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EMERGING TRENDS IN THE CONDUCTION AND APPLICATION OF RESEARCH SKILLS AMONG COLLEGE OF EDUCATION LECTURERS IN AKWA IBOM AND CROSS RIVER STATE NIGERIA.

By

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ABSTRACT

The purpose of this study was to find out the influence of research trends on application of research skills among College of Education lecturers in Akwa Ibom and Cross River States. The population of the study was 921 lecturers in three colleges of education. The independent variables were individual to collaborative research and school to conference training for research. The dependent variable was application of research skills (sub-divided into 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 application of research skill). Ex-post facto design was used, while stratified sampling technique was deployed to select 550 lecturers in three colleges of education. Data was collected using research trends and Application of Research Skills Questionnaire (RCBARSQ). Two hypotheses were tested at .05 alpha level using One Way Analysis of Variance (ANOVA) and Fisher's least significant difference t-test where appropriate. The result revealed that individual to collaborative research significantly influenced lecturers' application of research skills while school to conference training for research does not. From the results, it was concluded that lecturers' trends from individual to collaborative research enhance application of research skills. It was therefore recommended among others that the Federal Government should consider collaborative research publication as criteria for promotion and professional advancement as well as extend conference training to cover not less than two days per conference. (244 words)

Key words: *Individual to collaborative research, school based learning to conference training for research and application of research skills.*

Introduction

In every discipline, research remains the process through which knowledge is created for application and advancement of such discipline. It is also a process of creating knowledge that is published and utilized in teaching and learning as well as in community services. Since knowledge remains a very important possession of mankind, acquiring necessary skills for its creation could be said to be a very important human endowment. It is an overriding duty of education, especially university education, to ensure such acquisition among its graduates (Velho, 2004).

Observation has shown that lecturers in general and college of education in particular still conduct research using the individual and school theoretical approach (Wibberley, Darka & Smith, 2002). This is aimed at conducting research for just r adding publication to their curriculum Vitae for career advancement. More over, very little attention is given to collaborative and conference training acquired (Owuamalam, 2012). The traditional approach has hindered application of research skills among lecturers in various disciplines (Sabo, 2005). The challenge is that researchers cannot probably conduct acceptable local and international standard research resulting to knowledge creation unless and until research capacity skill is clearly activated and applied in conducting research using the modern approaches like collaboration and conference training acquired. According to Krawthwohl (2005), the reasons for collaboration for research and conference participation include jointly:

- i. identifying, analysing, validating and communicating the problem to which a solution is anticipated or the interest or curiosity to be satisfied;
- ii. identifying and analysing what is known so far about such problem and based on this speculating what might be the possible solution to the problem or asking questions whose answers will contribute solutions to the problem;
- iii. reviewing and assessing the experiences of others who have earlier attempted to contribute solutions to this or related problems;
- iv. selecting, describing and implementing research methods and processes that will enable valid solution to be found for the problem;
- v. analysing the information collected through the implementation of such methods and interpreting the results of such analysis;
- vi. 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, and hence recommending possible solutions to the research problems;
- vii. reporting and disseminating the research findings in a format or style approved by the relevant research community.

University and college of Education stakeholders, expect that graduates of universities and other higher institution or lecturers on-the-job should be able to conduct research with certain specific skills. But the situation where these skills are not appropriately applied among college of education lecturers puts a question mark on the type of research approach these lecturers were subjected to while in higher institutions of learning and on-the-job.

This background gradually gave birth to collaborative and conference training to close this gap in conducting research in local and global acceptance for teaching and community services.

The poor application of research skills using the individual and school approaches among colleges of education lecturers has both application and reporting limitations. Summarizing the limitations, Okebukola (2002, Onuka & Onabamiro, 2010 and Owuamalam, 2012) listed them as:

- i. lacking adequate modern research methods.

- ii. lacking functional equipment in individual libraries and laboratories.
- iii. Lecturers' workload effect
- iv. accessing foreign research funds.
- v. infective supervision of junior researchers

Most of these variables have been addressed in many researches but application of research skills among colleges of education lecturers remained poor and below acceptable local and international standards (NCCE, 2012). The new trends that emanated in 2004 was in line with the Presidential Panels Visitation to tertiary institution 2003 which "reported that physical facilities in universities charged with training of researchers were in deplorable condition for standard research their collaboration research and conference training should encourage to share both physical facilities, skills and methodologies among lecturers (NUC, 2004)". The new trends of moving from individual research to collaboration and school based learning to conference training research skills had come to stay among lecturers. Whether these trends have improved lecturers' application of research skills is unclear, hence this study.

