PERCEPTION OF PRE-SERVICE UNDERGRADUATE TEACHERS ON COMPUTER-BASED EXAMINATION IN NIGER STATE, NIGERIA

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Abstract
The importance of students' perspectives on educational practices is considered as critical insights to educational classroom practice and help in providing vital information for effective learning experiences. Therefore, this study focused on the perception of Pre-service undergraduate teachers on computer-based examination (CBE) in Niger state. The study was guided by 3 research questions and two hypotheses which was tested at 0.05 significant level. The study was adopted a cross-sectional descriptive survey design. The population was all pre-service public undergraduate teachers studying Biology Education. Using simple random sampling 200 students were selected as the sample for this study. The sample was made up of 90 male and 110 females. The instrument for data collection was a perception of computer-based examination questionnaire (PCEQ). The instrument was a 4-point rating scale questionnaire. The PCEQ was validated by 2 experts in educational technology and 1 expert in psychometric. The PCEQ yield at reliability of 0.74 after pilot testing, which was considered adequate for this study. The findings of the study indicate that pre-service public undergraduate's teachers have a positive perception of CBE students' age and gender have no significant influence on the perception of CBE. The findings have implication for theory and practice. It was recommended among others that university authorities should provide a conducive atmosphere for the conduct of CBE.
Keywords: Computer-Based Examination, Perception, Gender, Age & Pre-service University Students

Introduction

Technology is a vital tool for the improvement of the quality of human life, it is an indispensable component of our everyday lives; socially and educationally, among others. Therefore, in the past few decades, there have been remarkable growths in Information and Communication Technology, and computer network which has created numerous possibilities for classroom instruction. Consequently, the effective and efficient adoption of technology has become a critical issue in today's classroom to prepare human resource that will take advantage of opportunities in the global market. Furthermore, the growth of these communications, computer systems and their proliferation in the educational environment allows the education community to have access to the world beyond the classroom which increase the flexibility of learning and mobility of learners (Uyouko & Wong, 2015). There is a move from teacher-centred to student-centred education, and from the traditional to the virtual classroom. Similarly, there is a shift from a paper-based test to computer-based examination. Consequently, assessment is a vital component of teaching and learning and determine the degree to which educational objectives have been achieved. The quest to leverage on the potential of technology and reform examination in Nigeria has encouraged the Joint Admission and Matriculation Board to initiate the first E-examination in public examination in Nigeria (Umar, & Wilson, 2019). How preservice teachers perceived and experience the use of technology for assessment might influence the adoption and implementation of computer-based assessment in the near future (Uyouko & Wong, 2015).

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Biology is branch of science that deals with the living world Umar (2011). It is a prerequisite subject for many fields which have contributed immensely to the technological growth of the nation. These include pharmacy, machine, Agriculture, Engineering and Biotechnology (Ahmed and Abimbola, 2011). The subject is one of the core subjects taught in the senior secondary school level (FRN, 2004). Despite the importance and popularity of biology, students' performance at senior secondary level has been unsatisfactory thus, the need to seek other methods of writing examinations.

Perception is the extent to which an individual believes that using a particular device or technology will impact positively on their job performance. Chen and Lishing-Hang (2011) reported that perceived usefulness positively influences an individual's attitudes towards utilisation of technology or a new product. Sanni and Mohammad (2015) examined the views of students on the use of e-examination for the conduct of UTME. The finding indicated that students prefer CBE over the traditional paper and pen assessment. This implies that students have positive perception towards CBE. On the contrary, Joshua and Ikiroma (2013) carried out a study on CBT perspectives among Nigerian university entrants' admission examination. The findings indicated that the students, criticized CBT because of interrupted electricity supply, implying a negative perception of CBT among students.

However, in a study conducted by Tella and Bashorun (2012) investigated the attitude and perception of undergraduate students to CBE among university students. The results revealed that the students have a positive attitude towards the computer-based examination, the findings also revealed that the respondent has a strong and positive perception towards the computer-based test. Sanni and Mohammad (2015) investigated the perception of students' perception towards CBT JAMB UTME examination. The findings revealed that students have positive perception towards JAMB computer-based examination. Appiah and Tonder (2019) conducted a study on the perception of e-examination among higher education students in Singapore. The findings indicated that the students have positive perception towards e-examination. Therefore, teachers' perception of computer-based examination, is a fundamental variable that could influence the integration of technology for classroom instruction. Individual perception of CBE is largely governed by his experience and background knowledge of CBE; thus two individuals could perceive CBE differently.

