

COMPARATIVE ANALYSIS OF ECONOMICS LECTURERS QUESTIONING ALLOWED WAIT-TIME IN FOUR FEDERAL UNIVERSITIES IN SOUTH-WEST NIGERIA

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Abstract

The study examined comparative analysis of economics lecturers questioning allowed wait-time in four federal universities in the south-west Nigeria. The level of students' response to questions in teaching-learning process depends on the time giving by the instructor for students to ruminate when faced with questions. The study adopted ex-post facto design of survey research type; forty (40) economics lecturers were observed, ten (10) lecturers each from the four university (University of Ibadan, Obafemi Awolowo University, University of Lagos, and Federal University of Agriculture Abeokuta) who are handling the compulsory courses either as junior or senior lecturers were selected through two-stage sampling techniques from four sampled universities. One validated observation instrument was used to collect data for the study. This is: University Economics Lecturer Questioning Effectiveness Observation Sheet ($\pi = 0.75$). Three research questions were raised and answered. The data obtained were analysed using percentage count of descriptive statistics, t-test and Anova at 0.05 level of significance. The result revealed that in a typical economics lecture, the lecturer allowed three to four minutes for group of students to ruminate on higher-order questions, one to two minutes each for lower-order question to individual and group of students, one minute for higher-order question to individual student and follow-up questions attract least wait time. There was a significant mean difference in questioning wait-time allowed, between junior ($X = 10.67$, $Sd = 0.816$) and senior ($X = 13.33$, $Sd = 2.08$) lecturers. ($t_{(39)} = 2.880$, $P = 0.024$). There was no significant mean difference in wait-time allowed among the observed economics lecturers by institutions except in higher-order questions to group of students ($F_{(3, 36)} = 4.506$, $p < 0.05$). The paper recommended that:

teaching effectiveness is likely going to be enhanced when enough wait-time is given to students and hence allowed for enhanced academic standard in critical thinking.

Keywords: *Questioning, Wait-time, Students'-response, classroom-interaction, Economics*

Introduction

Teachers questioning effectiveness is an area of interest in research milieu. Teachers questioning technique perform a central role in the processes of teaching and learning because students' learning, thinking, participation and their level of engagement depend on the kind of questions teachers formulate and use in the classroom. Research findings of some authors are inconsistent in determining the relationship between the frequency of cognitive levels of the questions teachers ask in the classroom and their students' gains in classroom interaction in secondary schools and some higher institutions outside Nigeria (Moyer and Milewicz 2002; Shomossi, 2004; Patricia 2010; McComas and Abraham 2012; Neal, 2012). The research gap necessitates investigation into lecturers questioning allowed wait-time in classroom interaction in the university.

Wait-time is a crucial factor in questioning techniques. Wait-time can be explained as the amount of time a teacher allows to elapse after he or she has posed a question. (A less frequently used and researched definition is the amount of time that a teacher allows to elapse before responding after a student stops speaking). While traditional wisdom advocates a brisk pace of instruction to maintain interest and cover more material, research shows that slowing slightly to include more wait-time promotes achievement (Wimer, Ridenour, Thomas and Place, 2001). In the classrooms interaction studied, literature revealed that the average wait-time after a question was posed was one second or less. By this, Students perceived as slow or poor learners were afforded less wait-time than students viewed as more capable. This amount of wait-time is not sufficient for students, particularly for those that experience difficulty. Studies show that for lower cognitive questions, a wait-time of three seconds is most effective in terms of achievement. Shorter or longer times were less positively correlated with student achievement (Patricia, 2010).

For higher cognitive questions, no wait-time threshold was observed. Researchers noted that students seemed to become more engaged and successful the longer the teacher waited. Increased wait-time is related to a number of student outcomes, including improved achievement and retention, greater numbers of higher cognitive responses, longer responses, decreases in interruptions and increased student-student interactions. These outcomes are quite similar to those observed with an increased frequency of higher cognitive questions. In fact, researchers believe that a causal relationship may exist between the two: higher cognitive questions require more wait-time, and more wait-time allows for the implementation of higher cognitive discussions (Marzano, Pickering and Pollock, 2001).