Statement of problem

Efforts to improve lecturers' application of research skills and research output through the introduction of collaboration research and conference training had come to stay among lecturers. Despite this new trends in COE, lecturers are unable to meet the acceptable local and international research standards. In the other hand, all efforts to improve lecturers' research output, application of research skills among lecturers in COE is unable to meet the acceptable local and international standards. The sub-standard research work of the lecturers, most of the time, is blamed on poor application of research skills. This was in support of the NUC (2004) report that "no Nigerian tertiary institution (college of education inclusive) is among the top 500 schools around the world in terms of publication of research output than can enhance teaching and community services". The educational sector stakeholders find it difficult to determine why the research outputs are still below accepted local and international standard when measured by the huge investments in the research sector to encourage collaboration and conference attendance through Tertiary Education Trust Fund. With all these activities by government and Colleges of education Provost and NCCE, one wonders why the problems of poor application of research skills still exist among college of education lecturers.

Given this background, it becomes necessary to ask the question to what extent is the research trends from individual to collaborative research and school based learning and conference training among colleges of education lecturers' influence their application of research skills in terms of 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.

Purpose of the study

1. the influence of collaborative research on lecturers' application of research skills.
2. the influence of conference training for research attended on lecturers' application of research skills

Research questions

1. To what extent does collaborative research influence lecturers' application of research skills?

2. To what extent does conference training for research attended influence lecturers' application of research skills?

Statement of hypotheses

1. There is no significant influence of movement from individual to collaborative research on lecturers' application of research skills.
2. There is no significant influence of school based leaning to conference training for research on lecturers' application of research skills.

Literature review

The application of H and five Ws makes it possible for an investigation to be carried out, in order to determine an answer to the observed problem created by the situation. It therefore means that research is a well-planned investigation designed to provide an answer to a given issue within an environment. 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".

Hagstom as cited in Ehikhamenor (2003:108) found that "there was a correlation between productivity and the rate of joint authorship". Also, 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. Still in another study by Mattessich and Barbara (1992) find out if there is a correlation between creativity and connectedness, they found 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".

Akpochafo (2009) states that attendance at workshop and conferences for training for research are necessary for update of research skills. In a three day workshop on funding of research beyond time-limit conducted by educational researchers and evaluators in Lagos State colleges of education, 734 colleges of education lecturers attended from 24 Federal colleges of education and 12 State colleges of education in Nigeria and eight from 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. The participants appreciated the opportunity to develop and acquire skills in conducting researches on teaching strategies and instructional media; 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 current influence on application of research skills level among colleges of education lecturers is not established in relation to Akwa Ibom and Cross River State of Nigeria. Therefore this study fill these gaps and corroborate or reject earlier findings as applied to the research capacity and application of research skills among colleges of education in Akwa Ibom and Cross River States, Nigeria.

Methodology

The research design adopted for this study was the ex- post facto design. The design is appropriate because the independent variables (individual to collaborative research, school based learning to conference training) already exist in the working lives of the Colleges of education lecturers. The dependent variable (application of research skills) 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 COE lecturers currently serving in two states in the 2015/2016 academic session. The number of lecturers, as at 2015/2016 academic session, was 1082. 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 colleges of educations, schools, academic qualification, professional rank and departments). The sample of the study was 550 COE lecturers. This means that 51.00% of the lecturers were sampled. A further break down showed that 291 (53.00%) were males and 259 (47.00%) were females; 241 (44.00%) lecturers were sampled from Federal College of Education Obudu, 137 (25%) from COE, Akamkpa and 172 (32.00%) from COE, Afaha Nsit; Professional ranking of the sample include chief lecturer, chief Assistant Lecturers, Principal Lecturers, Senior Lecturers, Lecturers 1, lecturer and lecturers, Assistant Lecturers, Graduate Assistant Lecturers, and instructors, from the various school of studies, 178 (32.37%) lecturers were sampled from School of Education, 74 (13.45%) from School of vocational Education, 115(20.91%) from School of Arts and Social Science and 183 (33.27%) from School of Science Education. The sample fraction was 2. This means that each person in the study sample represented two lecturers in the sample frame.

