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The perception of quantitative and qualitative economics in tertiary institutions: A case study of the Department of Economics, Nigerian Army University Biu

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Abstract
This study investigates the understanding of the concept of economics among 100 level and 200 level students at the department of Economics, Nigerian Army University Biu, Borno State, Nigeria. The descriptive research method and purposive sampling technique was adopted in which 74 students were surveyed using a structured questionnaire. Despite the evidence that there was no variation in students' perception of quantitative and qualitative economics, it was revealed that knowledge had improved for both groups as those in their second year had higher perception of the nature of economics than those students in their first year. There is also a greater agreement that economics should be both quantitative and qualitative and males are more knowledgeable in economics than females. There is need for improvement in the curriculum design to encourage simplicity in mathematical processes in economics. In addition, exercises at the end of each lecture will help students' retentive memory of what is learnt in class.

Keywords: Quantitative Economics, Qualitative Economics, Biu LGA, NAUB

1.0 Introduction and Statement of the Problem

Generally, students' perception varies with curriculum, learning environment and students' response. Perception of the nature of economics requires planned programmes to assist educationists to take care of differences in understanding by students. Perceptions have been defined by different scholars to relatively mean the same thing with learning and understanding. It generally borders on thinking, learning and understanding. Perception is a belief or opinion, often held by many people and based on how things seem (Cambridge Dictionary, 2021). According to Dictionary.com (2020) psychologically, perception is the single unified awareness derived from sensory processes while a stimulus is present. Assimilation in the learning process is key to achieving the purpose of education. One of the major objectives of learning is to help learners cope with learning tasks and the learning environment. Ruohoniemi, Parpala, Lindblom-Yianne and Katajavuori (2010) identified curriculum and students experiences as common determinants of study progress.

McConnell (1987) defined economics as the study of the behaviour of human beings in producing, distributing and consuming material goods and services in a world of scarce resources. All these variables are

quantifiable. According to Dowling (2012) Mathematics is needed for the study of economics. There is a history of debates as to the use of Mathematics in Economics considering that economics is concerned with rational behaviours of man. Early contributors to the science of economics were mathematicians such that the texture of the subject assumed the embodiment of mathematical abstractions (Ekanem and Iyoha, 2015). According to Samuelson and Nordhaus (2003) economics relies upon analyses and theories where theoretical approaches allow economists to make broad generalizations. Analyses and theories, in other words, are quantitative and qualitative nature of economics. McConnell (1987) agrees to this statement by stating that humans are characterized by biologically and socially determined wants and also blessed with certain aptitudes, surrounded by quantities of property resources. People who have neither interest nor ability in economics and who may be hostile to the basic idea of social science do not understand why economics should be both quantitative and qualitative in nature (Lipsey, 2007). Lipsey further observed that, in teaching economics, there is a tradition of trying to sneak quite complex bits of analysis past the learners. This type of method of teaching would not let the goal of understanding be achieved in the learner. Chiang (1984) is of the opinion that learning basic mathematical methods have become indispensable for a proper understanding of the current economic literature. In essence the connection between theory and real world observations in economics cannot be separated. In agreement, Starr (2014) opined that there has been an explosion in the use of qualitative approach including mixed method projects of a combination of qualitative and quantitative methods.

The Nigerian Army University Biu (NAUB) was established in Borno State of Nigeria in the year 2019 and has students of first year (100 level) and second year (200 level) in the year 2021. People in this area are mostly engaged in agricultural activities (fishing, pastoralism or farming), while others are Traders, Civil Servants in government establishments, self-employed or students. There are many public and private primary and secondary schools but the tertiary institutions in Biu Local Government Area are three. These are the College of Education, Waka-Biu, the School of Health Science Biu and the NAUB. NAUB is the only tertiary institute in the area that has Department of Economics and students of economics in Biu Local Government Area. In Nigeria, Borno State is one of the worst hit by insecurity due to insurgency whose crux of ideology is against western education. This security problems in the state generated so much arguments against siting the University in the state. This is not far-fetched from the importance of learning environment to learning experiences. In as much as the local government area is relatively peaceful, NAUB being part of the community and having two levels of students gives the researcher ample opportunity to compare learning experiences of learners of economics. This makes timely to assess the learning process thus far as a way to improving learning. According to Lipsey (2007), good students always attempts criticisms and evaluation of what was taught by the teacher. Hence understanding the learner, the learning environment and presentation methods helps the teachers to adopt, adapt and adjust the style of presentation of learning experiences in order to attain the relatively permanent change in the behaviour of the learner. In agreement, Chauhan (2008) defined the

ultimate goal of education as the preparation of learners or individuals to find satisfaction and zest in life so as to contribute to the welfare of society.

