Research Paper

Impact of Instructional Materials on Students' Academic Performance in Quantitative Economics in North-West State Colleges of Education, Nigeria

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ABSTRACT: *The process of lecturing/teaching especially in tertiary institution in Nigeria demand good instructional material to expand communication gap between the lecturers and the students for effective understanding, but revised is the case. It on these bases the researchers embarked on impact of instructional materials on students' academic performance in quantitative economics in North-West State Colleges of Education (COE), Nigeria. Four research questions and one hypothesis guided the study. The study adopted an exploratory cross-sectional survey research design. The population of the study consisted of all 8 accredited State COE in North-West Nigeria with 12,320 lecturers and NCE 1 students who registered for quantitative Economics 2019/2020 academic season. The sampled size for the investigation consisted of 1,085 lecturers and students of economics selected from 7 accredited State COE in North -West Nigeria through multi-stage stratified random sampling technique, 35 lecturers and 1,050 students. The researchers developed an instrument for data collection entitled ''Impact of Instructional Materials on Students' Academic Performance in Quantitative Economics Questionnaire'' (IIMSAPQEQ) contained 9 items used for data collection. IIMSAPQEQ was anchored on the 2-point scale from agree and disagree was validated by expert which yielded 0.87 validity index and 0.82 reliability index. Frequency count and percentage were used to answered research questions while parametric statistics was used to test the null hypotheses at 0.05level of significance using SPSS version 23 and the findings revealed that majority of respondents agreed that they don't always use any instructional materials during lecture period, no supplied of instructional materials available in their school and there is a significant impact of instructional materials on academic performance of students. It was recommended that appropriate measures should be taken by concerned stakeholders of colleges of education to compel all lecturers to use instructional material during lecturing and learning process and supply of instructional material to all colleges of education in Nigeria to minimize students' poor performance in the subject.*
KEYWORDS: *Instructional materials, academic performance, quantitative economics, colleges of education*

I. INTRODUCTION

Education is the process of becoming critically aware of one's reality in a manner that leads to effective action upon it. Education therefore, remains the bedrock for national development. For a country to be technologically sound, economically reliant and politically vibrant, it will depend on the quality of education of its citizenry. It is in recognition of this that the [1] that education is adopted as an instrument par excellence for effective national development. In view of this, the second National Development plan spelled out five goals to be achieved through Education which includes the following: a free and democratic society, a just and egalitarian society, a united strong and self-reliant Nations, a just and dynamic economic, and a land of bright and full opportunity. In recent years, Instructional materials (IMs) are defined as resources that organize and support instruction, such as textbooks, tasks, and supplementary resources [2]. It refers to the human and non-human materials and facilities that can be used to ease, encourage, improve and promote teaching and learning activities. They are whatever materials used in the process of instruction. The great Soviet encyclopedia defines IMs as educational resources used to improve students' knowledge, abilities, and skills, to monitor their assimilation of information, and to contribute to their overall development and upbringing of students under the auspices of a teacher.

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Instructional materials (IMs) or resource are sine qua non in the educational institutions especially in the large and crowded lecture halls to the improvement and attainment of educational goals in any given country. They encompass everything that provides information to the teacher and learner for qualitative and effective teaching and learning economics in the schools [3]. For [4], resources in economics include all forms of school facilities that are used to promote, encourage and enhance qualitative teaching and learning economics. [5] made reference to what he considered as resources to include; men, machines, students, materials and money which are to be planned, organised, directed, controlled and coordinated to achieve better teachings and learning. The teaching and learning of economics as a subject in Nigeria and other West African countries is part of the senior secondary- SS1, SS2 and SS3 curriculum [6]. Economics according to[7] is a social science for analyzing the production, distribution, and consumption of goods and services. Economics education is the education provided for economics teachers or would be teachers on different economic issues and problems. It focuses on the improvement of economic curriculum materials and pedagogy. This according to [8] is the education provided to assist a rational man in organizing his different thoughts whenever he is faced with day-to-day economic issues and problems. Instructional materials (IMs) are those items that assist the information aspect of teaching. Not teaching holistically. These could take the form of textbooks, worksheets, 3D models, charts, info graphics, over head projector, audio-speakers, etc which assist teachers in conveying information, massage across the leaner's within and far at during the instruction [9].