The questionnaire titled “Research Trends and Application of Research Skills Questionnaire” (RTARSQ) was developed and used for data collection. The instrument is made of section A, B, and C, for demographic data, two items seeking information on research trends and 54 items on lecturers’ application of research skills divided into nine dimensions. The lecturers that require no training are classified as skilled in application of research skills; little training needed are those that have difficulties in applying certain skills and those with much training needed are regarded as those with extreme difficulties in applying research skill. In both sections, the respondents are required to tick (✓) on the most suitable option apply to them against each item.

A Split half reliability method was adopted to estimate the reliability of the instrument. The method used is the correlation of the two halve 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 - .88 and over overall research skill was 0.84. After stratification, simple random sampling was used in selecting the respondents using the YES and NO approach. There were 550 completely filled and returned questionnaire, giving a return rate of 91.82%.

Procedure for data analysis

The statistical tool used for analysis of data was One-way analysis of variance (ANOVA) using Scientific Package for Social Statically (SPSS). It tested the influence of the independent variables (trends from individual to collaborative research and school based learning to conference training and application of research skills) on dependent variables (sub divided into nine and over

all application 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 application of research skill). All results were tested at .05 level of significance.

Results:

Hypothesis 1

There is no significant influence of movement from individual to collaborative research on application of research skills.

The independent variable in this hypothesis is individual to collaborative research, categorized into 4 groups as intra-department, inter-department, inter schools and inter colleges. The dependent variable is the nine dimensions and over all application of research skills of colleges of education lecturers. The statistical technique used to test this hypothesis is one-way-analysis of variance (ANOVA). The results of the analysis are presented in Table 1 and 2.

Table 1

Summary of descriptive statistics for the application of research skills based on movement from individual to collaborative research

S/No	Application of research skill variables	Groups (collaborative research)	N	X	SD
1	Problem identification skill	(1) Intra-department	261	10.920	5.153
		(2) Inter-department	110	12.091	3.418
		(3) Inter-school	124	15.597	4.269
		(4) Inter-colleges	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-school	124	17.460	5.040
		(4) Inter-colleges	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-school	124	14.234	4.691
		(4) Inter-colleges	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-school	124	13.847	5.072
		(4) Inter-colleges	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-school	124	13.839	4.625
		(4) Inter-colleges	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-school	124	15.395	3.975
		(4) Inter-colleges	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-school	124	17.774	.891
		(4) Inter-colleges	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-school	124	16.807	2.740
		(4) Inter-colleges	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-school	124	15.371	4.413
		(4) Inter-colleges	55	13.236	5.055
		Total	550	12.567	5.171
10	Overall application of research skills	(1) Intra-department	261	100.39	38.268
		(2) Inter-department	110	106.400	17.725
		(3) Inter-school	124	140.323	25.693
		(4) Inter-colleges	55	13.073	29.099
		Total	550	112.373	35.294

Table 2

Analysis of variance for the influence of the movement from individual to collaborative research on lecturers' application of research skills

S/N	Application 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			

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2	Questions/hypothesis formulation skill	Between Groups	1788.417	3	596.139	22.72	.00
		Within Groups	14320.618	546	26.228	9	0
		Total	16109.035	549			
3	Literature review skill	Between Groups	896.317	3	298.772	14.05	.00
		Within Groups	11605.021	546	21.255	7	0
		Total	12501.338	549			
4	Sampling technique skill	Between Groups	727.175	3	242.392	10.33	.00
		Within Groups	12800.280	546	23.444	9	0
		Total	13527.455	549			
5	Instrumentation development skill	Between Groups	661.100	3	220.367	10.20	.00
		Within Groups	11791.673	546	21.596	4	0
		Total	12452.773	549			
6	Use statistical tool skill	Between Groups	2015.735	3	671.912	31.94	.00
		Within Groups	11484.236	546	21.033	5	0
		Total	13499.971	549			
7	Computer application in data analysis skill	Between Groups	5277.831	3	1759.277	110.8	.00
		Within Groups	8663.761	546	15.868	72	0
		Total	13941.593	549			
8	Referencing skill	Between Groups	3232.224	3	1077.408	57.74	.00
		Within Groups	10187.574	546	18.659	3	0
		Total	1343.798	549			
9	Reporting writing skill	Between Groups	1440.613	3	480.204	3.805	.00
		Within Groups	13238.398	546	24.246		0
		Total	14679.011	549			
10	Overall application of research skills	Between Groups	14339.745	3	47313.248	47.67	.00
		Within Groups	54314.846	546	992.518	0	0
		Total	683854.591	549			

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

The result presented on Table 2 shows that five 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 application of research skills (F=47.670) where each higher than 2.61 at .05 level of significant with 3 and 546 degree of freedom.

