

PEDAGOGICAL APPROACHES NEEDS OF LECTURERS ON INFORMATION COMMUNICATION TECHNOLOGY IN TEACHING ELECTRONIC DEVICES IN NIGERIA CERTIFICATE IN EDUCATION AWARDING INSTITUTIONS IN NORTH-EAST, NIGERIA.

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ARTICLE INFORMATION	ABSTRACT
Received: 26th February, 2025 Accepted: 20th March 2025 Published: 29th April 2025 KEYWORDS: Pedagogical Approach, Teaching Tools, Skill Based Content. Publisher: Empirical Studies and Communication - (A Research Center) Website: www.cescd.com.ng	<i>The research examine pedagogical practice needs in teaching electronic devices. Two research questions and (2) hypotheses were raised and tested. Survey research design was used with the entire elect/electronic technology lecturers. Structured questionnaire instruments validated by four experts in two phases and the reliability was ensured by Cronbach Alpha method and the result yielded a reliability coefficient of 0.86. Data collected from the respondents and analyzed using mean and standard deviation. The statistical tools employed for the analysis to draw inference was independent T-test. The pedagogical approaches were highly needed on utilization of ICT in teaching electronic devices. Recommendations were made among the other; NCE awarding institutions electrical/electronic lecturers should strive to develop approaches that create hands-on and collaborative engagement on pedagogical practices to explore select, troubleshoot, solve problems in electronic devices teaching. NCE electrical/electronic lecturers should encourages to improve the ongoing challenges for utilizing ICT tools on recognizing the importance of incorporating pedagogical practice into their teaching electronic devices that enhance problem-based and project-based supports.</i>

INTRODUCTION

Technology can be used to perpetuate a teacher-led, knowledge-based learning approaches, with used to implement a student-centered, approach. Teaching pedagogues are the pedagogical practice of repetition of an activity to improve skill, these could be achieved through rehearsal, exercise, training, workout etc. The paper explores the needs of electrical and electronic technology education lecturers on pedagogical approaches to utilize ICT devices in teaching electronic devices. The needs on NCE awarding institutions in demonstrating how they can be harnessed to promote best practices on utilization of ICT tools, across electronic devices for student conceptual changes. According to Macoun, Schneider, Bedir, Sheehan, & Sung, (2021), Pedagogical practice is only ingenious when a teacher uses resources, materials, methods, principles and explanation that have not been employed before, during the course. Pedagogical Practice is an important skill to the teachers/lecturers because once teachers/lecturers are well prepared, they would be able to implement the use of digital technologies for information technology across the curriculum as teaching pedagogy (Ashraf, Yang, Zhang, Denden, Tlili, Liu, & Burgos, 2021).

In this vain, the study aims to investigate the needs of lecturers on influence of collaborative pedagogical practice as the one of the twenty-first century pedagogical approach that placed a big emphasis on collaborative learning, which is the idea that learners work together to gain a greater understanding of the information learners have received from the teacher or as presented with. This process allows for learners to create an environment where to interact with technology devices with each other by sharing experiences and knowledge that they obtained from the benefit of utilization of ICTs in teaching electronic devices. This can be done in a variety of ways, including exchanging ideas and information they acquired through utilization of ICT tools in electronic devices, and even evaluating or monitoring somebody else work. In order hands the inquiry-based approach also a unique in the sense that it encourages learners to engage in exploration, investigation, research and study. It begins with presenting questions, scenarios or problems that require critical thinking to solve, problems. This approach which is vastly different from other approaches where facts are presented in simple manner. This approach requires more than just simply giving the correct answers to questions and encourages more thoughtful and engaged participation from learners (Correia & Harrison, 2020). This is effective when teaching in utilizing ICT tools, as many science/technology topics are more easily learned through seen and practicing and understanding of processes rather than isolated facts.

In considering aforementioned approaches, literacy and proficiency in technology tools have been made compulsory for all NCE awarding institutions as revealed by National Commission for Colleges of Education (NCCE). For this convenient there is need for NCE lecturers to be able to actively design activities consciously in order to bring about effective teaching through coaching process, modelling or scaffolding, and exploration of digital technologies like any significant piece of knowledge for teaching electronic technology course, since NCCE recognizes NCE lecturers as key players in developing ICTs skills as strategies for teaching Students.