For [10] educational materials bring more positive than negative implications in their classroom pedagogy as well as their performance towards other educators. It greatly helps them to personalize their teaching strategies because they know the various learning speeds and capacity of their students despite the challenges in developing their own or looking for relevant materials that suit the needs of their learners [11]. According to [12] the teachers need to use various and appropriate teaching methods and instructional materials, in order to develop positive attitudes of learners towards the subject. [13] Instructional materials supplement, clarify, vitalize, emphasize instruction and enhance learning in the process of transmitting knowledge, ideas, skills, and attitude. This calls for teacher resourcefulness and improvisation on the parts of the Physics teachers. The ability of the teacher to make use of "local" materials in place of "standard" ready-made materials makes lesson more effective and improved students' achievement. [14] It is a fact that classroom learning depends on effective communication, skillful application of the several techniques and materials for learning. When adequate instructional materials are added to suitable methods, efficiency in learning is assured. The maximum impact can be made on learning when an efficient instructor uses the suitable method and appropriate teaching materials.

According to [15], the results indicated that students taught practical agriculture using instructional charts, pictures and filmstrips performed significantly better than students taught without instructional materials. In the process of teaching/learning, instructional materials that were used facilitated students understanding by supplementing, clarifying, revitalizing and emphasizing the teacher's verbal efforts that inadequate use or lack of use of instructional materials in the teaching/learning situation (lecture method) negates the objective of teaching. According to [16] the strengthening of the cognitive prerequisites mentioned above proved that instructional materials positively influenced the children's cognitive skills development since the first graders were able to identify, compare, classify, differentiate, analyze pictures, decode and use divergent thinking during the implementation. Quantitative Economics is concerned with hypotheses, tentative explanation of solutions to abstract representation of real world situation and problems [17]. Quantitative Economics uses a range of complex mathematics and statistical procedures to analyze economic phenomena [18]. Quantitative Economics represents a systematic attempt to set theoretical hypotheses about economic reality against empirical evidence produced by observing that reality. In quantitative Economics, the emphasis is always on hypothesis formation and testing.

According to [19], quantitative Economics lends empirical support to economic theories which are generally expressed in quantitative terms. In this content of Economics, mathematics and econometrics are discussed. The benefit of the quantitative contents is that, they can be used to forecast economic conditions, evaluate the impact of economic policies, and examine the feasibility of government. There are such quantitative contents in Economics in the senior secondary school curriculum. The content includes; basic tools for economic analysis, further aspects of production, cost and revenue concepts, elasticity of demand and supply, national income accounting, price mechanism, income determination, balance of payment, public finance, theory of consumer behaviour and so on [20]. To understand the quantitative Economics contents, there is need for learners to possess quantitative ability.

Quantitative ability is the application of mathematical methods to represent theories and analyze problems in Economics [21]. Quantitative skills are marked by the ability to solve numerical problems easily. It equally means that one is able to separate a whole into its constituent parts more readily than others. [22] Defined quantitative ability as a measure of the student's ability to apply knowledge of mathematics concepts and principles, to demonstrate flexibility in thinking, to identify critical features on new situations. In summary,

quantitative ability entails arriving at mathematical solutions to problems, as well as basic additions, subtraction, multiplication and division. Teaching quantitative Economics demands adequate instructional materials, textbooks, teacher's knowledge of the subject, use of innovative teaching strategies, for the purpose of the importance attached to the study of Economics. In contrast, teachers who teach Economics in Nigerians secondary schools have few materials and text books [23]. This as reported by [24] was evident since the review of Economics curriculum by the NERDC in 2008. This has affected the Economics teachers and teaching of Economics.

Despite the importance attached to the subject, there has been poor achievement trend which became evident when mathematical and statistical components were incorporated into the subject. This has been posing problems to the students, probably due to the carry over effect of the negative attitude they have had towards mathematics. This negative attitude could be the reason for the poor achievement in the quantitative aspects of senior secondary school Economics. Academic achievement is the outcome of education. It is the extent to which students, teachers or institutions have achieved their educational goals [25]. Academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific goals [26]. The goals to be accomplished according to [27], is regarded in most school systems as cognitive goals that apply across multiple subject areas or that include the acquisition of knowledge and understanding in a specific intellectual domains.

