

RESEARCH CAPACITY BUILDING AND CULTIVATION OF RESEARCH SKILLS LITERACY AMONG UNIVERSITY LECTURERS IN AKWA IBOM AND CROSS RIVER STATES, NIGERIA

Ojini, R. A.
and
Otu, B. D.

Abstract

The purpose of this study is to examine the influence of research capacity building and cultivation of research skills literacy among university lecturers in Akwa Ibom and Cross River States, Nigeria. Ex-post facto design was used for the study. The population of the study was 2400 lecturers. Stratified sampling technique was deployed to select 550 lecturers in three universities. The independent variables were collaborative research and conference training on research. The dependent variables was the cultivation of research skills literacy (sub-divided into problem identification skill, research question/hypothesis formulation skill, literature review skill, sampling skill, instrumentation skill, use of statistical tool skill, computer application in data analysis skill, referencing skills, report writing skill and overall cultivation of research skill). Data was collected using Research Capacity Building and research skills literacy Questionnaire (RCBRLQ). One Way Analysis of Variance (ANOVA) and Fisher's least significant difference t-test were used at .05 alpha level. The result revealed that collaborative research significantly influences lecturers' research literacy in cultivation of research skills. However, conference training on research did not significantly influence lecturers' research literacy in cultivation of research skills. From the results, it was concluded that lecturers' collaborative research facilitated research literacy in cultivation of research skills. It was therefore recommended among others that the Federal Government should consider collaborative research publications as criteria for promotion and advancement as this will encourage collaborative research, thereby improving research literacy in cultivation of research skills among lecturers of the intra-university and inter-universities and disciplines.

Key words: Collaborative research, conference training attended and cultivation of research skills literacy.

Introduction

Research literacy as well as the acquisition of its necessary skills remains a significant asset to mankind. This is why acquisition of research literacy is imperative for higher education in the university and other related institutions. Therefore it is an overriding duty of education, especially university education, to ensure such literacy acquisition among its graduates and lecturers. The continuous cultivation of literacy in areas of research and related disciplines remains a cardinal point in postgraduate school instructional objectives (University of Calabar Graduate School Hand Book, 2011).

Researchers will be unable to conduct acceptable research which will measure up to both local and international standards and create knowledge until they are able to harness research literacy and apply it to their scholarly investigation. However, the traditional approach has hindered cultivation of research skills among lecturers in various disciplines (Sabo, 2005).

The capacity for research literacy ought to be built in order to enable the researcher apply the cultivated skills to identifying, analysing, validating and communicating the problem to which a solution is anticipated or the interest or curiosity to be satisfied. Research literacy also aids in identifying and analysing what is known so far about such a problem and either suggesting possible solutions to the problem based on this speculation, or asking questions whose answers will contribute solutions to the problem. Furthermore, research literacy enables the reviewing and assessing of the experiences of others who have earlier attempted to contribute solutions to this or related problems, the selection, description and implementation of research methods and processes that will enable valid solutions to be found. In addition, research literacy helps the researcher in analysing the information collected through the implementation of such methods and interpreting the results of such analysis; summarizing, discussing (synthesizing and evaluating) the research findings in the light of the underlying theory and reviewed literature, and presenting it in a form applicable to the research problems, hence recommending possible solutions to the research problems; and reporting and disseminating the research findings in a format or style approved by the relevant research community”

While most of these variables have been addressed in many researches, research literacy levels among university lecturers have remained poor and below acceptable local and international standards (Ojini, 2015). The researcher is a witness to the fact that the curriculum provides Test and Measurement and Research Method as a course for undergraduates and Advanced Educational Statistics, Advanced Research Methods, and

Advance Research Statistics courses at graduate-level. In addition, monthly seminars for research capacity are also held for students and lecturers.

With these measures put in place to cultivate research literacy, stakeholders expect that researchers, lecturers, and graduates of universities and other higher institutions should be able to conduct research with a certain level of proficiency in applying research skills. However, the misapplication or improper application of these skills by lecturers puts a question mark on the type of research literacy training these lecturers were underwent (Ojini, 2015).