Moderating variables such as gender and age could moderate the perception, attitude, and intention of individuals towards CBE. Pre-service teachers' perception of computer-based examination could be gender-related. Gender is a socially created meaning and roles assigned to persons of different biological sexes. The concept also includes the expectation held about the perception, attitudes, and behaviours of both men and women. Gender refers to the biological difference in terms of sex. The population of male and female having secondary education was 63.3% and 47.9% respectively (HDI, 2013). Gender seems to influence individuals' perception or opinions of phenomena and thus affects their attitudes. Research results on gender and achievement are inconclusive, however, there seems to be an imbalance on computer access, usage, perception, and attitude between males and females (Yusuf and Afolabi, 2010). Al-Emran, Elsherif, and Shaalan (2016) reported that there is no gender effect on students' perception of technology for educational purposes. Similarly, Yang (2012) reported no significant difference among students' perspectives on the technology used with regards to gender.

Respondents' age could also influence the perception of students towards technology and specifically, CBE. Age has been reported to have no significant difference in students' attitudes towards the use of technology for learning, this could be attributed to their perception (Al-Emran, Elsherif, & Shaalan, 2016). Given the preceding, gender and age in this study are considered as moderating variables. The study is limited to public undergraduates' pre-service teachers in Niger State. In this study Computer-Based

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Examination, Computer-Based Test and E-assessment are used interchangeably.

Statement of the Problem

Information and communication devices and platform have impacted every sector of human endeavours or daily lives. In the educational sector, technology has influenced the way assessment and examination is developed and executed. In literature, the use of technology to administered examination and assessment is called E-examination, Computer-Based Test, Computer-Based Examination or Computer-Based Assessment. The CBE provides the standardize or homogenous examination environment for all candidates and objective and immediate feedback. However, before the advent of the 21st-century the traditional paper and pencil examination has been dominant for decades and associated with numerous examination malpractices such as spying of answers, impersonation, and use of unauthorized materials among others (Ndunugu, 2014 & Umar, & Wilson, 2019). Therefore, to mitigate examination malpractices which are associated with the traditional examination environment, CBE is considered as an alternative. It improves the effectiveness of the examination process by enhancing students' consideration (Chua et al., 2013). Moreover, pre-service teachers are the primary gatekeeper to the implementation of the Computer-Based Examination soon. It is therefore critical to understand their perception of technology integration into teaching and learning with special reference to evaluation and assessment. Consequently, pre-service university students' perspectives on CBE could play a critical role in fostering effective and efficient classroom practices. It is against this background that the researcher examined the perception of CBE among pre-service university undergraduate's teachers in Niger State.

Research Questions

The research hypotheses that guided the study are:

1. What is the perception of Computer-Based Examination (CBE) among pre-service undergraduate teachers?
2. What is the perception of Computer-Based Examination (CBE) between male and female pre-service undergraduate teachers?
3. What is the perception of Computer-Based Examination (CBE) between different ages of pre-service undergraduate teachers?

Research Hypotheses

The formulated null hypotheses that guided the study include:

Ho$_1$: There is no significant difference in the perception of Computer-Based Examination (CBE) between male and female pre-service undergraduate teachers.

Ho$_2$. There is no significant difference in the perception of pre-service undergraduate teachers' base on their ages [$\leq$20, 21-25 and $\geq$ 26].

Research Methodology

This study adopted a cross-sectional descriptive survey design to determine the opinions and perception of undergraduate pre-service teachers on CBE in Niger State. This design is considered appropriate, for it involves the collection of the information base on respondents' perception (Creswell, 2015). The population of the study was all first and second-year pre-service teachers in the faculty or school of education in the public universities in Niger state (FUT Minna and IBBI University Lapai). A sample size of 200 students was randomly selected.

Instrumentation

The research instrument used for data collection was a students' perception of the Computer-Based Examination Questionnaire (PCEQ). The instrument was a 4-point rating scale from strongly agree to strongly disagree, it contains two sections; section A comprised of question soliciting for respondents' demographic variables (gender, age, and department). Section B contained 12 items on students, perception of Computer-Based Examination Questionnaire (PCEQ), the rating

scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) and rated 4, 3, 2, and 1 respectively. The questionnaire was validated by two experts each from educational technology and psychometric testing. The instrument was pilot tested, and it yielded the reliability co-efficiency (r) of 0.746, which was considered adequate and satisfactory for this study. This agrees with Hair, et al (2010) who reported that the reliability (r) value of above 0.60 is adequate for research in the field of education.