Previous research work was done to compare the understanding of the nature of science among science Education and Science undergraduates (Abah, 1979). Another study by Oloja-Ojabo (1993) compared undergraduate science teachers and arts Students. Others studies by Arnon and Reichel (2007), Ruohoniemi *et al* (2010), Asikhia (2010), Akareem and Hosain (2016)were attempt in other places to examine students perceptions on various fields of study.

Yet there seems to be no evidence in the literature of the study to compare the perception of quantitative and qualitative economics in Nigerian tertiary institutions and specifically in NAUB. Coast, McDonald and Baker (2004) posited that the most obvious issue confronting the choice between qualitative and quantitative methods is perception or understanding. Lipsey (2007) opined that the distinction between quantitative and qualitative economics are well known by professionals who often failed in imparting such knowledge on the learners. Hence there is need to objectively investigate the impact of the learning process this from students' perspective.

Against this background therefore, the fulcrum of this research is to compare the perception of quantitative and qualitative economics between 100 level and 200 level undergraduate students of NAUB. Other objectives are to examine the difference between student's perceptions of quantitative and qualitative economics among 200 level undergraduate students of NAUB, evaluate the difference between student's perceptions of quantitative and qualitative economics among 100 level undergraduate students of NAUB and to assess student's perception of the gender dimension of the knowledge of Economics.

1.1Hypotheses Statement

The following hypotheses stated in the null form is tested at 0.05 % level of significance.

i. The 100 level and 200 level undergraduate students of Nigerian Army University Biu, do not differ significantly in their perception of quantitative and qualitative economics.
ii. 200 level students do not significantly differ in their comparative perception between quantitative economics and qualitative economics.
iii. 100 level students do not significantly differ in their comparative perception between quantitative economics and qualitative economics.

2.0Conceptual Clarifications and Literature Review

2.1Perception

According to Ashby (2001) perception is the way you notice things, especially with the senses. In other words, it is the ability to understand the true nature of something. Perception is the process of understanding knowledge or discerning information acquired from a learning experience. It involves mental actions through thoughts, senses or intuitions as an outcome of the process of teaching. Lui, Choy, LI & Cheung (2006) observed that students' perception plays critical role in determining educationally sound behaviour. Specifically, Akareem and Hossain (2016) attributed students' perception of higher education quality as highly influenced by the university, scholarship status, extra-curricular activities, age, parent's education and previous academic successes. This study is focused on the students' perspective on

the quality of knowledge received by the learners in comparison to their previous academic status.

Economics could broadly be defined as a science of human behaviour which is both quantitative and qualitative in nature. In agreement, Samuelson and Nordhaus (2003) explained that economists use the scientific approach to understanding economic life which involves observing economic affairs and drawing upon statistics and historical records. Statistical and historical records here refer to the quantitative and qualitative nature of economics. In this research therefore, perception of undergraduate students on the nature of economics as a course of study as specifically focused on the knowledge acquired by the 100 level and 200 level undergraduate Students of Nigerian Army University Biu.

2.2Qualitative Economics

Lancaster (1962) posit that economists, for a very long time perceived that a considerable body of economic propositions are expressed qualitatively. Qualitative economics is the cognitive structure of economics which is vital to understanding and discovery of economic mechanisms beyond practical computation. Qualitative economics is also known as normative economics and approaches learning on the policy side of the course. It deals will what ought to be or what should be which cannot be quantified. This is concerned with value judgement of what is right and what is wrong. These are statements which explain situations and what outcomes should be expected when certain actions of learning experiences are taken. Clark and Fast (2008) argues that economists need to understand and handle the essence of data, meaning of numbers and validation of fact. According to Lipsey (2007) theory helps to explain, understand and predict phenomena in the real world. These are cognitions such as economic decision making which is believed to be beyond quantification. Alfred Marshall's desire was to improve the mathematical rigour of economics and transform it into a more scientific profession. Yet, Lancaster (1962) stated that though the belief in qualitative economics grew out of handling simple systems, most economists still hope that it remains qualitative. In agreement, Starr (2014) posit that quality qualitative work can provide scientifically valuable and intellectually helpful ways of improving the stock of economic knowledge.