Therefore, academic achievement is considered to be a multifaceted construct that comprises different domain of learning. The field of academic achievement is very-wide-ranging and covers a broad variety of education outcomes. Its definition depends on the indicator used to measure it. Among the many criteria that indicate academic achievement, there are general indicators such as procedural and declarative knowledge acquired in an educational system, more curricular – based criteria such as grades or performance on an educational achievement test, and cumulative indicators of academic achievement such as educational degree and certificates. Academic achievements play a very important role in education. It can be measured by the GPA (Grade Point Average) or by standardized assessment designed for selection purpose [28] like secondary school certificate examination. This standardized assessment determines whether or not a student will have the opportunity to continue his or her educational career. Besides the relevance of academic achievement to an individual, academic achievement is of utmost importance for the wealth of a nation and its prosperity. However, academic achievement can be affected by some factors such as students' socio-economic background, school type and peer factor [29].

These aforementioned factors are equally applicable to Economics students academic achievement. [30] were of the view that the teaching of Economics in Nigeria is characterized by many inadequacies. Such as inadequate use of instructional materials which are either not available or are insufficient, short supply of qualified Economic teachers, lack of motivation and so on [31]. These inadequacies have affected the effectiveness of teachers of Economics and could have resulted in students' poor achievement in senior secondary school Economics [32]. The teacher ineffectiveness could also be attributed to teachers' use of non-student centered instructional method which does not motivate learners to learn. There is need for a change in delivery approach in Economics to students centered approaches. One of such student-centered instructional methods that can motivate learners to develop interest to learn Economics as well as enhance achievement is instructional material.

Statement of the Problem

Over the years, weaknesses manifested in the students' outcomes as reported by the various colleges' education in North-East were poor grammatical expression, scanty explanation of points, and inadequate knowledge of drawing and analysis of graphs, simple calculation and lack of manipulative skills. These deficiencies could be attributed to students' overcrowding in lecture halls which deprived smooth communication of lecture or negative attitude towards mathematical contents as well as ineffectiveness on the part of lecturer due to the lack of instructional material and technique. This ineffectiveness could result in low student-lecturer interaction due to routine conventional lecturing technique that does not encourage students' participation during learning process. These outcomes may explain not only students' poor performance in quantitative Economics but their multiply effect of students attitude towards quantitative Economics.

Research Questions

The following research questions guided the study.
1. Are students knowledgeable about the availability of instructional material in improving academic performance in quantitative economics?
2. What type of instructional material is commonly used in lecture halls during lecturing and learning of quantitative economics?

3. Are the lecturers fully complying with the use of instructional material in lecturing quantitative economics in North-West colleges of education?
4. What is mean difference between academic performance of students and instructional material in State colleges of Education in North-West Nigeria?

Statement of Hypotheses
The following null hypotheses were tested at the 0.05 level of significance:
HO: There is no significant mean difference between academic performance of students and instructional material in State colleges of Education in North-West Nigeria.

II. MATERIAL AND METHODOLOGY

Design
      This study adopted an exploratory cross-sectional survey research design. The exploratory cross-sectional survey captured the impact of IMs on students' academic performance in quantitative Economics. The resulting data were used to make general statement about instructional material impact on students' performance. The reason why the exploratory cross-sectional survey techniques was used was because the technique allows the researchers to use only a small portion of the population, to collect a large amount of data in a relatively short period of time and also allows the researchers to include a wide range of other variables. [33] states that exploratory studies are such in which the researcher is totally ignorant of what the findings might be while cross-sectional survey involves the collection of data from a wide geographical area within a short span of time from a random sample of a targeted population.

Population and Sample
      The population of the study consisted of all 8 accredited State Colleges of Education in North-West Nigeria with 12,320 lecturers and NCE 1 students who registered for quantitative Economics 2019/2020 academic season from [34]. The sampled size for the investigation consisted of 1,085 lecturers and students of economics selected from 7 accredited State Colleges of Education in North -West Nigeria. The accredited 7 accredited State Colleges of Education in North West Nigeria were randomly selected from across all the 8 accredited State Colleges of Education in 7 State North West Nigeria, thought Kaduna State have 2 State Colleges of Education while others states have 1 each as reflected in Table 1 using the multi-stage stratified random sampling technique, 35 lecturers and 1,050 students from Economics departments. The Colleges of Education were stratified according to State and lectures-students dichotomy before simple random sampling was employed.

