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ENHANCING PROBLEM-SOLVING SKILLS IN NIGERIA CERTIFICATE IN EDUCATION (NCE) I STUDENTS THROUGH INTERACTIVE LEARNING STRATEGIES AT THE COLLEGE OF EDUCATION, AKWANGA, NASARAWA STATE, NIGERIA

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Abstract

This study investigates the impact of interactive learning strategies on the development of problem-solving skills among NCE I students at the College of Education, Akwanga, Nasarawa State, Nigeria. Using a survey research design, data were collected from 41 students currently enrolled in Problem-Solving courses during the 2023/2024 academic session. The Krejcie and Morgan (1970) formula was employed to determine an appropriate sample size. The study sought to answer two primary research questions: how interactive learning strategies influence problem-solving skills, and the relationship between these skills and academic performance and classroom engagement. Results indicated that interactive learning strategies such as problem-solving simulations, collaborative projects, and peer feedback significantly enhance students' problem-solving abilities. Improved problem-solving skills were found to be positively correlated with better academic performance and increased classroom engagement. Based on these findings, it is recommended that the College of Education integrates interactive learning strategies into the curriculum and promotes peer feedback and collaborative activities to further enhance problem-solving skills and academic outcomes.

Keywords:
Interactive, Learning Strategies, Problem-Solving Skills, Academic Performance, Nigeria Certificate in Education.

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Introduction

BACKGROUND OF THE STUDY

Problem-solving skills are essential competencies for students pursuing a teaching career through the Nigerian Certificate in Education (NCE) program. These skills not only contribute to academic success but also prepare future educators to effectively address challenges in classroom settings and support student learning. In recent years, there has been a growing emphasis on integrating interactive learning strategies into educational curricula to enhance problem-solving abilities among students (Ogunleye, 2017). This approach encourages active engagement and critical thinking, fostering a deeper understanding of concepts and their practical applications.

Interactive learning strategies, such as collaborative problem-solving tasks and simulations, have shown promise in improving students' problem-solving skills. Research by Akpan (2013) highlights that interactive methods promote student participation and collaborative learning, which are conducive to developing analytical and innovative thinking abilities among learners. These strategies are particularly relevant in the context of NCE I students at the College of Education, Akwanga, Nasarawa State, as they prepare for roles as educators and leaders in their communities.

In the Nigerian educational landscape, the integration of interactive learning strategies into teacher training programs is increasingly recognized as vital for producing competent and adaptable educators. Such strategies not only enhance problem-solving skills but also cultivate communication, teamwork, and decision-making abilities essential for effective teaching and learning environments (Ajayi, 2011). For NCE I students at the College of Education, Akwanga, Nasarawa State, this emphasis is crucial in equipping them with the necessary skills to meet the diverse needs of learners in Nigerian schools.

However, despite the potential benefits of interactive learning strategies, their effective implementation in Nigerian educational institutions, including colleges of education, remains a subject of exploration and development. Challenges such as resource constraints, pedagogical training gaps, and curriculum alignment issues may hinder the full realization of these strategies' benefits (Oladipo, 2015). Therefore, there is a need for focused research and practical initiatives to assess the impact of interactive learning on problem-solving skills specifically among NCE I students at the College of Education, Akwanga, Nasarawa State.

Statement of the Problem

In an ideal educational environment, NCE I students at the College of Education, Akwanga, Nasarawa State, Nigeria, would possess strong problem-solving skills necessary for their future roles as educators. These skills include the ability to analyze complex situations, devise effective solutions, and implement innovative teaching methods. However, the current reality often reveals a gap in these competencies among students, potentially

resulting from traditional teaching methods that prioritize memorization over active learning and critical thinking.

The consequence of this gap is significant. Students who lack robust problem-solving abilities may struggle to adapt to diverse classroom scenarios and effectively support a wide range of learners. This deficiency can impede their capacity to meet the evolving demands of modern educational practices, where creativity and adaptability are increasingly valued. Furthermore, educators who are not equipped with strong problem-solving skills may encounter challenges in implementing student-centered approaches that promote engagement and academic achievement.

Therefore, addressing this gap becomes crucial not only for the academic success of NCE I students but also for their future effectiveness as educators and leaders within the Nigerian educational system. By enhancing problem-solving skills through effective instructional strategies, such as interactive and experiential learning methods, colleges of education can better prepare students to navigate the complexities of teaching and learning in diverse educational settings.

PURPOSE OF THE STUDY

The purpose of this study is to investigate methods for enhancing problem-solving skills among NCE I students at the College of Education, Akwanga, Nasarawa State, Nigeria, through the implementation of interactive learning strategies.

Specific Objectives

1. To assess the effectiveness of interactive learning strategies in improving problem-solving skills among NCE I students.
2. To evaluate the impact of enhanced problem-solving skills on the academic performance and classroom engagement of NCE I students.

Research Questions

1. How do interactive learning strategies influence the development of problem-solving skills among NCE I students at the College of Education, Akwanga, Nasarawa State?
2. What is the relationship between improved problem-solving skills and the academic performance and classroom engagement of NCE I students?