Lipsey (2007) is of the opinion that economic theory is meant to be about the real world. The real world is not quantifiable but partly has ordinal orderings of values as mathematics cannot entirely control economics. Hence mathematics is limited in its ability convey economic ideas to the learner. Qualitative economics in this research therefore refers to that aspect of the study of economics which is more focused on thoughts than on facts.

2.3Quantitative Economics

Alfred Marshall, the father of quantitative economics' developed teaching principles derived from his effective use of diagrams which were soon emulated by other teachers of economics worldwide. Mills, Hollander, Viner, Wilson and Wesley (1928) observed that the degree of emphasis placed on the use of quantitative economics is enormous that it draws attention to the fact that economic theory must accord with facts of economic life. Ekanem and Iyoha (2015) suggested that survival in the field of economics requires knowledge of certain level of mathematical sophistication on the part of the learners. One of Alfred Marshall's major contribution to knowledge in economics was the visual representation

of complex economic basics as the demand and supply graph which allows clear and concise representation of information. Before these developments, economic ideas and theories were only explained in words. Economics ideas are however, susceptible to mathematical formalization. Coast, McDonald, and Baker (2004) observed that, the extent to which quantitative and qualitative methods can enjoy collaborative co-existent has always been a heated argument. Lipsey (2007) stated that the learner of economic theory needs to ask at every stage what the relevant magnitudes and quantities are in the real world. These are observable situations which can be explained by theories when facts are gathered from real life experiences. Quantitative considerations in economics rule out ideal solutions (McConnell, 1987). Quantitative reasoning is vital to understanding the nature of economics, being that the subject utilizes scientific approach to knowledge of human behaviour. This is why economics is referred to as a social science. Quantitative economics in this study is a scientific and mathematical approach to economic analysis which aids reasoning.

2.4Theoretical Framework

Chauhan (2009) elaborated the theory of personality development as developed by B. F. Skinner which is known as the theory operant conditioning. It also known as the theory of learning. It posits that as a spontaneous behaviour satisfies some needs and stimulates same behaviour to increase. Imitation increases learning through copying while modelling does so through planned demonstration. While imitation method of learning does not impart new behaviour, modelling is a direct teaching of certain action. This method of learning involves reinforcement and generalization. This theory helps to understand if individuals respond to stimulus similar to another stimulus. It also helps to discriminate between similar situations.

This theory is of relevance to this study as the teacher action could stimulate learning in the learner. This initial action of the teacher could increase the frequency of the behaviour which satisfies a need. In this case the nature of economics as both quantitative and qualitative knowledge is unconditioned and could be likened to modelling and imitation respectively. Based on this theory learners understanding of the concept of economics can be studied.

2.5Empirical Review

Abah (1979) examined the role of teacher understanding of the nature of science in students' understanding of the subject matter. The study found that graduate science teachers with professional qualification showed a significantly different and greater understanding of the nature of science than graduate science teachers without professional teaching qualification.

Oloja-Ojabo (1993) researched the perception of the nature of science by comparing between B.Sc (ED) and B.A (ED) undergraduate students of Ahmadu Bello University, Zaria. Having used The Nature of Science Scale (NOSS), found that there is no significant difference between B.Sc (ED) and B.A (ED) undergraduate. It was also found that gender did not create any disparity in their understanding of the concept of science.

Arnon and Reichel (2007) compared the perception of students of education on an ideal teacher and their own self-image as teachers. Data of two groups were gathered through questionnaires administered on 89 students from two colleges and analyzed quantitatively. The study found that an ideal

teacher has personal qualities and knowledge of the subject taught.