Even though most of these variables have been addressed in many researches, research skills among lecturers have remained poor and below acceptable local and international standards (NCCE, 2012). This state of affairs provoked the present study to investigate lecturers' capacity building factors and research skills literacy. Velho (2004) maintains that most qualified and practicing lecturers need to update their knowledge regularly through attending conferences and workshops. While various studies have found a correlation between joint authorship and research literacy skills, others maintain that most qualified and practicing lecturers need to update their knowledge regularly through cultivating new research skills (Ehikhamenor, 2003 and Poter & Brough, 2004). Capacity is an index of an academic staff research quality. It determines a lecturer's advancement in research skills. Regrettably, maybe because of various training constraints, the cultivation of research skills, even with the support of computers, remains low. As a result, giant strides have not been recorded from the research efforts of university lecturers.

The questions of how, when, who, what, which and for whom makes it possible for an investigation to be carried out with the aim of determining an answer to the observed problem created by the situation. It therefore means that a research is a well-planned investigation designed to provide an answer to a given issue within an environment. Austin (2000), reports that

“in collaborative research, relationship moves from stage to stage, the level of engagement of the partners moves from low to high; the importance of the relationship to each collaborator's mission shifts from peripheral to strategic; the magnitude and nature of resources allocated to the relationship expand significantly; the scope of activities encompassed by the partnership broadens; partners' interactions intensify; the managerial complexity of the alliance increases; and the strategic value of the collaboration escalates from modest to major resulting in better research skills”.

Hagstom as cited in Ehikhamenor (2003:108) found that “there was a correlation between productivity and the rate of joint authorship”. Furthermore, it has been observed by Meadow as cited by Ethikamenor (2003: 108) that “the number of contacts a scientist had with colleagues on a regular basis was related to the extent to which he carried out his research tasks in collaboration with others. In addition, in another

investigation by Rhee & Riggins (2007) to examine the correlation between creativity and connectedness, it was discovered that 97%(86/89) of those who responded to the survey felt they were better informed because they were connected, 66% (60/91) felt being connected made them more productive and 62%(55/89) felt they were more creative because they were connected.

Abels, Liebscher & Denman (2009) state that workshops and conferences that offer research training are necessary for the development of research skills. A three-day workshop on funding of research beyond time-limit conducted by educational researchers and evaluators in Lagos State University was attended by 734 university lecturers from 24 federal universities, 12 state universities in Nigeria and eight universities located in other African countries. The workshop was organized to train participants on research skills. All the 734 participants said that “the workshop was worthwhile and necessary”. They also appreciated the opportunity to develop and acquire skills in conducting researches on teaching strategies and instructional media and the opportunity to develop and enhance skills in collaborative work and instrument development. They claimed that they also had the opportunity to develop skills in collaborative research work and problem identification. They also developed their ability to discuss and report research findings.

The review of influence on research skills level among university lecturers is not established in relation to Akwa Ibom and Cross River State of Nigeria. It is therefore the assigned task of this study to fill these gaps and corroborate or reject earlier findings as applied to the research capacity building and cultivation of research skills literacy among universities in Akwa Ibom and Cross River States, Nigeria.

Statement of problem

Some university lecturers' research outputs are unable to meet international standards. The sub-standard research work of the lecturers, most of the time, is blamed on literacy level of the researchers in cultivation of acquired research skills. The editors and evaluators find it difficult to determine why the research outputs are below international standards when the training to reduce research illiteracy in the research sector is taken into consideration. With all these activities by government and university authority, the shareholders wonder why the problems of research illiteracy still exist among lecturers.

Given this background, it becomes necessary to ask the question: to what extent is the research literacy of university lecturers in problem identification skill, research question/hypothesis formulation skill, literature review skill, sampling skill, instrumentation skill, use of statistical tool skill, computer application in data analysis skill, referencing skill and report writing skill affected by research capacity in the area of collaborative researches and conference training on research?

Statement of hypotheses

1. There is no significant influence of collaborative research on lecturers' cultivation of research skills literacy.
2. There is no significant influence of conference training for research on lecturers' cultivation of research skills literacy.

Methodology

The research design adopted for this study was the ex- post facto design. The design is appropriate because the independent variables (collaborative research and conference attendance for training) already exist in the working lives of the university lecturers. The dependent variable (cultivation of research skills literacy) is a measure of its application that is currently taking place.