      Lastly, lottery method of simple random sampling was also employed in the selection of sample size of 1,085 lecturers and students of economics selected from 7 accredited State Colleges of Education in North West Nigeria. Serial numbers of the elements in the sampling frame were recorded on pieces of papers folded and mixed thoroughly before respondents were asked to pick at once without replacement. This technique gave the respondents equal opportunity of being selected thereby, reducing the bias effect that may interfere with the validity and reliability of the study. The population and sampled distributions of State Colleges of Education in North-West Nigeria is shown in table 1 below:

Table 1: Population and Sampled Distributions of State Colleges of Education in North-West Nigeria

States	Names of Colleges of Educations	Population		Sampled Size	
		Lecturers	Students	Lecturers	Students
1.Jagawa,	College of Education, Gumel	15	1500	5	150
2.Kano,	Sa'adatu Rimi College of Education, Kumbotso	15	1500	5	150
3.Katsina,	Isa Kaita College of Education, Dutsin-Ma	15	1500	5	150
4.Kaduna	College of Education, Gidan-Waya, Kafanchan	15	1500	5	150
5.Kaduna	Jama'Atu College of Education (JACE)	15	1500	-	-
6.Kebbi,	Adamu Augie College of Education, Argungu	15	1500	5	150
7.Zamfara	College of Education, Maru	15	1500	5	150
8.Sokoto	Shehu shagari College of Education	15	1500	5	150
Sub-Total		120	12000	35	1050
Grand Total		12,320		1085	

Source: Economics Department of Various State Colleges of Education, (EDVSCOE2020)

Instrumentation
      The researchers developed an instrument for data collection entitled ''Impact of Instructional Materials on Students' Academic Performance in Quantitative Economics Questionnaire" (IIMSAPQEQ) contained 9 items used for data collection. IIMSAPQEQ was anchored on the 2-point scale from agree and disagree. Before the administration of the IIMSAPQEQ, it was subjected to experts' judgment for validation. Experts validated

the instrument by checking for appropriateness and relevance of the items, adequacy and agreement with the blueprint, clarity of expression and size of the print. The logical consensus of the experts yielded 0.87 validity index and internal consistency of IIMSAPQEQ was determined using Cronbach Alpha statistic, which yielded 0.82 reliability index.

Lastly, data were collected by researchers with the helped of seven (7) researches assistant that are Economics lecturers each from the accredited State Colleges of Education in North West Nigeria. This was possible because to curtailed extraneous variable that could havoc the validity and reliability of this research. Descriptive statistics (frequency count and percentage) were used to answered research questions while parametric statistics (One-sample Test) was used to test the null hypotheses at 0.05level of significance using Statistical Package for Social Science (SPSS) version 23 and the results are presented in below tables.

III. RESULTS

Research Question One: Are students knowledgeable about the availability of instructional material in improving academic performance in quantitative economics?

Table 2: Descriptive Statistics of Students Responses toward the Impact of Instructional Material

Description of Statements	AGREE		DISAGREE	
	Frequency	**Percent**	**Frequency**	**Percent**
Economics lecturers are frequently using Instructional material during lecture period in my school	325	30.95%	725	69.04%
I don't know anything about Instructional material used by my lecturers	350	33.33%	700	66.67%
Average Scores	**337**	**32.09%**	**713**	**67.90**