Statement of Problem

The evidence of acquisition of technology tools knowledge, skills regarding its use as pedagogical practice is paramount in NCE awarding institutions lecturers. These is because, digital technology proficiency is the ability of lecturers to use technology tools appropriately to access, manage, integrate and evaluate information, develop new understanding, and communicates with others in order to participate effectively in teaching learning process.

Observation through repeated visitations to some NCE awarding institutions in North-East State appears that, the traditional lecture method and use of textbooks still engross classroom instructions are upheld as the common practice in their teaching electronic subjects. This depicts the level of literacy and usage of ICT by some lecturers in their institutions. Moreover, this limitation hinders the potential for enhanced student performance, understanding, and academic performance in NCE awarding institutions. NCE technology lecturers were lagging teaching approaches with new definitions of 21st century to deliver content using information using electronic media in teaching. These was quite obvious with these challenges of mismatch in teaching styles without utilizing basic computer skills and its devices for pedagogical practice. Thus, Ifinedo, Rikala and Hämäläinen, (2020) stressed that there is a notable gap in understanding the pedagogical practice needs of lecturers pertaining to incorporation of ICTs in teaching approaches. Thus, research intents in identifying these needs and the associated challenges, it will inform the development of training programs, facilities allocation, and policy recommendations to enhance the quality of teaching and learning in north eastern academic institutions.

1.3 Aims and Objectives

The main aim of this study is to determine pedagogical practice needs of lecturers on utilization of ICT tools in teaching electronic devices in NCE awarding institutions in North-East, Nigeria.

Specifically, the objectives of the study sought to:

1. Determine Pedagogical Practice Needs of Lecturers in collaborative pedagogical practice on utilizing ICT tools in teaching electronic devices in NCE awarding institutions in North East, Nigeria
2. Determine Pedagogical Practice Need of Lecturers in inquiry-based pedagogical practice in utilizing ICT tools in teaching electronic devices in NCE awarding institutions in North East, Nigeria

1.4 Research Questions

1. What are the lecturers needs in collaborative pedagogical practice on utilizing ICT tools in teaching electronic devices in NCE awarding institutions in North East, Nigeria?
2. ICT tools in teaching electronic devices in NCE awarding institutions in North East, Nigeria?

1.5 Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance.

H₀₁ There is no significant difference between the mean responses of experienced and beginner lecturers needs in collaborative pedagogical practice on utilizing ICT tools in teaching electronic devices in NCE awarding institutions in north- east, Nigeria.

H₀₂: There is no significant difference between the mean responses of experienced and beginner lecturers needs in inquiry-based pedagogical practice on utilizing ICT tools in teaching electronic devices in NCE awarding institutions in northeast, Nigeria.

1.6 Significance of Study

The findings of the study would benefit electrical/electronic technology lectures/instructors, students, Ministry of Education Science Innovative and Technology in the North Eastern States of Nigeria. The findings also benefits by curriculum reform planners, parents and guidance, as well as the electrical and electronic technology industries. The immense benefits of the findings will be at Educational Resource Centers and other regulatory bodies as such; NCCE, NBTE, NRDC, NEEDS and TETFUND for research and development record in Federal Republic of Nigeria. The findings provide information for lectures of technology education in higher institutions of learning to improve their teaching to solve the current problem inherent in students' performance.

1.7 Scope of the Study

This study involves electrical/electronic technology education lecturers, with

in the NCE technology institutions located in North-East, Nigeria. This study conducted in NCE awarding institutions in the North-East geopolitical zone of Nigeria, which comprises six states: Adamawas, Bauchi, Borno, Gombe and Yobe. The study involves only electrical and electronic technology lecturers handling electronic subjects, in North-East, Nigeria.

The study investigated the pedagogical practice needs of lecturers in teaching electronic devices using ICT tools, with a focus on:

1. Professional development needs
2. Current ICT integration practices
3. Challenges faced by electrical and electronic lecturers

The study is delimited to electronic software, computers, Liquid Crystal Display (LCD) projectors and MS Power Point, internet etc. And electronic workbench is a Multisim software, as its name suggests; the program models have the large central area on the screen acts as a breadboard for circuit assembly.

1.8 Operational Definition of terms:

pedagogical practice; teaching and learning activities consciously design by lecturers, to support the delivery of content as well as utilizing various ICT tools in teaching interactions.