The states covered by this research are Cross River and Akwa Ibom States of Nigeria. The study population was 2400 university lecturers currently serving in two states in the 2016/2017 academic session. The stratified random sampling technique was adopted and used in this study. Stratified random sampling technique was chosen because of its capacity for proportional representative of subjects from the different strata of the population (lecturers in the university, academic qualification, professional rank and departments). Out of the 600 lecturers sampled, 550 questionnaires were filled correctly, returned, and used for the study. A further break down showed that 370 (67.27%) were males and 180 (32.73%) were females; 233 (42.36%) lecturers were sampled from University of Calabar, 147 (26.73%) from Cross River University of Technology and 170 (30.91%) from university of Uyo. Their professional rank is as follows: Professors 98 (17.82%), Associate Professors 170 (30.91%), Senior Lecturers 98 (17.82%), Lecturers 1- 108 (19.64%), lecturer 2- 96 (17.45%) and Assistant lecturers 80 (14.55%), . From the various faculties, 178 (32.37%) lecturers were sampled from Faculty of Education, 74 (13.45%) faculty of Science, 115 (20.91%) Faculty of Arts and 183 (33.27%) from faculty of Social Science.

The questionnaire titled Research Capacity building and cultivation of research skills literacy Questionnaire (RCBCRSLO) was developed and used for data collection. The instrument is made of sections A and B. Section "A" for demographic data and 2 items seeking information on research capacity building and 54 items on cultivation of research skills literacy divided into nine dimensions (C_{1-c9}). The lecturers that require no training were classified as skilled in cultivation of research skills. Lecturers that require little training were classified as those that have difficulties in cultivating certain skills and those with much training needed were regarded as those with extreme difficulties in cultivating research skills. In both sections, the respondents were required to tick ($\sqrt{\quad}$) on the most suitable option applicable to them against each item. Split half reliability methods were adopted to estimate the reliability of the instrument. The method used was the correlation of the two halves of the responses of questionnaire items, that is, the correlation between the scores on the odd-number and

even-number items on the questionnaire. These were computed using the Spearman Brown Proficiency Formula. The reliability coefficient ranged from .71 - .82. The instrument was administered by the researchers who visited the three universities (university of Calabar, university of Uyo and University of Cross River university of Technology), sampled the lecturers, administered and retrieved the questionnaire. Using the list of staff for each university, the researchers were able to extract the sample using stratified random sampling technique to select the respondents. After stratification, simple random sampling was used in selecting the respondents using the YES and NO draw approach to whom the questionnaire was administered. , 639 questionnaire were administered. Of the 639 questionnaires retrieved, 61 were not returned or missing and 28 were not completely filled. Hence, 550 were filled correctly and returned, thereby forming the sample of the study with a return rate of 86.07%.

Procedure for data analysis

The statistical tool used for analysis of data was One-way analysis of variance (ANOVA) using Social Statically Package Science (SPSS). It tested the influence of the independent variables (collaborative research, conference training attended for cultivation research literacy (in cultivation of research skills) on dependent variables (sub divided into nine and over all cultivation of research skills: problem identification skill, research question/hypothesis formulation skill, literature review skill, sampling skill, and instrumentation skill, use of statistical tool skill, computer application in data analysis skill, referencing skills, report writing skill and overall research skills). All results were tested at .05 level of significance.

Results

Hypothesis One

There is no significant influence of collaborative research on cultivation of research skills literacy.

The independent variable in this hypothesis is collaborative research, categorized into 4 groups as intra-department, inter-department, inter faculties and inter universities. The dependent variable is the cultivation of research skills in the 10 dimensions by lecturers. The statistical technique used to test this hypothesis is one-way-analysis of variance (ANOVA). The results of the analysis are presented in Tables 1 and 2.

The result presented in Table 2 shows that 10 F-ratio of 26.605, 22.729, 14.057, 10.339, 10.204, 31.945, 110.872, 57.743, 3.805 and 47.670 were each higher than the critical F-ratio 2.61 at .05 level of significance with 3 and 546 first degree of freedom. This implies that the F-ratio of problem identification skill (F=26.605), literature review skill (F=22.729) research questions/hypotheses formulation skill (F=14.057) sampling technique skill (F=10.339), instrumentation development skill (F=10.204), use of statistical tools skill (F=31.945), computer application in data analysis skill (F=110.872), referencing skill (F=57.743), reporting skill (F=3.805) and overall

component of cultivation of research skills ($F=47.670$) with each higher than 2.61 at .05 level of significant with 3 and 546 degrees of freedom.