Ruohoniemi, Parpala, Lindblom-Yianne, & Katajavuori, (2010) evaluated on the relationships between students' approaches to learning, perceptions of teaching-learning environment, and study success. 36 third year students' responses to a modified version of the experiences of teaching and learning questionnaires (ETLQ) were collected regarding examinations and the progress of studies. It was found that curriculum and students' actions or experiences most commonly enhance or impede study progress.

Asikhia (2010) examined the perception of students and teachers on the causes of poor academic performances among secondary school students in Ogun state of Nigeria. Percentages and chi-square were used to analyze data collected through questionnaire and it was found that method of teaching affected poor performance but teachers' qualification and student's environment did not affect causes of poor academic performances.

Konings, Seidel, Brand-Gruwel, and Van Merrienboer, J. J. G. (2011) studied students' and Teachers' perception of education: differences in perspectives. Latent class analyses of differences in Inventory Learning Styles (ILS-SE) and Approaches to Teaching Inventory (ATI) was used and the study revealed that teacher's perceptions were mostly more positive than students' perception. It was recommended that congruence between perceptions should be improved.

Muhonen, Ruohoniemi, and Ylanne (2011) compared students' perceptions of their teaching-learning environments in three professional academic disciplines: a valuable tool for quality enhancement. The study was carried out at the University of Helsinki and a modified version of experiences of teaching and learning questionnaire was used on 426 first year students from faculty of Law, Pharmacy and Veterinary Medicine. It was revealed that Veterinary and Pharmacy students had more positive teaching-learning environment than law students.

Rytkonen, Parpala, Lindblom-Yianne and Liisa (2012) examined student's perception of their teaching-learning environment as well as explored factors enhancing or impeding studying in relationship to their approaches to learning and academic achievements. The modified version of ETLQ was used to collect data of 188 students and the factor analyses, ANOVA and structural equation modelling found that studying is related to academic progression and study success. Results also showed that social support and self-regulation skills play critical roles in academic achievement.

Balli and Liu (2018) researched on students' perception toward online learning and face-to-face learning in Indonesian Open University, Taiwan branch. The study found that face-to-face learning perception was higher than online learning in terms of social presence, social interaction and satisfaction. Yet there was no statistically significant difference in learning preference found among levels of student. Other students were very satisfied in online learning which provided them with chances to be innovative with computer technology. The study recommended that online learning as advantageous.

Baczek, Zaganazyk-Baczek, Szpringer, Jaroszynski, and Wozakowska-Kaplon, (2021). Baczek *et al.* (2021) studied students' perception of online learning during COVID-19 pandemic, having surveyed Polish Medical students, the survey was conducted through

administration of questionnaire. The collected data was analysed with routine statistical software. The study found that there was no statistical difference between face-to-face and online learning in terms of opinions on the ability of learning method to increase knowledge. It was recommended that successful implementation of online learning into the curriculum requires efficient strategy and comparatively active approach.

Muthuprasad and Jha (2021) assessed agricultural students' perception and preference towards the online learning. The method of online survey of 307 students indicated that majority of the respondents were ready for online classes and preferred the use of smart phones for online learning. Students also preferred quiz at the end of recorded classes to improve effectiveness of learning while connectivity to broadband was a challenge to rural areas. It is recommended that a hybrid mode of online learning experiences should be initiated for agricultural education system since Agriculture requires more practical as online learning may require developing a new curriculum.

These reviewed studied have shown that there is no evidence of empirical work on the comparative analysis of the perception of quantitative and qualitative economics between the 100 level and 200 level undergraduate students of Economics from the Nigerian Army University Biu, Borno State. This research is an attempt to fill the existing gap in literature.

3.0Methodology

The research employed the survey and descriptive research design which is suitable for this research. The research is designed to obtain data from primary source through questionnaire. Questionnaires were administered on economics undergraduate students of Nigerian Army University Biu, Borno State. The questionnaire responses were coded as adapted from a study by Oloja-Ojabo (1993) who used the Nature of Science Scale (NOSS) as designed by Kimbal in 1967 and modified by Abah (1979). This method provides a basis for group comparison by application of ANOVA test.