In view of this, Rowe (1974) cited in Wimer, Ridenour, Thomas and Place (2001) explicate the wait time to be the time between when the teacher stops speaking and the student responds or the teacher speaks again. On the average, students are only allowed one second of wait time to start an answer. Similarly, the author noted differences in interaction between the teacher and students when wait time increased to three seconds or more. Several benefits for both the student and teacher were found when a minimum of three seconds of wait time was allowed. Benefits for the student included longer and more correct responses and scores on achievement tests tended to increase (Rowe, 1974) cited in Wimer, Ridenour, Thomas and Place (2001).

Moreover, Chin (2006) added to previous research by stating that a minimum of three seconds wait time restructured the learning by shifting students to an evaluator of their thoughts and the thoughts of others in the classroom. The discussion further elaborates that another aspect that affect wait time is the rate at which a teacher presents information, as it should match the cognitive processing abilities of students (Cazden, 2001). Thus, teachers should supply sufficient time for students to think about the question and engage in communication. Generally speaking in classroom setting, Cazden (2001) found that when extended wait time were given, there was an increase in application questions and decrease of questions seeking basic comprehension.

In addition, researches express that silence during the wait time gives teachers time to think and develop higher quality

communication that influence their thinking and responses to students. Creating a learning environment in which all students are given opportunities to participate in ways that not only enhance their learning but also the learning of others in the classroom can be related to the wait time allowed by the teacher. Wilen (2004) discovered that students at all levels can be frustrated when teachers do not give them sufficient time to think. Allowing a few seconds of wait time can also increase the probability of a more thoughtful and supported response. Wilen (2004) found that wait times of three to five seconds can increase the quantity and quality of student responses and achievement.

An important dimension of teacher questioning skills is halting time or wait time, that is, the length of time the teacher waits after asking the question before calling on a student to answer it, rephrasing the question., directing the question to another student or giving the answer is called wait time, and it is amazing how few teachers use this important questioning skill. In fact, it seems clear that if teachers asked questions, which they did not already know the answers, they would find it natural to wait for responses, and they would need time to think about the responses before reacting to them. It takes time to answer questions, because a lot of studies showed that students were rarely given sufficient time to formulate their answers before the teacher repeated, rephrased, or went on to ask another student the question (Bonne and Pritchard, 2007).

Furthermore, Bowker (2010) found that teachers, on average, waited less than a second before calling a student to respond, and that only a further second was then allowed for the student to answer before the teacher intervened, either supplying the required response themselves, rephrasing the question, or calling on some other student to respond. In short, Cotton (2003) asserted that few teachers give their students enough wait-time to think about the questions or to form meaningful answers. The average wait time, when the teacher waits at all after a question, is less than a second. There should be at least two to four seconds after any question before any student is called on to answer it. Wait time allows the reflective student an opportunity to respond as well as the impulsive student or one who instantly knew the answer. If no one wants to answer the question after fifteen seconds, the teacher can then leave it unanswered and tell the students to think

about the answer and it can be raised again at the beginning of the next class (Wimer, Ridenour, Thomas and Place, 2001; Bonne and Pritchard, 2007; Bowker 2010). In the same spirit, Feldman (2003) and Harris (2000) suggested that the act of increasing the wait time between questions improves the quality of student responses, as it allows students to further consider and reflect on their answer.

Similarly, wait time is the lapse of time that occurs between the teacher's question and a student's response, or the time between a teacher's first and second questions to students, wait time influences the quality and quantity of student responses as well as the initiation of subsequent dialog (Neal, 2012). If students do not respond within a relatively brief period of time (often as little as one second) after being asked a question, teachers often will attempt to move the conversation forward by repeating the question, rephrasing the question, or calling on students (Neal, 2012). When a teacher uses higher-order questions, the questions that require complex cognitive processes, it may be necessary to provide one to two minutes of wait time before soliciting responses from students (Nicholl and Tracey, 2007). A series of wait time studies involving both small groups and large classes were conducted by various authors such as Bowker (2010); Zygmunt and schaeffer (2006) Wait times were manipulated with student participants at various levels of cognitive development, ranging from elementary school through university classrooms, to determine the optimal wait time and potential benefits for both students and teachers. Increasing wait time by a few seconds had several positive effects on the attitudes and behaviours of both students and teachers.