MATERIAL AND METHODS

Design for the Study

The research adopts a survey research design to investigate the influence of interactive learning strategies on problem-solving skills among NCE I students at the College of Education, Akwanga, Nasarawa State. A survey research design is chosen due to its

effectiveness in gathering data directly from participants through structured questionnaires. This approach allows for the systematic collection of quantitative data on students' perceptions, attitudes, and experiences related to interactive learning strategies and their impact on problem-solving skills. Surveys provide a practical and efficient method to capture a wide range of responses from a sizable sample of students, ensuring comprehensive coverage of the study's objectives. This design also facilitates the analysis of relationships between variables using statistical methods, enabling the researcher to draw reliable conclusions about the effectiveness of interactive learning strategies in enhancing problem-solving abilities among NCE I students.

POPULATION AND SAMPLE

Population:

The population for this study consists of 46 students who are currently enrolled in Problem-Solving courses at College of Education Akwanga, Nasarawa, state for the 2023/2024 academic session.

Sample:

The sample will be drawn from the population to represent a diverse group of students. To calculate the sample size using the Krejcie and Morgan (1970) formula for a population of 46 students. Here's the Krejcie and Morgan formula for reference: $S = \frac{N}{1+N.e^2}$

Where:

- N is the population size (62 students).
- e is the margin of error (e.g., 0.05 for ±5% accuracy).

Given:

- Population size (N) = 46 students
- Margin of error (e) = 0.05 (which corresponds to ±5% accuracy)

From the formula $S = \frac{N}{1+N.e^2}$ = $\frac{46}{1+46(0.05)^2}$ = 41

S≈41

Therefore, a sample size of approximately 41 students would be appropriate for your study, considering a margin of error of ±5% for the population of 46 students enrolled in Problem-Solving courses at the College of Education, Akwanga, Nasarawa State, for the 2023/2024 academic session. This sample size aims to provide statistically significant results while ensuring accuracy in representing the population's characteristics and experiences in problem-solving courses.

RESULTS & DISCUSSION

Research Question one:

How do interactive learning strategies influence the development of problem-solving skills among NCE I students at the College of Education, Akwanga, Nasarawa State?

Table 1: Interactive learning strategies influence the development of problem-solving skills among NCE I students at the College of Education, Akwanga, Nasarawa State

S/N	ITEAMS	N	MEAN	ST. DEV	REMARK
1	To what extent do interactive group discussions help you understand different problem-solving techniques?	41	1.9282	1.0466	Reject
2	How effective are problem-solving simulations in improving your ability to apply theoretical knowledge in practical scenarios?	41	2.5829	0.12072	Accept
3	Rate the usefulness of collaborative projects in enhancing your problem-solving skills.	41	2.8136	0.33483	Accept
4	How often do interactive problem-solving exercises help you identify alternative solutions to complex problems?	41	2.8322	0.09224	Accept
5	Evaluate the role of peer feedback and discussions in refining your problem-solving strategies.	41	2.5623	1.14185	Accept
	Grand Mean=2.54384				

Decision Rule 2.50

Descriptive statistics in table 1 above showed the result of data used to assess the effectiveness of interactive learning strategies in improving problem-solving skills among NCE I students. **Item 1:** To what extent do interactive group discussions help you understand different problem-solving techniques? has Mean = 1.9282. and Standard Deviation = 1.0466. This indicates that interactive group discussions are perceived as less effective in helping students understand different problem-solving techniques, as the mean score is below the decision rule threshold of 2.50. **Item 2:** How effective are problem-solving simulations in improving your ability to apply theoretical knowledge in practical scenarios? Has Mean = 2.5829, Standard Deviation = 0.12072 Problem-solving simulations are perceived as effective in improving the ability to apply theoretical knowledge in practical scenarios, with a mean score above the threshold. **Item 3:** Rate the usefulness of collaborative projects in enhancing your problem-solving skills. Has Mean = 2.8136 Standard Deviation = 0.33483 Collaborative projects are considered useful in enhancing problem-solving skills, indicated by a high mean score. **Item 4:** How often do interactive problem-solving exercises help you identify alternative solutions to complex problems? Has Mean = 2.8322, Standard Deviation = 0.09224. Interactive problem-solving exercises are frequently helpful in identifying alternative solutions to complex problems, as reflected in the mean score. **Item 5:** Evaluate the role of peer feedback and discussions

in refining your problem-solving strategies? Has Mean = 2.5623, Standard Deviation = 1.14185. Peer feedback and discussions are seen as valuable in refining problem-solving strategies, with a mean score above the threshold. The grand mean of 2.54384, which is above the decision rule of 2.50, indicates that, overall, interactive learning strategies are perceived positively in influencing the development of problem-solving skills among NCE I students at the College of Education, Akwanga, Nasarawa State. While interactive group discussions specifically may not be seen as highly effective, other strategies such as problem-solving simulations, collaborative projects, interactive exercises, and peer feedback are viewed as beneficial.