The study area is Biu Local Governmernt Area, of Borno State. There are many public and private primary and secondary schools but the tertiary institutions in the Local Government Area are three: College of Education, Waka-Biu, the School of Health Science Biu and the Nigerian Army University Biu (NAUB). While the sample study area is Tertiary institutes in Biu, purposive sampling has been used to select the Nigerian Army University Biu as the sample of study. This is because NAUB is the only tertiary institute in the area that has Department of Economics and students of economics.

When this study was carried out, the department of Economics in NAUB has 29 and 45 students in 100 level and 200 level respectively. More so, students were selected after the application of Krejcie and Morgan (1970) table of random sample size of known population was contacted to decide the number of student on which questionnaires was to be administered. From the table, the population of 70 and 75 were allotted 59 and 63 sample size respectively. The known population of this study is 74 which is between 70 and 75, this known population was not on the table and is a little higher than the 63 sample size allotted a population of 75. The researchers decided to use the no exclusion criteria by studying the entire population of 74 students.

After administering the questionnaire through face-to-face survey, the responses

collected were further arranged in the Nature of Science Scale (NOSS) as proposed by Abah (1979) and used by Oloja-Ojabo (1993) where 1 point was assigned to all positive responses while 0 point for negative responses. This coding was done to allow for testing of the stated hypothesis. For this research the scale will be called Nature of Economics Scale (NOES). This is because the questions in the questionnaire have been designed to capture the nature of economics as a course of study. A copy of the NOES is at the appendix 3.

29 questionnaires were administered on 200 level students but 27 were returned while all 45 that were administered on 100 level students were retuned. The responses of all respondents were captured as summation, percentages and NOES for further evaluation under data analysis.

This study used descriptive and analytical statistics which includes the use of tables, summations and percentages. All data collected were presented on tables while summation and percentages were used to analyse the data. Finally, the hypotheses were tested with the ANOVA statistics.

4.0Data Analysis

4.1Summary of Responses to Administered Questionnaire

Having collected data through questionnaire, below are analyses of the primary data collected.

Table 4.1Total Questionnaires Distributed, Returned and Unreturned.

Questionnaires	200 level		100 level	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Returned	27	93%	45	100%
Unreturned	2	7%	0	0%
Total Distributed	29	100%	45	100%

Source: Researchers' field survey.

From table 4.1 it is shown that 29 questionnaires were distributed to the 200 level students while 45 questionnaires were distributed to the 100 level students. While the 100 level students returned 100% of the questionnaire they received, the 200 level students returned 93 % of theirs, represented by 27 returned questionnaires. This means that a total of 74 questionnaires were distributed but 72 were returned as 2 questionnaires were unreturned.

Table 4.2Gender Analysis of the Returned.

Gender	100 Level		200 Level	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Male	39	87%	24	93%
Female	6	13%	3	7%
Total	45	100%	27	100%

Source: Researchers' field survey.

Table 4.2 shows that among the 100 level student, 39 (87%) were males while 6 (13%) were females. In like terms, among the 200 level student, 24 (93%) were males while 3 (7%) were females. This means that there are more male students than there are female students in both 100 and 200 level of Department of Economics, NAUB. An implication that can be drawn from this is that, in as much as there are more male

economics students than female economics students at both levels, the number and percentage of females tend to increase as new entrants gain admission into Economics Department of NAUB. This is shown by an increase from 7% of 200 level students to 13% of 100 level students.

Table 4.3Data from Section B of Questionnaires

	Responses	**200 level**	**%**	**100 level**	**%**
1.	High	25	92.5	26	57.7
	Low	1	3.7	19	42.2
2.	High	19	70.3	27	60
	Low	7	25.9	17	37.7
3.	Equal	12	44.4	14	31.11
	Different	12	44.4	30	48.88
	i. higher preference for quantitative		66.6	12	26.6
	ii. higher preference for qualitative		33.3	8	17.7
4.	Good	14	51.8	27	60
	Poor	13	48.1	18	40
5.	Good	17	62.9	26	57.7
	Poor	10	37	19	42.2
6.	a. Better with quantitative	13	48.1	20	44.4
	b. Better with qualitative	14	51.8	19	42.2
7.	Agree	27	100	35	77.7
	Disagree	0	0	8	17.7
8.	Agree	22	81.4	34	75.5
	Disagree	4	14.8	7	15.5
9.	a. all quantitative	0	0	4	8.8
	b. all qualitative	2	7.4	4	8.8
	c. both quantitative and qualitative	25	92.5	36	80
10	Agree	11	40.7	29	64.4
	Disagree	16	59.2	16	35.5

*Note that where percentages do not sum up to 100%, the remaining percentages were respondents who did not respond to such question or were undecided.
Source: Researchers' compilation.