Procedure for Data Gathering
Approval was obtained from the respective university authority to ensure adherence to ethical principles. The respondents' cooperation was solicited and encourage to give unbiased responses. The researchers informed of the objectives of the study and assured the respondents that the data would be used strictly for this study. The researchers

administered and collected back the completed questionnaires.

The research questions were answered using mean and standard deviation while the formulated hypotheses were tested using inferential statistics (t-test and ANOVA) at 0.05 level of significance. The Statistical Package for Social Science (SPSS) 21.0 edition was used for the analysis.

Results
The results of this study are presented based on the stated research questions and formulated hypotheses as presented below
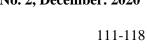
Research question one: What is the perception of Computer-Based Examination (CBE) among pre-service undergraduate teachers? The mean and standard deviation was used to answer this research question and the result is presented in table1.

Table 1: Mean and Standard Deviation of Respondents' Perception of CBE

S/No	ITEMS	N	Mean	SD	Decision
1	CBE is more effective than paper and pencil test	200	3.14	1.06	Agree
2	CBE encourages children participation in achieving learning goals	200	2.62	1.30	agree
3	CBE minimizes examination malpractices	200	3.24	1.20	Agree
4	CBE provides children with instant feedback	200	3.80	1.63	Agree
5	Students' concentration during examination is enhanced using CBE	200	3.48	1.43	Agree
6	CBE is user friendly	200	3.24	1.35	Agree
7	I have the knowledge to successfully engage in CBE	200	3.36	1.41	Agree
8	Participating in CBE enhanced my digital skills	200	3.62	2.24	Agree
9	CBE has positive effects on students learning	200	2.82	1.12	Agree
10	I trust the outcome of CBE because teachers' bias is eliminated	200	3.82	1.46	Agree
	Grand (Mean and Standard Deviation)		**3.38**	**1.52**	**Agree**

Table 1 shows the findings of pre-service undergraduate teachers' perception of CBE. The average mean of 2.50 was the benchmark for positive perception and less than 2.50 for negative perception for each item. Accordingly, all items show the mean of between 2.62 – 3.82, the grand mean of 3.38 indicating that the pre-service teachers from the population have a positive perception of CBE. The standard deviation of the respondents'

perception was between 1.06 - 2.24, indicating that there is no significant deviation of respondents' perception from each other and the standard deviation mean of the group.

Research Question two: what is the perception of Computer-Based Examination (CBE) between male and female pre-service undergraduate teachers? Mean, the standard

deviation was used to answer this research question and the result is presented in Table 2

Table 2: Mean and Standard Deviation of Male and Female Pre-Service Undergraduate Teachers towards CBE

Variable	N	Mean	SD	MD
Male	90	24.89	3.79	
				1.10
Female	110	26.09	4.20	

Table 2 indicates that the mean and standard deviation of male and female pre-service undergraduate teachers. The table revealed the mean of 24.89 with Standard Deviation of 3.79 for male pre-service undergraduate teachers and 26.09, and 4.20 for female pre-service undergraduate teachers mean score standard deviation, respectively. This gives Mean difference of 1.10 in favour of male pre-service teachers. Thus, an independent t-test was used

to test the corresponding hypothesis to determine whether the mean difference is significant or not.

Ho$_1$: There is no significant difference in the perception of Computer-Based Examination (CBE) between male and female pre-service undergraduate teachers. An independent t-test was used to test this formulated hypothesis and the result is presented in table 3.

Table3: Independent t-test Result of Male and Female Pre-Service Undergraduate Teachers towards CBE

Variable	N	df	X	SD	t-value	P-value	Remarks
Male	90		24.89	3.79			Not
		198			-1.54[NS]	0.14	Significant
Female	110		26.09	4.20			

Not Significant at *p>*.05

Table 3 shows the independent sample t-test of male and female pre-service university undergraduate's teachers. The result shows that the mean perception of male and female was not significantly different t (198) = -1.5, p(0.14) >.05, therefore, the hypothesis is accepted. Therefore, there is no significant difference between male and female undergraduate students' perception of CBE.