ICT Tools: refers to application of digital electronic system, knowledge for pedagogic usages in teaching. Example, computer, software, simulation tools, LCD Projector, MS PowerPoint and Internet facilities etc.

A Lecturer; is a person responsible for facilitating student learning through the use of curriculum as a guide, and possesses professional qualifications that include the study of pedagogy.

Needs: refers to; the prioritization of teaching actions developed from content planning and systematization of dynamics teaching in electronic devices.

Experienced lecturers; are the electrical and electronic technology lecturers with professional teaching experienced reneges; from 10 years and above in teaching electronic devices in NCE awarding institutions, in North-East, Nigeria.

Beginner Lecturers; refers to lecturers that are beginners with less teaching experienced; ranges from 1-9 years in particular subject in teaching profession.

Literature Reviewed

Literature reviewed based on the objectives of the study under the following subheadings:

- 2.0 Theoretical Framework
- 2.1. Need Assessment Theory
- 2.2 Conceptual Framework
- 2.2.1 The Concept of Technological Pedagogical Content Knowledge (TPACK)
- 2.3 Pedagogical Practice in Collaborative Practice in Teaching in Tertiary Institutions
- 2.4 Pedagogical Practice in Inquiry-Based Practice in Teaching in Tertiary Institutions
- 2.5 Challenges on Pedagogical Approaches Needed for Teaching in Tertiary Institutions
- 2.5.1 Challenges on Familiarization of Technology Tools for Teaching in Tertiary Institutions
- 2.5 Review of Related Empirical Studies
- 2.6 Summary of the Reviewed
- 2.1 Theoretical Framework
- 2.1.1 *Need Assessment Theory*

Horny (2010), stated the Needs Theory as a formal set of ideas that is intended to explain why something happens or exists: According to kaufman (1998), “Needs Assessment Theory involves identifying, justifying gaps in results, and placing the gaps in prioritized order for attention”. The function of this theory is to guide practice and lead to application of knowledge to solve real-world problems. The needs theory is related to this study because Onwuka 1982 in Gabasa, (2021), emphasized the fact that before any inservice education programme can be established; the felt need of teacher who will participate in such a programme must be ascertained. Therefore, perceived needs of the teachers must be considered and also in-service education training should be structured to permit their active involvement in order to improve on their skills for effective teaching. Therefore, needs assessment theory support to determine teacher/lecturers need to enhanced their strength, weakness on development areas so that researchers can provide pedagogic activities needed for instructional improvement in relation to relevant technology software’.

2.2 Conceptual framework

2.2.1 The Concept of Technological Pedagogical Content Knowledge (TPACK) The study is hinged on the TPACK Conceptual framework. This framework describes the kinds of knowledge that teachers need in order to teach with technology tools, and the complex ways in which this knowledge interact with one another. Koehler, Mishra, Bouck, DeSchryver, Kereluik, Shin, and Wolf. (2011) describes the concept to which what teachers need to know can be difficult because teaching is an inherently complex, multifaceted activity which occurs in varied settings. By its nature, teaching is an ill-structured problem requiring reasoning about a wide range of interrelated variables such as the background knowledge that students bring into the classroom, teacher and student expectations about the content to be covered, and school and classroom guidelines and rules.

Based on this conceptual assertion, the pedagogical practice need of lecturers for teaching electronic technology in NCE Awarding Institutions in use of technology tools into the classroom in order to introduces a new set of variables into the teaching context is relevant.

METHODOLOGY

The study adopted Survey design. The survey research design examine, current attitudes, beliefs, opinions, or practices of the target population (Creswell 2012). This research design was appropriate because it allow the respondents to put down their views and opinions on pedagogical practice need on collaborative and inquire-based approaches for teaching electronic technology education in NCE awarding institutions in north-east states of Nigeria.

The population was all electrical and electronic technology education lecturers, in NCE awarding institutions with in the north-east, Nigeria. The study conducted in both State Owned and Federal institutions offering electrical and electronic technology education in North-East, Nigeria. There was no sampling, entire respondent were used in the study. The instrument for data collection was structured questionnaire, which have adapted and

modified by the researcher based on the objectives of the research. The instrument validated by an (4) experts in two phases within the specialist of elect/electronic technology education in department of technology education, Abubakar Tafawa Balewa University, Bauchi (ATBU). and Ramat Polytechnic, Maiduguri Borno State, Nigeria.