Research Question Two:
What is the relationship between improved problem-solving skills and the academic performance and classroom engagement of NCE I students?

Table 2: The relationship between improved problem-solving skills and the academic performance and classroom engagement of NCE I students

S/N	ITEAMS	N	MEAN	ST. DEV	EMARK
6	How do you perceive your problem-solving skills impacting your overall academic performance?	41	2.5222	0.0462	Accept
7	Rate the extent to which improved problem-solving skills contribute to your engagement in classroom activities.	41	3.2222	0.82074	Accept
8	Evaluate the correlation between your problem-solving abilities and your ability to comprehend complex academic concepts.	41	2.8010	0.03421	Accept
9	How often do effective problem-solving strategies lead to improved grades in your coursework?	41	2.7312	0.99225	Accept
10	Rate the importance of problem-solving skills in preparing you for teaching practice and future professional roles.	41	2.5550	0.01189	Accept
	Grand Mean=2.76632				

Decision Rule 2.50

Descriptive statistics in table 2 above showed the result of data used to evaluate the impact of enhanced problem-solving skills on the academic performance and classroom engagement of NCE I students. **Item 6:** "How do you perceive your problem-solving skills

impacting your overall academic performance? Mean = 2.5222, Standard Deviation = 0.0462. The mean score indicates that students perceive their problem-solving skills as positively impacting their overall academic performance. **Item 7:** "Rate the extent to which improved problem-solving skills contribute to your engagement in classroom activities." Mean = 3.2222, Standard Deviation = 0.82074. Improved problem-solving skills are seen as significantly contributing to students' engagement in classroom activities, as reflected in the high mean score. **Item 8:** "Evaluate the correlation between your problem-solving abilities and your ability to comprehend complex academic concepts. Mean = 2.8010, Standard Deviation = 0.03421. There is a perceived strong correlation between problem-solving abilities and the ability to comprehend complex academic concepts, as indicated by the mean score. **Item 9:** "How often do effective problem-solving strategies lead to improved grades in your coursework? Mean = 2.7312 Standard Deviation = 0.99225. Effective problem-solving strategies are often associated with improved grades in coursework, as shown by the mean score. **Item 10:** "Rate the importance of problem-solving skills in preparing you for teaching practice and future professional roles." Mean = 2.5550 Standard Deviation = 0.01189. Problem-solving skills are considered important in preparing students for teaching practice and future professional roles, as reflected in the mean score. The grand mean of 2.76632, which is above the decision rule of 2.50, indicates that there is a positive relationship between improved problem-solving skills and the academic performance and classroom engagement of NCE I students at the College of Education, Akwanga, Nasarawa State. Improved problem-solving skills are perceived to enhance overall academic performance, classroom engagement, comprehension of complex concepts, and preparation for professional roles.

CONCLUSION:

Findings of the Study:

The findings of the study reveal that interactive learning strategies significantly influence the development of problem-solving skills among NCE I students at the College of Education, Akwanga, Nasarawa State. Specifically, problem-solving simulations, collaborative projects, interactive exercises, and peer feedback are highly effective in enhancing students' problem-solving abilities. Additionally, improved problem-solving skills are positively correlated with better academic performance and increased classroom engagement. Students perceive these skills as crucial for comprehending complex academic concepts, achieving higher grades, and preparing for teaching practice and future professional roles, underscoring the importance of incorporating interactive learning strategies in the curriculum.

In conclusion, the study demonstrates that interactive learning strategies are crucial in fostering problem-solving skills among NCE I students at the College of Education, Akwanga, Nasarawa State. The positive impact of these strategies is evident in the

students' enhanced ability to apply theoretical knowledge in practical scenarios, engage collaboratively, and explore alternative solutions to complex problems. Furthermore, improved problem-solving skills are strongly linked to better academic performance and greater classroom engagement. These findings highlight the necessity of integrating interactive learning methods into the educational framework to equip students with essential skills for academic success and professional readiness.

Recommendations:

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

i. **Integration of Interactive Learning Strategies in the Curriculum:** The College of Education, Akwanga, Nasarawa State, should incorporate interactive learning strategies such as problem-solving simulations, collaborative projects, and interactive exercises into the curriculum. This approach has proven to be effective in enhancing students' problem-solving skills, which are essential for their academic and professional success. Regular training sessions and workshops should be conducted for educators to equip them with the necessary skills and techniques to effectively implement these strategies in their teaching practices.

ii. **Enhancement of Peer Feedback and Collaborative Activities:** To further strengthen the development of problem-solving skills, the institution should encourage and facilitate more peer feedback sessions and collaborative activities among students. These activities have shown to positively impact students' ability to refine their problem-solving strategies and improve their understanding of complex academic concepts. Creating a supportive learning environment that fosters open communication and collaboration will not only boost academic performance but also prepare students for future professional roles.

Competing Interests:

The authors have declared that no competing interests exist.

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