Research question three: what is the perception of Computer-Based Examination (CBE) between different ages of pre-service undergraduate teachers? Mean, and standard deviation was used to answer this research question and the result is presented in table4

Table 4: Mean & standard deviation of pre-service undergraduate teachers' perception of CBE

Age	N	Mean	SD
≤20	101	28.20	3.26
21-25	69	27.80	4.14
≥26	30	27.01	3.42

Table 4 shows the mean and standard deviation of pre-service undergraduate teachers. The mean score and standard deviation of the respondents whose ages are 20 and below are 28.20and 3.26, respectively. Similarly, the

respondents that are between the ages of 21 – 25 has the mean of 27.80 with a standard deviation of 4.14. While respondents whose ages were 26 and above have the mean and standard deviation of 27.01, and 3.42,

respectively. ANOVA was used to test the corresponding hypothesis. Given the result, respondents whose age were 20 years and below has the mean score and seem to have a more positive perception towards CBE.

Hypothesis Two: There is no significant difference in the perception of pre-service undergraduate teachers on CBE base on their ages [≤20, 21-25 and ≥ 26]. To test this hypothesis, analysis of variance (ANOVA) was used and the result was presented in table5.

Table5: ANOVA Result of Undergraduate Students' Perception of CBE based on their Ages

	Sum of Squares	*df*	Mean Square	F	Sig.
Between Groups	218.623	2	114.20	7.002	0.12
Within Groups	2824.370	197	16.31		
Total	3042.993	199			

Table 5 shows the ANOVA results of perception of pre-service undergraduate teachers on CBE base on their ages [≤20, 21-25 and ≥ 26]. The results indicated that there was no statistical significant difference among students of ages ≤20, 21-25 and ≥ 26 F (2,197) = 7.00, P (0.12)>.05. Therefore, the hypothesis is accepted that there is no significant difference in the perception of pre-service undergraduate teachers on CBE base on respondents' ages.

Discussions
The importance of students' perspectives is considered as critical insights to educational classroom practices and help in providing vital information for effective learning experiences. The finding of the study shows that pre-service undergraduate teachers of the population have a positive perception of CBE. The findings collaborated with the earlier results of Appiah and Tonder (2019) conducted a study on the perception of e-examination among higher education students in Singapore. The findings indicated that the students have positive perception towards e-examination. Similarly, the finding agrees with Sanni and Mohammad (2015) who reported positive perception towards JAMB computer-based examination among students. On the contrary, Joshua and Ikiroma (2013) carried out a study on CBT perception among Nigerian university applicants. The findings indicated that the students, criticized CBT because of interrupted electricity supply, implying a negative perception of CBT among students. This finding can be attributed to the perceived

usefulness of CBE over traditional paper and pencil examination in curbing examination malpractices. Furthermore, it could be attributed that the respondents are either digital natives or immigrants, thus, technology has become part of their daily lives. Consequently, Barclay and Osei-Bryson (2012) opined that perceived usefulness influences an individual behavioural intention.
The findings also indicated that gender has no effects on respondents' perception of CBE. This result agrees with Al-Emran, Elsherif, and Shaalan (2016) reported that there is no gender effect on students' perception of technology for educational purposes. Similarly, Yang (2012) reported gender has no significant difference in students' perspectives on the technology used. This result can be attributed to the gender-friendly nature of technology. The finding also shows that age has no significant influence on pre-service university undergraduate's teachers' perception of CBE. The finding did not collaborate with the earlier finding of (Al-Emran et al, 2016) who reported that age has a significant difference in students' attitudes and perception towards technology used for learning.

Conclusion
The quest to leverage on technology to enhance educational delivery is at the forefront of educational discourse. Given the findings, it is logical to conclude that technology has infiltrated every aspect of human life, education inclusive. This was demonstrated by the positive perception of the respondents towards CBE. Gender did not play a significant role in

respondents' perception, suggesting that irrespective of gender, pre-service undergraduate teachers have positive perception towards CBE. It is logical to conclude that CBE is gender friendly. Similarly, age has no significant impact on pre-service teachers of this population. Hence, this study provided a theoretical understanding of pre-service teachers' perception of CBE.

Recommendations
1. Government policy on the integration of technology into teaching and assessment should be reinforced to curb examination malpractices.
2. Conducive environment and gender-friendly environment should be provided for the conduct of E-examination

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