TABLE 1

Summary of descriptive statistics for the cultivation of research skills literacy based on collaborative research

S/No	Cultivation of research skill variables	Groups (collaborative research)	n	\bar{X}	SD
1	Problem identification skill	(1) Intra-department	261	10.920	5.153
		(2) Inter-department	110	12.091	3.418
		(3) Inter-faculties	124	15.597	4.269
		(4) Inter universities	55	13.091	4.539
		Total	550	12.426	4.942
2	Questions/ Hypothesis formulation skill	(1) Intra-department	261	13.061	5.723
		(2) Inter-department	110	13.255	3.449
		(3) Inter-faculties	124	17.460	5.040
		(4) Inter universities	55	15.036	5.062
		Total	550	14.289	5.417
3	Literature review skill	(1) Intra-department	261	11.625	5.087
		(2) Inter-department	110	10.873	3.486
		(3) Inter-faculties	124	14.234	4.691
		(4) Inter universities	55	13.582	3.961
		Total	550	12.258	4.772
4	Sampling technique skill	(1) Intra-department	261	11.031	5.059
		(2) Inter-department	110	11.364	3.969
		(3) Inter-faculties	124	13.847	5.072
		(4) Inter universities	55	12.618	4.840
		Total	550	11.891	4.964
5	Instrumentation development skill	(1) Intra-department	261	11.073	5.014
		(2) Inter-department	110	11.646	3.679
		(3) Inter-faculties	124	13.839	4.625
		(4) Inter universities	55	12.327	4.611
		Total	550	11.936	4.763
6	Use statistical tool skill	(1) Intra-department	261	10.556	5.273
		(2) Inter-department	110	11.446	3.233
		(3) Inter-faculties	124	15.395	3.975
		(4) Inter universities	55	12.382	4.657
		Total	550	12.007	4.959
7	Computer application in data analysis skill	(1) Intra-department	261	9.908	5.272
		(2) Inter-department	110	11.818	.997
		(3) Inter-faculties	124	17.774	.891
		(4) Inter universities	55	13.236	4.776
		Total	550	12.396	5.039
8	Referencing skill	(1) Intra-department	261	10.717	5.434
		(2) Inter-department	110	11.855	1.452
		(3) Inter-faculties	124	16.807	2.740
		(4) Inter universities	55	13.564	5.014
		Total	550	12.602	4.944
9	Reporting writing skill	(1) Intra-department	261	11.310	5.590
		(2) Inter-department	110	12.055	3.506
		(3) Inter-faculties	124	15.371	4.413
		(4) Inter universities	55	13.236	5.055
		Total	550	12.567	5.171
10	Overall research skills	(1) Intra-department	261	100.39	38.268
		(2) Inter-department	110	106.400	17.725
		(3) Inter-faculties	124	140.323	25.693
		(4) Inter universities	55	13.073	29.099
		Total	550	112.373	35.294

TABLE 2
Analysis of variance for the influence of the collaborative research on lecturers' research skills literacy.

S/No	Cultivation of research skill variables	Sources of variance	SS	df	MS	F-ratio	p-value
1	Problem identification skill	Between Groups	1875.658	3	625.23	29.605	.000
		Within Groups	11530.785	546	21.13		
		Total	13406.444	549			
2	Questions/hypothesis formulation skill	Between Groups	1788.417	3	596.139	22.729	.000
		Within Groups	14320.618	546	26.228		
		Total	16109.035	549			
3	Literature review skill	Between Groups	896.317	3	298.772	14.057	.000
		Within Groups	11605.021	546	21.255		
		Total	12501.338	549			
4	Sampling technique skill	Between Groups	727.175	3	242.392	10.339	.000
		Within Groups	12800.280	546	23.444		
		Total	13527.455	549			
5	Instrumentation development skill	Between Groups	661.100	3	220.367	10.204	.000
		Within Groups	11791.673	546	21.596		
		Total	12452.773	549			
6	Use statistical tool skill	Between Groups	2015.735	3	671.912	31.945	.000
		Within Groups	11484.236	546	21.033		
		Total	13499.971	549			
7	Computer application in data analysis skill	Between Groups	5277.831	3	1759.277	110.872	.000
		Within Groups	8663.761	546	15.868		
		Total	13941.593	549			
8	Referencing skill	Between Groups	3232.224	3	1077.408	57.743	.000
		Within Groups	10187.574	546	18.659		
		Total	1343.798	549			
9	Reporting writing skill	Between Groups	1440.613	3	480.204	3.805	.000
		Within Groups	13238.398	546	24.246		
		Total	14679.011	549			
10	Overall cultivation of research skills	Between Groups	14339.745	3	47313.248	47.670	.000
		Within Groups	54314.846	546	992.518		
		Total	683854.591	549			

* $p < 0.05$. (critical F-ratio of 2.61)

Based on this result, the null hypothesis is rejected for research literacy in problem identification skill, question/hypothesis formulation skill, literature review skill, sampling technique skill, instrumentation development skill, use of statistical tools skill, computer application in data analysis, referencing skill, reporting writing skill and overall cultivation of research, since the overall F-ratio of 47.670 is higher than the critical F-ratio of 2.61 value at 0.05 level of significance with 3 and 546 degree of freedom. It means that there is a significant influence of collaborative research on cultivated research literacy in cultivation of research skills.