Contributing to issue of question wait time, McComas and Abraham (2012) asserted that longer wait time consistently resulted in longer student responses, an increase in the number of students volunteering to respond, and an increase in the number of follow up questions posed by students. Students significantly reduced the frequency of "I do not know" responses and student achievement scores on tests significantly increased. Improvements in teacher behaviours were also observed after they increased wait times. Question quality, flexibility and variety increased while the number of questions declined. Conversely, too much wait time can be detrimental to student participation. Depending on the nature and cognitive complexity of the question, a wait time of more than twenty seconds

may be perceived as threatening and result in equally poor responses (Nicholl and Tracey, 2007; Saeed, Khan, Ahmed, Gul, Cassum and Parpio, 2012).

Many teachers make the mistake of answering their own questions, and this behaviour will quickly become self-defeating. After a relatively short wait time, some teachers attempt to fill the silence by providing their own answer to the question posed. This behaviour has several negative consequences. Students are deprived of the opportunity to grapple with the question and formulate their own responses, a process essential for learning.

Think time is a closely related concept to wait time and is another strategy to improve student participation. Think time is a period of uninterrupted silence imposed by the teacher so that all students can process the question and formulate an answer. This is because some students can process and respond to questions more rapidly than others, imposing a think time during which no responses will be accepted allows all students an opportunity to process their thoughts and formulate a meaningful answer (Wilson and Smetana, 2011).

Contributing to the issue of questioning wait time, McNeil (2010) asserted that wait-time for lower order questions should be about three seconds and beyond three seconds for higher-order question. In other words, for higher-order cognitive questions, no wait time threshold was observed (McNeil, 2010). Researchers like: Nagappan, 2001; Wilson and Smetana, 2011 noted that students seemed to become more engaged and successful the longer the teacher questioning wait-time (Nagappan, 2001). Increase wait-time is related to a number of students' outcomes including improved achievement and retention, greater number of higher cognitive responses, longer responses, decreases in interruptions and increased student-student interactions (Zhou and Zhou, 2002). These outcomes are quite similar to those observed with an increased frequency of higher cognitive questions. In fact, researchers believed that a causal relationship may exist between the two: higher cognitive questions require more wait-time allowed for the implementation of higher cognitive discussion (Caram and Davis, 2005). In classroom context, teachers employed higher-order, lower-order, follow-up, rhetorical,

overhead, direct, probing, display and factual questions to facilitate teaching-learning process.

Statement of the Problem

Literature reveals that adequate wait-time, make the students think before giving response to the questions, wait time makes the students who is about to respond, think and refine their thoughts before offering any answer during the classroom discussion, wait time let the instructor gauge the groups' attentiveness to the question, that is, the student who is thinking about question and who is not, it stimulate classroom active participation. Although, many research works have considered various aspects in classroom interaction in higher institutions in Nigeria. It seems much investigation have not been carried out on the wait-time allowed by the lecturers for students to respond to questions in classroom. The researchers therefore, examined comparative analysis of economics lecturers questioning allowed wait-time in four federal universities in South-West Nigeria.

Research Questions

Based on the problem identified in this study, the following questions were raised and answered.

1. What is the frequency of questioning wait-time allowed in teaching-learning process by the observed economics lecturers in universities in the South-West Nigeria?
2. Is there any significant mean difference in questioning wait-time allowed, between junior and senior lecturers in universities in the South-West Nigeria?
3. Is there any significant mean difference in questioning wait-time allowed among the observed economics lecturers in the sampled universities in the South-West Nigeria?

Methodology

The Design: The study adopted an *ex-post facto* design of survey research type. This research type was chosen because the researcher does not have control over the variables because their manifestations have already occurred and they are inherently not manipulable.

