods. This finding supports Bekele, Melese and Sime (2025), who reported that blended learning significantly enhanced student engagement at Jimma Teachers' College in Ethiopia due to its flexibility and dual participation modes. Similarly, Alqurashi (2023) observed that blended approaches in higher education in the UAE improved student achievement and performance compared to conventional methods. These studies reinforce the effectiveness of blended learning packages, particularly in enhancing both theoretical understanding and practical skill acquisition.

Despite the effectiveness of blended learning package, the study in answering research question three found that several challenges hinder its implementation. Respondents highlighted issues such as poor connectivity, digital divide, inadequate lecturer training, infrastructural deficiencies, and limited institutional support. These findings are in agreement with Olabode and Nwachukwu (2023), who identified lack of ICT infrastructure, unreliable electricity, inadequate internet access, and weak policy frameworks as obstacles to blended learning adoption in Nigerian higher education institutions. Similarly, Okoro and Akinwale (2024) noted that pre-service teachers in Lagos Colleges of Education faced challenges such as poor ICT resources and low motivation in blended learning environments. These studies confirm that while blended learning is beneficial, systemic and institutional barriers remain a serious constraint.

Finally, the study in answering research question four revealed the guidelines required for successful adoption of blended learning package to enhance students' skill performance in workshop practices. Respondents emphasized the importance of clear policies, adequate infrastructure, comprehensive

training, interactive design, continuous technical support, collaboration, and phased implementation. This finding is consistent with Ayeni (2025), who recommended that administrators develop clear policy frameworks, provide training, and expand infrastructure to encourage sustainable blended learning integration. Likewise, Oladipo and Bello (2023) argued that government and institutions must provide adequate digital resources and training for effective utilization in TVET programmes. These studies support the position that successful adoption requires a holistic and systematic approach that integrates policy, infrastructure, pedagogy, and support services.

CONCLUSION

This study investigated the development and effectiveness of a blended learning package for enhancing students' skill performance in workshop practices in Colleges of Education in North-Central Nigeria. The findings revealed that both digital learning tools and hands-on training resources are essential in improving students' practical competencies, although their availability and consistent utilization remain inadequate. The study further established that blended learning packages are highly effective in enhancing students' practical skills, conceptual understanding, retention, engagement, and self-paced learning, thereby offering superior outcomes compared to traditional methods. However, challenges such as infrastructural deficiencies, poor internet connectivity, inadequate training of lecturers and instructors, limited institutional support, and difficulties with student adaptation were identified as barriers to successful implementation. To ensure successful implementation and sustainability of blended learning packages, clear guidelines including policy development, provision of infrastructure, capacity building, interactive design, technical support, and phased adoption were identified as critical. Overall, the study concludes that blended learning is a viable and effective approach to improving skill performance in workshop practices, but its success depends on institutional readiness and systemic support.

VI. RECOMMENDATIONS

1. Colleges of Education should provide adequate digital resources and workshop tools for effective skill training activities of students in the workshops.
2. Lecturers and instructors should be encouraged to adopt blended learning approaches that combine online and hands-on activities for skill training activities in the workshops.
3. Government and institutions should improve on ICT infrastructure, internet access, and provide training for lecturers and orientation for students on development and use of blended learning package.
4. Development and use of Blended learning packages should be guided by clear policies, continuous training, interactive content, technical support, and phased implementation.

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