In order to clearly understand the pattern of the significant influence of collaborative research on cultivation of cultivation of research skills, a Post Hoc multiple comparison was carried out using Fisher's LSD. The result of the analysis is presented in Table 3.

Problem identification skill: The result from the Fisher's LSD presented in Table 3 showed that there is a significant pair-wise difference between collaborative inter-faculties versus intra-department ($t=4.677$), inter-faculties versus inter-departments ($t=3.506$), inter universities versus intra-department ($t=2.171$). There is, however no significant pair-wise difference between inter-departments versus intra-department ($t=1.171$) and inter-universities versus inter-departments ($t=1.000$). The result from the mean scores showed that the inter-faculties ($X=15.597$) influence lecturers' skill in problem identification skill more than those of inter universities ($X=13.091$), inter-departments ($X=10.920$). That is, the more the inter-faculties school, the more their skill in problem identification.

Questions/hypotheses formulation skill: The result from the Fisher's LSD presented in Table 3 shows that there is a significant pair-wise difference between collaborative Inter-faculties versus intra-department ($t=4.398$), Inter-faculties versus inter-departments ($t=4.205$), inter universities versus inter-departments ($t=-2.423$) and inter universities versus intra-universities ($t=1.975$). There is, however no significant pair-wise difference between inter universities versus Inter-departments ($t=1.783$). The result from the mean scores shows that inter-faculties ($X=17.460$) influenced lecturers' skill in questions/hypotheses formulation skill more than those of inter universities ($X=15.036$), inter-departments ($X=13.255$) and intra-department ($t=13.061$). That is, the more the inter-faculties researches, the more lecturers' skill in questions/hypotheses formulation.

TABLE 3

Fisher’s LSD multiple comparison analysis of the significance influence of collaborative research on lecturers’ cultivation of research skills literacy