Population and Sample

The target population of this study were all economics students and lecturers facilitating first Degree programmes in economics in four selected Federal Universities located in the South-West zone of Nigeria as shown on table (1). Two stage sampling procedures were employed to select samples for the study as follows: simple random sampling technique was employed to select four Federal Universities that are offering economics out of existing six federal universities in South-West zone of Nigeria. Furthermore, purposive sampling technique was employed to select forty (40) economics lecturers that were observed, ten (10) from each university, who handled the compulsory courses either as junior or senior lecturers.

Table 1: Showing the Study Sample

S/N	States	Number of sampled Universities	No of Lecturers Sampled
1.	Oyo	University of Ibadan, Ibadan.	10
2.	Osun	Obafemi Awolowo University, Ife.	10
3.	Lagos	University of Lagos, Akoka.	10
4.	Ogun	Federal University of Agriculture Abeokuta	10
Total			40

Instrumentation

One validated observation instrument was used to collect data for the study. This is: **University Economics Lecturer Questioning Effectiveness Observation Sheet (UELQEOS)**

This instrument was adapted by the researchers to capture frequency of questioning wait-time allowed for students to respond to questions asked by economics lecturers. It was constructed in the Institute of Education, University of Ibadan for measuring University Lecturer classroom dynamics before it was adapted and the resulting reliability co-efficient then was ($\pi = 0.77$). The adapted instrument measured lecturer's questioning effectiveness. It encompassed two categories of activities which are: Lecturer's questioning behaviours and students' responses the coding was placed on interval of 60 seconds (1 minute

per observed questioning behaviour). The reliability and construct validity of this instrument was established using Scott pie reliability method and the resulting reliability co-efficient was ($\pi = 0.75$).

Data Collection

Data was collected from the lecture rooms in the four sampled institutions. This was done with the assistance of six (6) research assistants who were well trained and exposed to the importance of the study. The research was completed after eight weeks.

Method of Data Analysis

Simple percentage count of descriptive statistics, t-test and Analysis of Variance were used to analyse the data collected. Question one was answered with use of percentage count of descriptive statistics; research question two was answered with use of t-test and for research question three: Anova was used, at 0.05 level of significance.

Result

Research Question One: What is the frequency of questioning wait-time allowed in teaching-learning process by the observed economics lecturers in South-West Nigeria?

Table 2: Descriptive Statistics of Questioning Wait-Time Allowed in Teaching-Learning Process by the Observed Economics Lecturers

S/N	Type of Questions		Total Clerking of Allowed wait-time	Total Clerking Average
1.	Higher-Order	Individual	40	1.00
		Group	157	3.93
2.	Lower-Order	Individual	76	1.90
		Group	75	1.88
3.	Follow-up	Individual	5	0.13
		Group	5	0.13
4.	Rhetorical.	Individual	0	0
		Group	0	0
5.	Overhead	Individual	0	0
		Group	24	0.6
6.	Direct	Individual	22	0.55
		Group	0	0

7.	Probing	Individual	21	0.53
		Group	27	0.68
8.	Factual	Individual	16	0.40
		Group	8	0.20
9.	Display	Individual	19	0.48
		Group	22	0.55

Table 2 presents the frequency of questioning wait-time allowed in teaching-learning process by the forty observed economics lecturers. The result revealed that in a typical economics lecture, the lecturer allowed three to four minutes for group of students to ruminate on higher-order questions, one to two minutes each for lower-order question to individual student and group of students, one minute for higher-order question to individual student and the question with least wait time was follow-up question. This implies that the wait-time allowed commensurate with the potency of questions.

Discussion

These findings probably appeared in this manner because of the conventional universities sampled in this study. That is, the institutions that possess higher academics (Professors and Ph.D holders) with relevant pedagogical skills, necessary in the facilitation of teaching and learning processes. Most likely, the result implies that classroom interaction is now becoming students centre as pioneered by educators. The finding from this study which reveals that in a typical economics lecture, the lecturer allowed three to four minutes for group of students to ruminate on higher-order questions compared to other type of questions buttressed the fact that frequency of questions commensurate with the wait time allowed by the lecturers and is in consonance with Nicholl and Tracey (2007) who discovered that when a teacher uses higher-order questions, that is, the questions that required complex cognitive processes, it may be necessary to provide one to two minutes of wait time before soliciting responses from students.