The Reliability of the instrument was determined using Cronbach Alpha which yielded co-efficient value of 0.868. This value indicate that the reliability of the investment was good.

Results of the Reliability of Instrument

The result of reliability of the instrument are presented in Table: 1.

The pilot study instrument reliability presented the construct Inter-items correlation with the Cranach Alpha values. The results of the construct reliability test coefficient were greater than 0.70 as recommended as acceptable level by George and Mallery, 2003 in (Allyn and Bacon, 2022).

Table 1: Construct Reliability S/N Construct Items Cronbach Alpha

S/N	Construct	Items	Cronbach Alpha
1.	Collaborative Approach	13	.849
2.	Inquiry-Based Approach	16	.862
Total		29	.855

Results of Research Questions

The results of research questions were presented in Table 2 to 3

Research question One

What are lecturer needs of elect/elect lecturers in collaborative pedagogical practice on utilizing ICT tools in teaching electronic devices in NCE awarding institutions in NorthEast, Nigeria?

Table 2: Mean Ratings of Responses in Collaborative Pedagogical Practice Needs for Utilizing ICTs in Teaching Electronic Devices in North-East, Nigeria.

S/N	ITEMS STATEMENT	X_E	SD_E	X_B	SD_B	X_G	Remark
1.	Use googles workspace documents to create collaboration instruction	3.16	.874	3.00	.949	3.11	HN
2.	To use google slide for group presentation on electronic devices	3.39	.533	3.10	.700	3.30	HN
3.	Ability to explore observation with abstract notion of frequency, voltage, and current	3.08	.672	3.10	.436	3.09	HN
4.	Enables virtual classroom and collaborative discussion	3.24	.751	3.29	.561	3.26	HN
5.	To integrate on Microsoft office for document collaboration in electronic device class	3.33	.689	3.14	.655	3.27	HN
6.	Ability to interact with digital boards for sharing Ideas in electronic devices teaching	3.31	.683	3.52	.602	3.37	HN

7.	Ability to brainstorming collaborative discussion with utilizing ICTs for electronic devices	3.45	.614	3.24	.995	3.39	HN
8.	Messaging platform for Real-time collaboration among students in electronic devices	3.14	.764	3.19	.680	3.16	HN
9.	Ability to utilize virtual whiteboard for collaborative drawing and annotations	3.35	.597	3.33	.577	3.34	HN
10.	Ability to use collaborative flash card creation for learning electronic devices	3.22	.743	2.95	.805	3.14	HN
11.	Ability to Provide platform for collaborative assignment in in teaching electronic devices	3.18	.727	3.19	.680	3.18	HN
12.	Ability to organize virtual meeting for Interactive discussion on electronic devices	3.24	.751	3.29	.561	3.26	HN
13.	Ability to plan project management tools for organizing tasks related to electronic device	3.27	.700	3.19	.680	3.25	HN
Cluster Mean		3.26	.6999	3.19	.6832	3.23	HN

NE Number of Experienced

NN Number of Novice

N_E: = 49

N_B: = 21

Source:(Field work 2024)

The output presented in Table 2 indicated that all the items of the variable on collaborative approach are having a mean score of above 2.50. The inter-items mean scores in collaborative pedagogical practice needs of experienced and beginner lecturers for utilizing ICTs in teaching electronic devices ranged from 3.09 to 3.39. The results shows cluster mean average of 3.26 and standard deviation of .6999. Similarly, the cluster mean average of novice lecturers also revealed; 3.19 with standard deviation of .6832. This indicates the overall cluster grand mean of 3.23 which is highly needed pedagogical (HN) respectively. The result indicated the need of experienced and beginner lecturers on pedagogical practice in utilizing ICTs for teaching electronic devices is highly needed pedagogical (HN).

Research question Two

What are lecturer needs in inquiry-based pedagogical practice on utilizing ICT tools in teaching electronic devices in NCE awarding institutions in North-East, Nigeria?

Table 3: Mean Ratings of Responses in Inquiry-Based Pedagogical Practice Needs for Utilizing ICTs in Teaching Electronic Devices in North-East, Nigeria.