Cultivation of research skill	Level of collaborative research	Intra dep’t	Inter dep’t	Inter school	Inter universities
Problem identification skill	1. Intra-department	10.920 ^a	-1.171 ^b	-4.677 ^b	-2.171 ^b
	2. Inter- department	1.171	12.091 ^a	-3.506 ^b	-1.000 ^b
	3. Inter-faculties	4.677*	3.506*	15.597 ^a	2.509 ^b
	4. Inter universities	2.171*	1.000 ^c	-2.506*	13.091 ^a
		(MSW=21.13)			
Research question/hypothesis formulation skill	1. Intra-department	13.061 ^a	-.33 ^b	-4.398 ^b	-1.975 ^b
	2. Inter- department	.33 ^c	13.255 ^a	-4.205 ^b	-1.782 ^b
	3. Inter-faculties	4.398*	4.205*	17.460 ^a	2.423 ^b
	4. Inter universities	1.975*	1.783 ^c	-2.423*	15.036 ^a
		(MSW=26.228)			
Literature review skill	1. Intra-department	11.624 ^a	.752 ^b	-2.610 ^b	-1.957 ^b
	2. Inter- department	-.752 ^c	10.873 ^a	-3.361 ^b	-2.709 ^b
	3. Inter-faculties	2.609*	3.361*	14.234 ^a	.621 ^b
	4. Inter universities	1.957 ^c	2.709*	-.652 ^c	13.582 ^a
		(MSW=21.255)			
Sampling technique skill	1. Intra-department	11.031 ^a	-.333 ^b	-2.81 ^b	-1.588 ^b
	2. Inter- department	.333 ^c	11.364 ^a	-2.843 ^b	-1.25 ^b
	3. Inter-faculties	2.816*	2.843*	13.847 ^a	1.229 ^b
	4. Inter universities	1.588 ^c	1.255 ^c	-1.229 ^c	12.618 ^a
		(MSW=23.4444)			
Instrumentation development skill	1. Intra-department	11.073 ^a	-.573 ^b	-2.766 ^b	-1.254 ^b
	2. Inter- department	.573 ^c	11.646 ^a	-2.33 ^b	-.682 ^b
	3. Inter-faculties	2.766*	2.33*	13.839 ^a	1.511 ^b
	4. Inter universities	1.254 ^c	.682 ^c	-1.511 ^c	12.327 ^a
		(MSW=21.596)			
Use statistical tools skill	1. Intra-department	10.556 ^a	-.890 ^b	-4.840 ^b	-1.826 ^b
	2. Inter- department	.890 ^c	11.446 ^a	-3.950 ^b	-.936 ^b
	3. Inter-faculties	4.840*	3.950*	15.395 ^a	3.013 ^b
	4. Inter universities	1.826 ^c	.936 ^c	-3.013*	12.382 ^a
		(MSW=21.033)			
Computer application in data analysis	1. Intra-department	9.908 ^a	-1.910 ^b	-7.866 ^b	-3.328 ^b
	2. Inter- department	1.910 ^c	11.818 ^a	-5.956 ^b	-1.418 ^b
	3. Inter-faculties	7.866*	5.956*	17.774 ^a	4.538 ^b
	4. Inter universities	3.328*	1.418 ^c	-4.538*	13.236 ^a
		(MSW=15.868)			
Referencing skill	1. Intra-department	10.717 ^a	-1.138 ^b	-6.090 ^b	-2.847 ^b
	2. Inter- department	1.138 ^c	11.855 ^a	-4.952 ^b	-1.709 ^b
	3. Inter-faculties	6.090*	4.952*	16.807 ^a	3.243 ^b
	4. Inter universities	2.847*	1.709 ^c	-3.243*	13.564 ^{b a}
		(MSW=18.659)			
Reporting writing skill	1. Intra-department	11.310 ^a	-.744 ^b	-4.061 ^b	-1.926 ^b
	2. Inter- department	.744 ^c	12.055 ^a	-3.316 ^b	-1.182 ^b
	3. Inter-faculties	4.061*	3.316*	15.371 ^a	2.135 ^b
	4. Inter universities	1.926	1.182 ^c	-2.135*	13.236 ^a
		(MSW=24.246)			
Overall application research skills	1. Intra-department	100.39 ^a	-6.201 ^b	-40.123 ^b	-18.873 ^b
	2. Inter- department	6.201 ^c	106.400 ^a	-33.92 ^b	-12.673 ^b
	3. Inter-faculties	40.123*	33.923*	140.323 ^a	21.250 ^b
	4. Inter universities	18.873*	12.673*	-21.250*	13.073 ^a
		(MSW=992.518)			

*p< 0.05 (critical t-value = 1.96)

a – Group means (X) are along the diagonal;

b – Difference between the groups means (X) are above the diagonal;

c – Fisher’s t-values are below the diagonal.

Literature review skill: The result from the Fisher's LSD presented in Table 3 shows that there is a significant pair-wise difference between collaborative Inter-faculties versus inter-departments ($t=3.361$), interuniversities versus inter-departments ($t=2.709$), inter- versus intra-department ($t=2.609$). There is, however no significant pair-wise difference between inter-departments versus intra-department ($t=-0.752$) and inter universities versus inter-faculties ($t=-.652$). The result from the mean scores shows that inter-faculties ($X=14.234$) influence lecturers' skill in literature review more than those of inter universities ($X=13.582$), intra -department ($X=11.625$) and Inter-departments ($X=10.873$). In other words, the more the inter-faculties researches, the better the skill in literature review.

Sampling technique skill: The result from the Fisher's LSD presented in Table 3 shows that there is a significant pair-wise difference between collaborative inter-faculties versus inter-departments ($t=2.843$), inter-faculties versus intra-department ($t=2.816$). There is, however no significant pair-wise difference between inter universities versus intra-department ($t=1.588$) and inter universities versus Inter-departments ($t=1.255$), inter universities inter school ($X=-1.229$), inter-departments versus intra-department ($t=.333$). The result from the mean scores shows that inter-faculties ($X=13.847$) influenced lecturers' skill in sampling technique skill more than those of inter universities ($X=12.618$), inter-departments ($X=11.364$) and intra-department ($X=11.031$). Therefore, the more the inter-faculties researches, the more their skills in sampling technique.