The finding also buttresses the discoveries of Bowker (2010); Zygmunt and schaeffer (2006) that discovered that increasing wait time by a few seconds had several positive effects on the attitudes and behaviors of students and effectiveness of teachers in delivery of

instruction. Cazden, (2001) Chin (2006) added to previous research by stating that a minimum of three seconds wait time restructured the learning by shifting students to an evaluation of their thoughts and the thoughts of others in the classroom. The author further elaborated that another aspect that affect wait time is the rate at which a teacher presented information, as it should match the cognitive processing abilities of students.

However, Cotton (2003) asserted that few teachers give their students enough wait-time to think about the questions or to form meaningful answers. Contributing to issue of question wait time, McComas and Abraham (2012) asserted that longer wait times consistently resulted in longer student responses, an increase in the number of students volunteering to respond, and an increase in the number of follow up questions posed by students.

Research Question Two: Is there any significant mean difference in questioning wait-time allowed, between junior and senior lecturers in South-West Nigeria?

Table 3: T-test Analysis on Mean Score Difference in Wait-time Allowed between Junior and Senior Lecturers

Wait-time Allowed	Lecturers Classification	N	M	Std. Dev.	t-test for equality of Means						
					(t)	df	Sig	Mean Diff.	Std. Error Diff	95% Confidence Interval of Difference	
										Lower	Upper
	Junior Lecturers	20	10.67	.82	2.88	39	.024	2.667	.926	4.856	.477
	Senior Lecturers	20	13.33	2.08							

An independent-sample t test analysis was carried out, comparing the mean of junior and senior lecturers on wait-time allowed and a significant difference was found between the means of the two classification ($t_{(39)} = 2.880$, $p = 0.024$) on wait-time allowed. The mean of senior lecturers was significantly higher ($X = 13.33$, $Sd = 2.08$) than the mean of junior lecturers ($X = 10.67$, $Sd = 0.816$). This revealed that there is a significant difference

between the mean scores of questioning wait-time allowed, between junior and senior lecturers. The mean is in favoured senior lecturers.

Research Question Three: Is there any significant mean difference in questioning wait-time allowed among the observed economics lecturers in the sampled institutions in South-West Nigeria?

Table 4a: One-Way Analysis of Variance of Mean Differences in Questioning Wait-Time Allowed among the Observed Economics Lecturers in the Sampled Institutions

Type of Questions		Sum of Squares	Df	Mean Square	F	Sig.
Higher-Order Questions Ind.	Between Groups	2.400	3	.800	.857	.472
	Within Groups	33.600	36	.933		
	Total	36.000	39			
Higher-Order Questions Grp.	Between Groups	66.275	3	22.092	4.506	.009
	Within Groups	176.500	36	4.903		
	Total	242.775	39			
Lower-Order Questions Ind.	Between Groups	1.000	3	.333	.247	.863
	Within Groups	48.600	36	1.350		
	Total	49.600	39			
Lower-Order Questions Grp.	Between Groups	1.875	3	.625	1.000	.404
	Within Groups	22.500	36	.625		
	Total	24.375	39			
Follow-Up Questions Ind.	Between Groups	.475	3	.158	.966	.419
	Within Groups	5.900	36	.164		
	Total	6.375	39			
Follow-Up Questions Grp.	Between Groups	.275	3	.092	.407	.749
	Within Groups	8.100	36	.225		
	Total	8.375	39			

Overhead Questions Grp	Between Groups	1.000	3	.333	.531	.664
	Within Groups	22.600	36	.628		
	Total	23.600	39			
Direct Questions Ind.	Between Groups	1.100	3	.367	.635	.598
	Within Groups	20.800	36	.578		
	Total	21.900	39			
Probing Questions Ind.	Between Groups	1.275	3	.425	.674	.574
	Within Groups	22.700	36	.631		
	Total	23.975	39			
Probing Questions Grp.	Between Groups	3.275	3	1.092	1.173	.333
	Within Groups	33.500	36	.931		
	Total	36.775	39			
Factual Questions Ind	Between Groups	.800	3	.267	.889	.456
	Within Groups	10.800	36	.300		
	Total	11.600	39			
Factual Questions Grp	Between Groups	.600	3	.200	1.241	.309
	Within Groups	5.800	36	.161		
	Total	6.400	39			
Display Questions Ind.	Between Groups	.275	3	.092	.282	.838
	Within Groups	11.700	36	.325		
	Total	11.975	39			
Display Questions Ind.	Between Groups	4.100	3	1.367	2.764	.056
	Within Groups	17.800	36	.494		
	Total	21.900	39			