S/	ITEMS STATEMENT	X_E N	SD_E	X_B	SD_B	X_G	Remark
1.	prepare lesson in utilizing ICTs for supporting inquiry-based teaching in class	3.35	.522	3.29	.717	3.33	HN
2.	Ability to enquire video-based Lab in electronic devices class	3.20	.645	3.05	.669	3.16	HN
3.	To simplify the correct answers to questions on ICT tools in teaching session	3.16	.825	3.29	.845	3.20	HN
4.	Ability to design inter tasks in electronic device	3.22	.715	3.24	.625	3.23	HN
5.	To instill curiosity among individual's student about ICTs to learning in electronic	3.43	.540	3.29	.717	3.39	HN
6.	Visualize phenomena and computer animations on system performance in lab	3.33	.658	3.00	.837	3.23	HN
7.	Ability to interact with systems in computer simulations, virtual laboratories	3.27	.700	3.29	.644	3.28	HN
8.	Willingness to aware the students' background and their ability on software	3.18	.727	2.90	.831	3.10	HN
9.	Ability to promote questioning strategy more important than the answer on sharing	3.39	.640	3.19	.928	3.33	HN
10.	Explore adaptive learning systems that tailor content to student needs in teaching	3.43	.645	3.14	.854	3.34	HN
11.	Ability on solution to challenges and guide to discoveries in software's utilization	3.29	.791	3.38	.805	3.32	HN
12.	Ability to inspire discussion among students using design toolbox based	3.29	.707	3.29	.956	3.29	HN
13.	To provide clear guidelines for interaction in organizing tasks related practical session	3.24	.560	3.29	.644	3.26	HN
14.	Ability to promote feedback through network to enhance student inquiry in class	3.27	.605	3.24	.700	3.26	HN
15.	Ability to develop interactive session on modelling tools in teaching electronic	3.14	.612	3.38	.669	3.21	HN

16	Ability to create time management for inquiry approach in utilizing ICTs tools	3.08	.862	3.48	.680	3.20	HN
Cluster Mean		3.27	.6721	3.23	.7576	3.26	HN

Source:(Field Survey,2024).

Key

N_E: Number of Experienced

N_B: Number of Beginner

N_E: 49

N_N: 21

The output presented in Table 3 indicated that all the items of the variable on inquiry-based pedagogical practice needs are having a mean score of above 2.50. The mean scores of experienced and beginner lecturers in inquiry-based approach for utilizing ICTs in teaching electronic devices items are ranged from 3.10 to 3.39 in all items. The cluster mean average of experienced lecturers indicated 3.27 with standard deviation of .6721. And the cluster mean average of novice lecturers also shows 3.23 and .7576, standard deviation. This description revealed the needs of respondents in inquiry-based approach is highly needed pedagogical (HN) for utilizing ICTs in teaching electronic devices with overall grand mean average of 3.26, respectively.

The results of results of research questions were presented in Table 4 to 5

Test of Hypothesis One

H₀₁: There is no significant difference between the mean responses of experienced and beginner lecturers in collaborative pedagogical practice needs on utilizing ICT tools in teaching electronic devices in NCE awarding institutions in North-East, Nigeria.

Table 4:Independent T-test analysis of the mean responses of experienced and beginner lecturers in collaborative pedagogical practice needs for utilizing ICTs in teaching electronic devices in NCE Awarding Institutions in North-East, Nigeria.

Variables	N	X	SD	Df	t-value	p-value	Decision
Experienced Lecturers	49	3.26	.6999	68	1.265	.218	Accepted
Beginner Lecturers	21	3.19	.6832				

Source: (Field Survey, 2024)

Key:

N Number of respondents

X Mean

SD Standard Deviation

Df Degree of Freedom

The statistical evidence in Table 4; indicated the difference between experienced and beginner lecturers in collaborative pedagogical practice needs for utilizing ICTs in teaching electronic devices in NCE awarding institutions in North-East Nigeria, is significant as df is 68, t- value was 1.265 and the p- value also revealed .218. Therefore, the null hypothesis was accepted that the p- value is greater than ($P=0.05$) significance level.

Test of Hypothesis Two

H₀₂: There is no significant difference between the mean responses of experienced and beginner lecturers in inquiry-based approach on pedagogical practice needs for utilizing ICT tools in teaching electronic devices in NCE awarding institutions in North-East,

Nigeria.

Table 5: Independent T-test analysis of the mean responses of experienced and beginner lecturers in inquiry-based pedagogical practice needs for utilizing ICTs in teaching electronic devices in NCE awarding institutions in North-East, Nigeria.