Table 4.3 is the summary of data collected on section B part of the questionnaire and these responses are numbered in correspondence to the administered questions. Response to each question is analyzed in corresponding paragraphs as follows:

Table 4.4Rating of Economics Students' Learning of Quantitative Economics.

Response	**100 Level**		**200 Level**	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
High	26	58%	25	93%
Low	19	42%	1	3.5%
Undecided	0	0%	1	3.5%

Total	45	100%	27	100%

Source: Researchers' field survey.

From table 4.4 the rating of economics students' learning of quantitative economics indicates that the gap between high and low learners in 100 level is slim at 58% and 42% while there is a wide margin between 93% and 3.5% at 200 level. Results shows that at both 100 level and 200 level class the greater percentages of 58% and 93% of students' learning of quantitative economics is an indication that most these students have high perception of quantitative economics. However, 42% of 100 level students having rated their learning of economics as low is significantly different from 3.5% of 200 level students' who rated themselves low in the learning of quantitative economics. By implication, 100 level students' perception of quantitative economics is lower than that of 200 level students.

Table 4.5Rating of Economics Students' Learning of Qualitative Economics.

Response	**100 Level**		**200 Level**	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
High	27	60%	25	70%
Low	17	38%	1	26%
Undecided	1	2%	1	4%
Total	45	100%	27	100%

Source: Researchers' field survey.

Results from table 4.5 is the rating of economics students' learning of qualitative economics shows that at both 100 level and 200 level class with the greater percentages of 60% and 70% of students' learning of qualitative economics, most of these students have high perception of qualitative economics. That is, 100 level and 200 level students' perception of qualitative economics are both high.

The comparison of economics students' understanding of quantitative and qualitative economics indicates that the learners at 200 level have equal understanding of both quantitative and qualitative economics at 44.4% while learners at 100 level had greater understanding of qualitative economics than quantitative economics at 67% and 31% respectively.

The comparison of economics students' difference in the understanding of quantitative and qualitative economics revealed that 40% and 67% of 100 and 200 levels students respectively have more quantitative economics understanding while only 27% and 33% respectively for 100 and 200 levels have higher qualitative economics understanding. By implication, those who had differences in understanding the nature of economics understood more of the quantitative aspect of economics.

Having analyzed economics students' knowledge of quantitative economics before current level of study, results indicate that learners of economics at 60% and 52% of 100 and 200 levels students respectively are of the opinion that their knowledge of quantitative economics before their current level of study was good. This may not be far-fetched from the fact that entry requirements for economics degree programmes in Nigeria require adequate knowledge of mathematics. That 40% and 48% of the respective classes also admitted their knowledge of quantitative economics before their current levels was poor may

also prove that knowledge has been added in their current level of study.

Analysis of economics students' knowledge of qualitative economics before current level of study showed that learners of economics at 58% and 63% of 100 and 200 levels students respectively are of the opinion that their knowledge of qualitative economics before their current level of study was good and that 42% and 37% of 100 and 200 levels respectively admitted that their knowledge of qualitative economics before their current levels was poor.

Comparison of economics students' performance in both quantitative and qualitative economics indicates that those who claimed to have performed better with quantitative economics at 100 and 200 levels were 45% and 48% respectively while those who claimed to have performed better with qualitative economics at both respective levels were 42% and 52%. This is indication that 100 level undergraduate students of Department of Economics, NAUB performed better with quantitative economics than qualitative economics. This results also implies that in as much as 200 level performed better in both aspects of economics, a greater performance with qualitative economics is represented by 52% which higher than the 48% claim by learners that they performed better in quantitative economics.