Table 4a presents the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for individual student on higher-order questions. The result revealed that there is no significant mean difference among the observed lecturers ($F_{(3,36)} = 0.857, p > 0.05$) which implies that the time

allowed for individual student to ruminates on higher order questions and provided answer across the sampled institutions is not significantly difference. Moreover, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for group of students on higher-order questions. The result revealed that there is a significant mean difference among the observed lecturers ($F_{(3, 36)} = 4.506, p < 0.05$) which implies that the time allowed for group of student to ruminate on higher-order questions and provided answer across the sampled institutions is significantly difference with the mean in favour of University of Ibadan and Obafemi Awolowo University.

Similarly, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for individual student on lower -order questions. The result revealed that there is no significant mean difference among the observed lecturers among the observed lecturers ($F_{(3,36)} = 0.247, p > 0.05$) which implies that the time allowed for individual student to ruminates on Lower order questions and provided answer across the sampled institutions is not significantly difference. Also, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for group of students on lower -order questions. The result revealed that there is a significant mean difference among the observed lecturers ($F_{(3,36)} = 1.00, p > 0.05$) which implies that the time allowed for group of student to ruminate on Lower -order questions and provided answer across the sampled institutions is not significantly difference

Also, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for individual student on follow-up questions. The result revealed that there is no significant mean difference among the observed lecturers ($F_{(3, 36)} = 0.966, p > 0.05$) which implies that the time allowed for individual student to ruminates on follow-up questions and provided answer across the sampled institutions is not significantly difference. Moreover, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for group of students on follow-up questions. The result revealed that there is a significant mean difference among the observed lecturers ($F_{(3, 36)} = 0.407, p > 0.05$) which implies that the time

allowed for group of student to ruminate on Follow-Up questions and provided answer across the sampled institutions is not significantly difference.

In the same vein, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for group of students on overhead questions. The result revealed that there is a significant mean difference among the observed lecturers ($F_{(3, 36)} = 0.531, p > 0.05$) which implies that the time allowed for group of student to ruminate on overhead questions and provided answer across the sampled institutions is not significantly difference. In addition, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for individual student on direct questions. The result revealed that there is no significant mean difference among the observed lecturers ($F_{(3,36)} = 0.635, p > 0.05$) which implies that the time allowed for individual student to ruminates on direct questions and provided answer across the sampled institutions is not significantly difference.

In addition, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for individual student on probing questions. The result revealed that there is no significant mean difference among the observed lecturers ($F_{(3,36)} = 0.674, p > 0.05$) which implies that the time allowed for individual student to ruminates on probing questions and provides answer across the sampled institutions is not significantly difference. Moreover, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for group of students on probing questions. The result revealed that there is a significant mean difference among the observed lecturers ($F_{(3,36)} = 1.173, p > 0.05$) which implies that the time allowed for group of student to ruminate on probing questions and provided answer across the sampled institutions is not significantly difference.

Furthermore, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for individual student on factual questions. The result revealed that there is no significant mean difference among the observed lecturers ($F_{(3, 36)} = 0.889, p > 0.05$) which implies that the time

allowed for individual student to ruminates on factual questions and provides answer across the sampled institutions is not significantly difference. Moreover, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for group of students on factual questions. The result revealed that there is a significant mean difference among the observed lecturers ($F_{(3, 36)} = 1.241, p > 0.05$) which implies that the time allowed for group of student to ruminates on factual questions and provided answer across the sampled institutions is not significantly difference.