Variables	N	X	SD	Df	t-value	p-value	Decision
Experienced Lecturers	49	3.27	.6721				
				68	.733	.470	Accepted
Beginner Lecturers	21	3.23	.7576				

Source: (Field Survey, 2024) **Key:**

N Number of respondents

X Mean

SD Standard Deviation

Df Degree of Freedom

The statistical evidence in Table 5 indicated the difference between experienced and beginner lecturers needs in inquiry-based pedagogical practice needs for utilizing ICTs in teaching electronic devices in NCE awarding institutions in North-East Nigeria is significant as; df is 68; t- value was .733; hence, p- value also .470. This implies that the Pvalue is greater than level of significant (0.05). Therefore, the null hypothesis was also accepted.

Findings of the study

The following are the findings of this study:

Lecturers are highly pedagogical need in collaborative approach for utilization of technology tools in teaching electronic devices.

Hypothesis (H_{01}) was upheld and which means there is no significant difference between the mean responses of experienced and beginner lecturers on utilization of ICT tools in teaching electronic devices in NCE awarding institutions in North-East, Nigeria.

In other hand, in finding two (2) of the study also shows highly needed in inquiry-based pedagogical practice in teaching electronic devices on utilizing ICT devices in NCE awarding institutions in North-east, Nigeria.

The null hypothesis (H_{02}) was also accepted; implicitly, there is no significant difference between the mean responses of experienced and beginner lecturers on the pedagogical practice needs in inquiry-based pedagogical practice on utilizing ICT tools in teaching electronic devices in NCE awarding institutions in North-East, Nigeria.

Discussion of Findings

The finding one (1) of the study shows the lecturers are highly prioritized in collaborative pedagogical practice on utilization of ICT for teaching electronic devices. This finding also in supports of the earlier finding of Abdous, 2011 in Oyinloye, and Umoru (2022), who stated; It is clear that pedagogical skills is essential for effective teaching and learning that are moderately needed for effective online teaching and learning. These are subject matter expert skills; ability to communicate high expectations; ability to incorporate and respect students' diverse views; ability to manage students through learner-centered approaches; ability to encourage students' collaborative knowledge creation in interaction with the teacher and among students and ability to plan and design online courses were moderately needed skills.

The finding (2) indicates that lecturers had positive responses towards the pedagogical practice on use of ICTs in inquiry-based pedagogical practice in teaching electronic devices in NCE awarding institutions in North-East, Nigeria. Hence, there was no clear difference statistically established between the experienced and beginner lecturers in their means responses. The finding corroborates the idea of Abubakar (2016); who investigated a research study on the influence of ICT on pedagogical practices in the teaching of electronics courses in TVET Institutions, in Nigeria. The finding revealed that there have been challenges inhibiting the successful use of ICTs for pedagogical practice in the teaching of electronic. The challenges include lack of institutional ICT policy and curricular that focuses on ICTs usage as an educational tool among others: ICTs enable lecturers/teachers to have greater control over their lesson preparation and lesson delivery through the use of simulation software's, to try abstract concept more concrete to students understanding and adverse impact on student's ethics. The study was Significant in nature as encourages pedagogical practice in ICT devices for teaching electronic devices in NCE awarding institutions with in, Nigeria.

Conclusion

The study investigated pedagogical practice needs of electrical/electronic technology lecturers on utilization of ICTs in teaching electronic devices in NCE awarding institutions in North-East, Nigeria. Findings revealed the pedagogical practice are highly prioritized for teaching electronic devices. However, electrical/electronic lecturers had high challenges on utilization of ICTs to promote conceptual changes on pedagogical practice, despite most of the electrical/electronic lecturers had low technological knowledge on the use of ICT tools for teaching electronic devices.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. NCE awarding institutions electrical/electronic lecturers should strive to develop approaches that create hands-on and collaborative engagement on pedagogical practices to explore select, troubleshoot, solve problems in electronic devices teaching.
2. NCE electrical/electronic lecturers should acquire skills and familiarity with various electronic platforms that can enhance teaching experiences. This includes; online teaching, educational ICTs applications that can support integrative engagement in teaching electronic devices.
3. NCE electrical/electronic lecturers should encourages to improve the ongoing challenges for utilizing ICT tools on recognizing the importance of incorporating pedagogical practice into their teaching electronic devices that enhance problem-based and project-based supports.

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