Instrumentation development skill: The result from the Fisher's LSD presented in Table 3 shows that there is a significant pair-wise difference between collaborative inter-faculties versus intra-department ($t=2.766$), Inter-faculties versus inter-departments ($t=2.33$). There is, however no significant pair-wise difference between inter-universities versus inter-faculties ($t=-1.229$) and inter-universities versus intra-departments ($t=1.588$), inter-departments versus intra-department ($X=.573$). The result from the mean scores showed inter-faculties ($X=13.839$) influence lecturers' skill in instrumentation development skill more than those who researches among inter - universities ($X=12.327$), inter-departments ($X=11.646$) and intra-department ($X=11.073$). Consequently, the more the inter-faculties researches a lecturer carries out, the more their skill in instrumentation development.

Use of statistical tools skill: The result from the Fisher's LSD presented in Table 3 shows that there is a significant pair-wise difference between collaborative inter-faculties versus intra-department ($t=4.840$), inter-faculties versus inter-departments ($t=3.950$), inter-universities versus intra-school ($t=3.013$). There is, however no significant pair-wise difference between inter-universities versus intra-department ($t=1.826$) and inter-universities versus inter-departments ($t=.936$) and inter-departments versus intra-department. The result from the mean scores shows that inter-faculties ($X=15.395$) influence lecturers' skill in the use of statistical tools more than those of inter universities ($X=12.382$), inter-departments ($X=10.556$). In other words the more the inter-faculties researches, the sharper the lecturers' skill in the use of statistical tools.

Computer application in data analysis skill: The result from the Fisher's LSD presented in Table 3 shows that there is a significant pair-wise difference between collaborative inter-faculties versus intra-department ($t=7.866$), inter-faculties versus inter-departments ($t=5.956$), inter universities versus intra-school ($t=-4.538$) and inter universities versus inter-departments ($t=3.328$). There is, however no significant pair-wise difference between inter-departments versus intra-department ($t=1.910$) and inter-universities versus inter-department ($t=1.000$). The result from the mean scores shows that inter-faculties ($X=17.772$) influence lecturers' skill in computer application in data analysis skill more than inter-universities ($X=13.236$), inter-departments ($X=11.855$), and intra-department ($X=9.908$). It means that the more the inter-faculties researches, the better the lecturers' skill in computer application in data analysis.

: The result from the Fisher's LSD presented in Table 3 shows that there is a significant pair-wise difference between collaborative inter-faculties versus intra-department ($t=6.090$), inter-faculties versus inter-departments ($t=4.952$), inter-universities versus inter-schools ($t=-3.243$) and inter-faculties versus intra-departments ($t=2.847$). There is, however no significant pair-wise difference between inter-departments versus intra-departments ($t=1.138$). The result from the mean scores shows that inter-faculties ($X=16.807$) influence lecturers' skill in referencing skill more than those who research among inter-universities ($X=13.564$), inter-departments ($X=12.055$) and intra-department ($t=10.717$). This implies that, the more the inter-faculties researches, the more their skill in computer application in data analysis.

Report writing skill: The result from the Fisher's LSD presented in table 3 showed that there is a significant pair-wise difference between collaborative inter-faculties versus intra-department ($t=4.061$), inter-faculties versus inter-departments ($t=3.316$), inter-faculties versus intra-department ($t=-2.135$). There is, however no significant pair-wise difference between inter universities versus intra-department ($t=1.926$) and inter universities versus intra-department ($t=.744$). The result from the mean scores showed that it was inter-faculties ($X=15.371$) influence lecturers' skill in report writing skill more than those of inter universities ($X=13.237$), inter-departments ($X=12.055$) and intra-department ($X=11.310$). That is, the more the inter-faculties researches, the more the lecturers are skilled in report writing.

Overall cultivation of research skill: The result from the Fisher's LSD presented in Table 3 shows that there is a significant pair-wise difference between collaborative inter-faculties versus intra-department ($t=40.123$), inter-faculties versus Inter-departments ($t=33.923$), inter universities versus intra-school ($t=-3.250$). There is, however no significant pair-wise difference Inter-departments versus intra-department ($t=1.171$), inter universities versus inter-departments ($t=1.000$) and inter universities versus inter-departments ($t=12.673$). The result from the mean scores shows that inter-faculties ($X=140.323$) influence lecturers' skill in overall cultivation of research skill more than inter-universities ($X=13.073$), inter-departments ($X=106.400$) and intra-department

($X=100.39$). This implies that the more the inter-faculties researches carried out by lecturers, the more their skill in overall cultivation of research skill.

Hypothesis Two

There is no significant influence of conference training attendance for research on lecturers' cultivation of research skills literacy.