Table 2 shows descriptive statistics of students' responses toward the impact of instructional material. 325 (30.95%) of respondents agreed that Economics lecturers are frequently using Instructional material during lecture period in my school meanwhile 725 (69.04%) disagreed on the statement.350 (33.33%) agreed that they don't know anything about instructional material used by my lecturers while 700 (66.67%) disagreed. Lastly, the average scores revealed 337 (32.09%) agreed on those statements on the contrary 713 (67.90%) disagreed. The average scores are distributed according to the magnitude in pie chart figure 1 below.
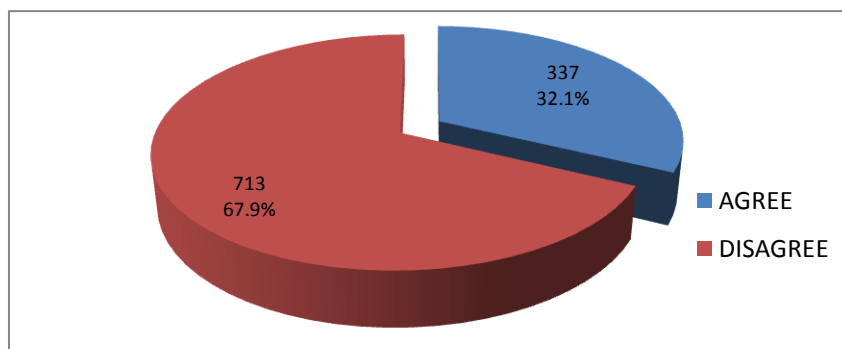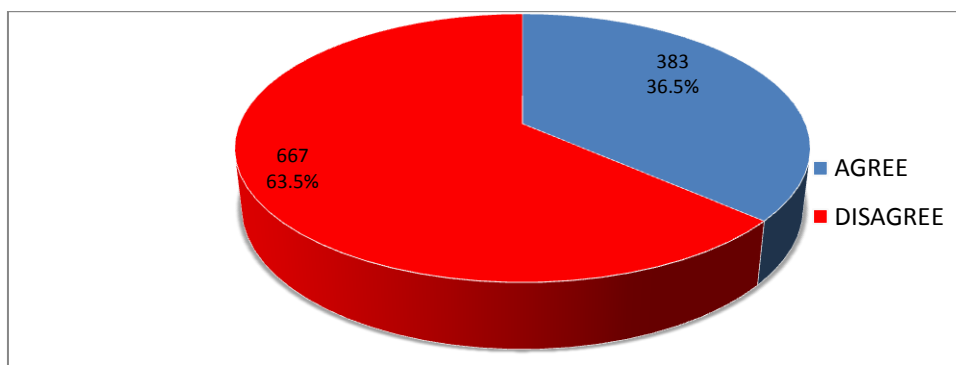

Fig 1: Average Scores

Research Question Two: What type of instructional material is commonly used in lecture halls during lecturing and learning of quantitative economics?

Table 3: Descriptive Statistics of Students Responses toward the Impact of Instructional Material

Description of Statements	AGREE		DISAGREE	
	Frequency	**Percent**	**Frequency**	**Percent**
During lecture period, Economics lectures in my school used Microphone and Speakers for effective communication	700	66.67%	350	33.33%
During lecture period, Economics lectures in my school used Power Point to view and communication with students	325	30.95%	725	69.04%
Do your lecturers used e-learning assessment type to enhance learning performance of student in your school	125	11.90%	925	88.09%
Average Scores	**383**	**36.47%**	**667**	**63.53%**

Table 3 shows descriptive statistics of students' responses toward the impact of instructional material. 700 (66.67%) of respondents agreed that during lecture period, Economics lectures in their schools used Microphone and Speakers for effective communication meanwhile 350 (69.04%) disagreed on the statement. 325 (30.95%) agreed that they during lecture period, Economics lectures in my school used Power Point to view

and communication with students while 725 (69.04%) disagreed. Further result revealed that, 125 agreed that their lecturers used e-learning assessment type to enhance learning performance of student in your school while 925 (88.09%) disagreed. Lastly, the average scores revealed 383 (36.47%) agreed on those statements on the contrary opinioned 667 (63.53%) disagreed. The average scores are distributed according to the magnitude in pie chart figure 2 below.
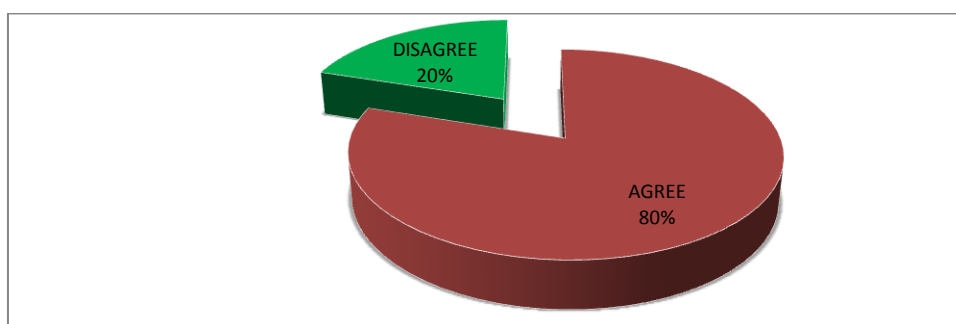

Fig 2: *Average Scores*

Research Question Three: Are the lecturers fully complying with the use of instructional material in lecturing quantitative economics in North-West colleges of education?