Analysis of the improvement in students' knowledge of quantitative economics shows that 78% of 100 level students and 100% of 200 level students acknowledged that their knowledge of quantitative economics has improved. On the other hand, 18% and 0% of 100 and 200 level student disagree with this opinion meaning that their knowledge of quantitative economics has not improved.

Results on the analysis of improvement in students' knowledge of qualitative indicates that 76% of 100 level students and 81% of 200 level students are of the opinion that their knowledge of qualitative economics has improved. On the other hand, 16% and 15% of 100 and 200 level student disagree with this opinion meaning that their knowledge of qualitative economics has not improved.

Findings on the analysis of economics students' choice between quantitative or qualitative economics as content of the nature of economics indicates that 9% of 100 level students chose that economics should be quantitative, another 9% are of the opinion that economics should be qualitative and 80% of respondent suggests economics should be both quantitative and qualitative while 2% are undecided. On the 200 level students' side, 93% of respondent agree that economics should be both quantitative and qualitative while 7% thinks it should be all qualitative.

Analysis of economics students' opinion on males are more knowledgeable in economics than females revealed that 64% of 100 level student agrees with the opinion that males are more knowledgeable in economics than females while 59% of 200 level students disagree with this opinion. By implication more 100 level students think there is gender bias in learning while more 200 level students disagreed with this.

4.2Test of Hypotheses

The ANOVA test was used to test the stated hypotheses, the first null hypothesis that 100 level and 200 level undergraduate students of Nigerian Army University Biu, do not differ significantly in their perception of quantitative and qualitative economics is tested thus:

Table 4.6Analysis of Variance among 100 level and 200 level undergraduate Economics students of NAUB

Sources of Variation	Sum of Squares	Df	Means Squares	F
Between groups	129.30	3	43.1	0.78
Within groups	661.76	12	55.14	
Total	791.092	15		

Source: Researchers' Computation.

From table 4.6 given that the calculated statistics is 0.78 and it is less than 3.49 at 12 and 3 degrees of freedom and at 5% level of significance, the null hypothesis is accepted that there is no significant difference in the mean of 100 level and 200 level on their perception of quantitative and qualitative economics. This implies that the groups have no difference in their perception of the nature of economics.

Table 4.7Analysis of Variance among 200 level undergraduate Economics students of NAUB

Sources of Variation	Sum of Squares	Df	Means Squares	F
Between groups	12.5	1	12.5	0.28
Within groups	263.48	6	43.91	
Total	275.98	7		

Source: Researchers' Computation.

The second null hypothesis stated that 200 level students do not significantly differ in their comparative perception between quantitative economics and qualitative economics is tested using table 4.7. Given that the calculated statistics is 0.28 and it is less than 5.99 at 6 and 1 degrees of freedom and at 5% level of significance, the null hypothesis is accepted that there is no significant difference in the mean of 200 level students in their comparative perception between quantitative economics and qualitative economics. This implies that among the 200 level students, they have no difference in their perception of the nature of economics.

Table 4.8Analysis of Variance among 100 level undergraduate Economics students of NAUB

Sources of Variation	Sum of Squares	Df	Means Squares	F
Between groups	28.125	1	28.125	0.42
Within groups	398.312	6	66.38	
Total	426.437	7		

Source: Researchers' Computation.

The third null hypothesis stated that 100 level students do not significantly differ in their comparative perception between quantitative economics and qualitative economics by table 4.8. The calculated statistics is 0.42 and it is less than 5.99 at 6 and 1 degrees of freedom and at 5% level of significance, the null hypothesis is accepted that there is no significant difference in the mean of 100 level students in their comparative perception between quantitative economics and qualitative economics. This implies that among the 100 level students, they have no difference in their perception of the nature of economics.