Besides, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for individual student on display questions. The result revealed that there is no significant mean difference among the observed lecturers ($F_{(3,36)} = 0.247, p > 0.05$) which implies that the time allowed for individual student to ruminates on display questions and provides answer across the sampled institutions is not significantly difference. Moreover, the result of one-way analysis of variance to test for the significant mean difference among the observed lecturers on the wait time allowed for group of students on display questions. The result revealed that there is a significant mean difference among the observed lecturers ($F_{(3,36)} = 1.00, p > 0.05$) which implies that the time allowed for group of student to ruminates on display questions and provided answer across the sampled institutions is not significantly difference.

Table 4b: Estimate Marginal Means and Standard Error on Higher-Order Allowed Wait-Time

Higher-Order Allowed Wait-Time	Universities Identification	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
	University A	2.90	.458	1.86	3.94
	University B	2.40	.340	1.63	3.17
	University C	5.20	.917	3.13	7.27
	University D	5.20	.892	3.18	7.22

Table 4c: Post Hoc: Mean Difference Pairwise Comparisons of Higher-Order Allowed Wait-Time

(I) Universities	(J) Universities	Mean Difference (I-J)	Std. Error	Sig ^a	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
University A	University B	.500	.990	.617	-1.51	2.51
	University C	-2.300	.990	.026	-4.31	-.29
	University D	-2.300	.990	.026	-4.31	-.29
University B	University A	-.500	.990	.617	-2.51	1.51
	University C	-2.800	.990	.008	-4.81	-.79
	University D	-2.800	.990	.008	-4.81	-.79
University C	University A	2.300	.990	.026	.29	4.31
	University B	2.800	.990	.008	.79	4.81
	University D	.000	.990	1.000	-2.01	2.01
University D	University A	2.300	.990	.026	.29	4.31
	University B	2.800	.990	.008	.79	4.81
	University C	.000	.990	1.000	-2.01	2.01

In order to examine the source of significant difference in allowed wait-time for higher-order questions to group across the universities, LSD Post-hoc Multiple Range test was used to determine the source of the significance and see the direction and the amount of variation due to the independent variable (higher-order question). There was a significant difference at alpha level $P < 0.05$. Table 4.4 c and d shows that the mean of universities C and D is the highest (mean = 5.20), followed by university A (mean = 2.90) and lastly, university B (mean = 2.40). It could therefore be inferred that the observed lecturers from universities C and D allowed three to four minutes for group of students' rumination on higher-order questions.

Discussion: The result that revealed, that observed lecturers allowed wait-time differently in teaching and learning interaction, appeared in this manner because of the fact that enough wait-time must be allowed for students' response to the lecturers' questions to develop in the learners critical thinking and practical exhibition of transferable skills. In this regard, the finding support Bowker (2010) who found that teachers, on average, waited less than a second before calling a student

to respond, and that only a further second was then allowed for the student to answer before the teacher intervened, either supplying the required response themselves, rephrasing the question, or calling on some other student to respond.

In short, Cotton (2003) asserted that few teachers give their students enough wait-time to think about the questions or to form meaningful answers. The average wait time, when the teacher waits at all after a question, is less than a second according to the author. There should be at least two to four seconds after any question before any student is called on to answer it. Wait time allows the reflective student a chance to respond as well as the impulsive student or one who instantly knew the answer. If no one wants to tackle the question after fifteen seconds, the teacher can then leave it unanswered and tell the students to think about the answer and it can be raised again at the beginning of the next class period (Wimer, Ridenour, Thomas and Place, 2001; Bonne and Pritchard, 2007; Bowker 2010).

Conclusion

This study established the fact that higher-order questions attract more wait-time. Therefore when substantial wait-time is allow for students to ruminate on the questions ask by the lecturers, this will increase the lecture room participation of the students and graduate into classroom dynamics on the part of the lecturers.

Recommendations

1. Enough wait-time should always be allowed for the students to ruminate on questions to encourage critical thinking in the learners as this will enhance high performance standard in tertiary institutions.
2. Lecturers should always allow enough wait-time for students to reconsider an answer that had been made earlier and generate more understanding through the use of follow-up and probing questions.

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