The independent variable in this hypothesis is conference trainings attendance for research and it is at four levels: none, between 1 – 5 times, between 6 – 10 times and 11 times and above. The dependent variables are the nine dimensions of cultivation of research skills literacy lecturers. The statistical technique used to test this hypothesis is ANOVA. The result of the analysis was presented in Table 4 and Table 5.

The result presented on Table 5 shows that five F-ratios: 1.248, .721, 1.251, 1.922, 2.543, .523, .862, 1.481, 1.461 and 1.556 were each less than the critical F-ratio 2.61 at .05 level of significance with 3 and 546 first degree of freedom. These imply that the F-ratio of problem identification skill ($F=1.248$), literature review skill ($F=.721$) research questions/hypotheses formulation skill ($F=2.323$) sampling technique skill ($F=1.251$), instrumentation development skill ($F=1.922$), use of statistical tools skill ($F=2.543$), computer application in data analysis skill ($F=.523$), referencing skill ($F=.862$), reporting skill ($F=1.461$) and overall component of cultivation of research skills ($F=1.556$) are each lesser than F-ratio of 2.61 at .05 level of significant with 3 and 546 first degree of freedom. Based on this result, the null hypothesis is not rejected for problem identification skill, question/hypothesis formulation skill, literature review skill, sampling technique skill, instrumentation development skill, use of statistical tools skill, computer application in data analysis, referencing skill, reporting writing skill and overall cultivation of research.

The overall F-ratio of 1.556 is less than the critical F-ratio of 2.61 value at 0.05 level of significance with 3 and 546 first degree of freedom. This means that there is no significant influence of conferences attended on the cultivation of research skills **literacy**.

Discussions

The finding revealed that there was a significant influence of collaborative research on cultivation of cultivation of research skills literacy.

In collaborative research, a researcher's poor skill(s) in a particular dimension can be complemented by another researcher's, thereby leading to the conduction of acceptable and standard researches for knowledge creation and publication. The finding supported Austin (2000), who reported that “in collaborative research, relationship moves from stage to stage, the level of engagement of the partners moves from low to high; the importance of the relationship to each collaborator's mission shifts from peripheral to strategic; the magnitude and nature of resources allocated to the relationship expand significantly; the scope of activities encompassed by the partnership broadens; partners'

interactions intensify; the managerial complexity of the alliance increases; and the strategic value of the collaboration escalates from modest to major resulting in better research skills". This result might be significant because the Federal Government and NCCE policies on lecturers' promotion require a certain number of publications for promotion. It is also possible that collaborative researches serve as motivation to lecturers to seek avenue to conduct and publish research work. The collaboration facilitates the acquisition of research skills from partnerships among lecturers.

The finding revealed that there was no significant influence of conference trainings for research attended on cultivation of cultivation of research skills literacy. Conference training for research comes up either once in a year or once in a while. The training in conference takes just a day and individual presentations cover the remaining period of the conference. This period is too short for any meaningful learning.

This finding contradicted that of Hagstom as cited in Ehikhamenor (2003:108) who found that "there was a correlation between productivity and the rate of joint authorship". In addition, it has been observed by Meadow as cited by Ethikamenor (2003: 108) that "the number of contacts a scientist had with colleagues on a regular basis was related to the extent to which he carried out his research tasks in collaboration with others. Furthermore, another study by Rhee & Riggins (2007) found that researchers were better informed because they were connected. Therefore, being connected made them more productive and more creative in research literacy.

Conclusion

From the result of this study, it was concluded that lecturers' collaborative research can be categorized into: intra-department, inter-department, inter faculties and inter university, and each category enhances cultivation of cultivation of research skills literacy. On the other hand, conference research trainings insignificantly enhance cultivation of cultivation of research skills **literacy** in the nine dimensions under study among university lecturers. This is so because most lecturers do not pay for conference training and therefore do not attend to improve on their research skills, which is the main focus of conference trainings.

Recommendations

In order to move the universities in Nigeria forward in cultivation of research skills **literacy** towards knowledge creation, the following recommendations should be urgently implemented:

- 1 The Federal Government should consider collaborative research publication as criteria for promotion and advancement as this will encourage collaborative research, thereby improving cultivation of research skills among lecturers of the intra- university and inter-universities and disciplines.

- 2 Conference attendance and training should be compulsory for all authors of papers and the training session should take reasonable time to cover all steps or processes involved in carrying out acceptable local and international researches.

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