Table 4: Descriptive Statistics of Lecturers Responses toward the Impact of Instructional Material

Description of Statements	AGREE		DISAGREE	
	Frequency	**Percent**	**Frequency**	**Percent**
I don't always used any instructional materials during lecture period	25	71.42%	10	28.57%
There was no supplied of instructional materials available in my school	30	85.71%	5	14.28%
Average Scores	**28**	**80.00%**	**7**	**20.00%**

Table 4 shows descriptive statistics of lecturers' responses toward the impact of instructional material. 25 (71.42%) of respondents agreed that they don't always used any instructional materials during lecture period meanwhile 10 (28.57%) disagreed on the statement. 30 (85.71%) agreed that there was no supplied of instructional materials available in their school while 5 (14.28%) disagreed. Lastly, the average scores revealed 28 (80.00%) agreed on those statements on the contrary, 7 (20.00%) disagreed. The average scores are distributed according to the magnitude in pie chart figure 3 below.
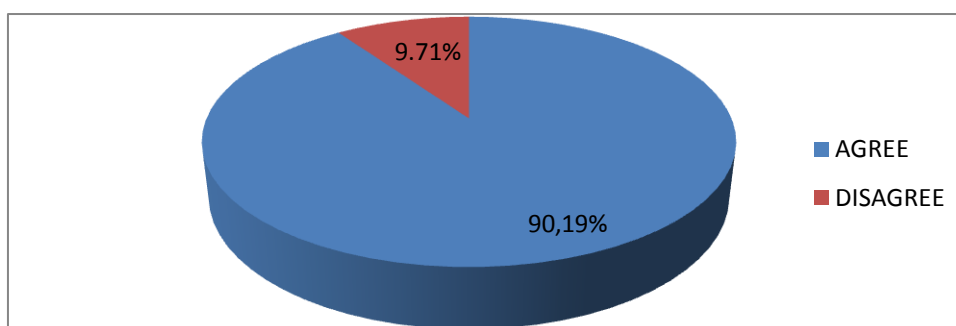

Fig3: *Average Score*

Research Question Four: What is difference between academic performance of students and instructional material in State colleges of Education in North-West Nigeria?

Table 5: Descriptive Statistics of Students Responses toward the Impact of Instructional Material

Description of Statements	AGREE		DISAGREE	
	Frequency	**Percent**	**Frequency**	**Percent**
Academic performance of students increases when instructional material is used during lecture period	945	90.00%	105	10.00%
Do you think students that were lectured using instructional material will perform better in academic	950	90.47%	100	9.52%

Average Scores	**947**	**90.19%**	**102**	**9.71%**

Table 5 shows descriptive statistics of students' responses toward the impact of instructional material. 945 (90.00%) of respondents agreed that academic performance of students increases when instructional material is used during lecture period meanwhile 105 (10.00%) disagreed on the statement. 950 (90.471%) agreed that they think students that were lectured using instructional material will perform better in academic while 100 (9.25%) disagreed. Lastly, the average scores revealed 947 (90.19%) agreed on those statements on the contrary, 102 (9.71%) disagreed. The average scores are distributed according to the magnitude in pie chart figure 4 below.

Fig3*: Average Score*

Statement of Hypothesis
The following null hypotheses were tested at the 0.05 level of significance:
HO: There is no significant mean difference between academic performance of students and instructional material in State colleges of Education in North-West Nigeria

Table 6: One-Sample Test for Significant Mean Difference between Academic Performance of Students and Instructional Material

	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
VAR00001	25.555	1049	.000	25.16667	23.1295	27.2039

Table 6 shows One-Sample Test for significant mean difference between academic performance of students and instructional material. At 0.05 level of significance t-cal was 25.5, df=1049, p=0.00 and MD=25.2.This revealed that there is a significant impact of instructional materials on academic performance of students. Since, (P<0.05). Hence, the null hypothesis was rejected. It means that instructional materials improve academic performance of students in colleges of education.