5.0 Interpretation of Findings

The results derived from the analysis above are as follows:

i. In comparative terms, the result showed that 100 level and 200 level economics undergraduate both have high perception of quantitative and qualitative economics, meaning that their level of understanding of the concept of economics are comparatively the same.
ii. Based on the analysis of percentages of response, it was found that while 200 level had equal understanding of the nature of economics, 100 level had greater understanding of qualitative economics than quantitative economics.
iii. Findings also showed that most respondents stated that their knowledge of both qualitative and quantitative economics was good before their current level of study while other few respondents admitted that their knowledge of both was poor.
iv. It was found that 100 level students were lower in perception of quantitative economics than 200 level students as 200 level student performed better in both aspects of economics than 100 level students. But looking at variations within, most 200 level students performed better with qualitative economics while comparison among 100 level students' perception of their performance showed that 100 level students performed better with quantitative economics.
v. Respondents whose understanding varied with the nature of economics understood more of quantitative economics than qualitative economics.
vi. It was also found that there was no difference amongst the groups on improvement of knowledge as most of the respondents agreed that their knowledge in both quantitative and qualitative economics has improved.
vii. The research also revealed that greater percentage of respondents understood that quantitative economics works alongside qualitative economics.
viii. It was discovered that there are more males than females studying economics at both 100 level and 200 level in Biu Local Government Area and 100 level students were of the opinion that males are more knowledgeable in economics than females. But greater percentage of the 200 level students' respondents disagreed with this opinion.

6.0 Conclusion and Recommendations

This study tested the understanding of the concept of economics among 100 level and 200 level students. It was found that despite the evidence that there was no variation in their perception of quantitative and qualitative economics, it was revealed that knowledge had improved for both groups as those in their second year had higher perception of the nature of economics than those students in their first year. There is also a greater agreement that economics should be both quantitative and qualitative and males are more knowledgeable in economics than females.

Based on the hypotheses tested, this research found that there were no variations between 100 level and 200 level students on their perception of quantitative and qualitative economics. In addition, among the 200 level students, there was no difference in their perception of the nature of economics and among the 100 level students too, there was also no difference in their perception of the nature of economics.

The finding that there is no significant difference between 100 level and 200 level undergraduate students in their perception of the concept of economics is a cause for concern. This could be due to the design and implementation of the curriculum. It is

therefore recommended that there should be improvement in the curriculum design such that mathematical processes in economics are broken down to its simplest form especially in the earlier classes for students to understand more. In addition, exercises at the end of each lecture will help their retentive memory of what is learnt in class.

It is also recommended that foundation in quantitative learning should be built in foundational classes especially in schools preceding the tertiary institutions. This will help more students to overcome the problem of low perception of quantitative economics.

The fact that male undergraduate economics students are more in number than female undergraduate economics students do not justify the opinion of the greater percentage of respondents that males are more knowledgeable in economics than females. More females should be encouraged to study economics at the tertiary institutions.

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Appendix 1
Questionniare
Please kindly respond to these questions on student's perception of the quantitative and qualitative nature of economics, to enable me complete the research on improving economics curriculum. Your responses will be treated in strict confidence.

section a: fill the blank spaces.
i.Gender: ……. Ii. Course of study: …… iii. Level: ……..…

Section b: please tick the best option that suits your opinion.

i.Rate your learning of quantitative economics
a.High…….. B. Low……

ii. Rate your learning of qualiitative economics
a.High …….. B. Low……

iii. Compare your understanding of quantitative economics and qualitative economics
a.Equal……
b.Different……... I. Higher preference for quantitative…… ii. Higher preference for qualitative……....

iv. How was your knowledge of quantitative economics before your current level of study?
a.Good…….. B. Poor…….

v.How was your knowledge of qualiitative economics before your current level of study?
a.Good…… b. Poor…….

vi. Compare your perfomance in both aspects of economics
a.Better with quantitative economics……
b.Better with qualitative economics……..

vii. Your knowledge of quantitative economics has improved. Agree……. Disagree……

viii. Your knowledge of qualitative economics has improved. Agree……. Disagree……..

ix. Economics should be
a.All quantitative…….
b.All qualitative……..
c.Both quantitative and qualitative……...

x.Males are more knowledgeable in economics than females. Agree……. Disagree……

Appendix 2
Noes coding of responses

	Level of study and nature of economics	Respondents to required questions				Mean
1.	200 level - quantitative	25	14	13	27	19.75
2.	200 level - qualitative	26	27	14	22	22.25
3.	100 level - quantitative	19	17	20	35	22.75
4.	100 level - qualitative	27	26	19	34	26.5