IV. DISCUSSION
Findings from this study in Table 2 show descriptive statistics of students' responses toward the impact of instructional material. Few respondents agreed that Economics lecturers are frequently using Instructional material during lecture period in my school while majority of the respondents disagreed on the statement. Again, few respondents agreed that they don't know anything about instructional material used by my lecturers while majority of them disagreed. Based on the research question one, the average scores revealed few respondents agreed on those statements contrary to that majority disagreed. This implies that students do not have knowledgeable on weightier the availability of instructional material in improving academic performance in quantitative economics. Findings in Table 3 revealed that majority of the of respondents agreed that during lecture period, Economics lectures in their schools used Microphone and Speakers for effective communication meanwhile few of the respondents agreed that they during lecture period, Economics lectures in their school used Power Point to view and communication with students while majority disagreed. Further result revealed that, few respondents agreed that their lecturers used e-learning assessment type to enhance learning performance of student in your school while majority disagreed. Lastly, the average scores based on research question two revealed few agreed on those statements on the contrary opinioned many of the respondents disagreed. This finding corroborated with that of [35]that the teaching of Economics in Nigeria is characterized by many inadequacies, such as inadequate use of instructional materials which are either not available or are insufficient, short supply of qualified Economic teachers, lack of motivation and so on [36].

Consequently, findings from Table 4 show descriptive statistics of lecturers' responses toward the impact of instructional material. Majority of respondents agreed that they don't always use any instructional materials during lecture period meanwhile others disagreed on the statement. Majority of the respondents agreed that there was no supplied of instructional materials available in their school while few lecturers disagreed. Lastly, the average scores revealed majority agreed on those statements on the contrary few of the respondents disagreed. Table 5 shows average scores majority of the respondents agreed on those statements on the contrary few disagreed. Drawing inference of the findings in Table 6 shows One-Sample Test for significant mean difference between academic performance of students and instructional material at 0.05 levels it was revealed that there is a significant impact of instructional materials on academic performance of students. Hence, the null hypothesis was rejected. It means that instructional materials improve academic performance of students in quantitative economics. This finding is in agreement with that of [37] indicated that students taught practical agriculture using instructional charts, pictures and filmstrips performed significantly better than students taught without instructional materials.

Finally, the process of teaching/learning, instructional materials that were used facilitated students understanding by supplementing, clarifying, revitalizing and emphasizing the teacher's verbal efforts that inadequate use or lack of use of instructional materials in the teaching/learning situation (lecture method) negates the objective of teaching. According to [38], the strengthening of the cognitive prerequisites mentioned above proved that instructional materials positively influenced the children's cognitive skills development since the first graders were able to identify, compare, classify, differentiate, analyze pictures, decode and use divergent thinking during the implementation. [39], educational materials bring more positive than negative implications in their classroom pedagogy as well as their performance towards other educators. It greatly helps them to personalize their teaching strategies because they know the various learning speeds and capacity of their students despite the challenges in developing their own or looking for relevant materials that suit the needs of their learner [40]. In line with the above findings, [41] opinioned that teachers need to use various and appropriate teaching methods and instructional materials, in order to develop positive attitudes of learners towards the subject. [42] Instructional materials supplement, clarify, vitalize, emphasize instruction and enhance learning in the process of transmitting knowledge, ideas, skills, and attitude.

V. CONCLUSION

This study was design to investigate the impact of instructional materials on students' academic performance in quantitative economics in North-West State Colleges of Education, Nigeria. This would go a long way to minimize the poor performance of students in quantitative. The findings of the study revealed that majority of respondents agreed that they don't always use any instructional materials during lecture period, no supplied of instructional materials available in their schools and further finding revealed that there is a significant impact of instructional materials on academic performance of students. It means that instructional materials improve academic performance of students in quantitative economics. Base on the findings of this study, it was recommended that appropriate measures should be taken by concerned stakeholders of colleges of education to compel all lecturers to use instructional material during lecturing and learning process and supply of instructional material to all colleges of education in Nigeria to minimize students' poor performance in the subject.

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