Based on this result, the null hypothesis is 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 application 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 movement from individual to collaborative research on application of research skills.

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

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

Table 3
Fisher’s LSD multiple comparism analysis of the significance influence of movement from individual to collaborative research on lecturers’ application of research skills

Application of research skill	Level of collaborative research	Intra dep’t	Inter dep’t	Inter school	Inter colleges
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-school	4.677*	3.506*	15.597 ^a	2.509 ^b
	4. Inter-colleges	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-school	4.398*	4.205*	17.460 ^a	2.423 ^b

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	4. Inter-colleges	1.975* (MSW=26.228)	1.783 ^c	-2.423*	15.036 ^a
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-school	2.609*	3.361*	14.234 ^a	.621 ^b
	4. Inter-colleges	1.957 ^c (MSW=21.255)	2.709*	-.652 ^c	13.582 ^a
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-school	2.816*	2.843*	13.847 ^a	1.229 ^b
	4. Inter-colleges	1.588 ^c (MSW=23.4444)	1.255 ^c	-1.229 ^c	12.618 ^a
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-school	2.766*	2.33*	13.839 ^a	1.511 ^b
	4. Inter-colleges	1.254 ^c (MSW=21.596)	.682 ^c	-1.511 ^c	12.327 ^a
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-school	4.840*	3.950*	15.395 ^a	3.013 ^b
	4. Inter-colleges	1.826 ^c (MSW=21.033)	.936 ^c	-3.013*	12.382 ^a
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-school	7.866*	5.956*	17.774 ^a	4.538 ^b
	4. Inter-colleges	3.328* (MSW=15.868)	1.418 ^c	-4.538*	13.236 ^a
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-school	6.090*	4.952*	16.807 ^a	3.243 ^b
	4. Inter-colleges	2.847* (MSW=18.659)	1.709 ^c	-3.243*	13.564 ^{ba}
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-school	4.061*	3.316*	15.371 ^a	2.135 ^b
	4. Inter-colleges	1.926 (MSW=24.246)	1.182 ^c	-2.135*	13.236 ^a

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-school	40.123*	33.923*	140.323 ^a	21.250 ^b
	4. Inter-colleges	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.

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-school versus intra-department (t=4.398), inter-school versus inter-department (t=4.205), inter-colleges versus inter-department (t=-2.423) and inter-colleges versus intra-colleges (t=1.975). There is, however no significant pair-wise difference between inter-colleges versus inter-department (t=1.783). The result from the mean scores shows that inter-school (X=17.460) influenced lecturers’ skill in questions/hypotheses formulation skill more than those of inter-colleges (X=15.036), inter-department (X=13.255) and intra-department (t=13.061). That is, the more the inter-school researches, the more lecturers’ skill in questions/hypotheses formulation.

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-school versus inter-department (t=3.361), inter-colleges versus inter-department (t=2.709), inter- versus intra-department (t=2.609). There is, however no significant pair-wise difference between inter-department versus intra-department (t=-0.752) and inter-colleges versus inter-school (t=-.652). The result from the mean scores shows that inter-school (X=14.234) influence lecturers’ skill in literature review more than those of inter-colleges (X=13.582), intra -department (X=11.625) and inter-department (X=10.873). This is to say that the more the inter-school researches, the more literature 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-school versus inter-department (t=2.843), inter-school versus intra-department (t=2.816). There is, however no significant pair-wise difference between inter-colleges versus intra-department (t=1.588) and inter-colleges versus inter-department (t=1.255), inter-colleges inter school (X=-1.229), inter-department versus intra-department (t=.333). The result from the mean scores shows that inter-school (X=13.847) influenced lecturers’ skill in sampling technique skill more than those of inter-colleges (X=12.618), inter-department (X=11.364) and intra-department (X=11.031). That is means, the more the inter-school 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-school versus intra-department (t=2.766), inter-school versus inter-department (t=2.33). There is, however no significant pair-wise difference between inter-colleges versus inter-school (t=-1.229) and inter-colleges versus intra-department (t=1.588), inter-department versus intra-department (X=.573). The result from the mean scores showed inter-school (X=13.839) influence lecturers’ skill in instrumentation development skill more than those who researches among inter-colleges (X=12.327), inter-department (X=11.646) and intra-department (X=11.073). That is, the more the

inter-school researches a lecturers carried out, the more their skills 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-school versus intra-department ($t=4.840$), inter-school versus inter-department ($t=3.950$), inter-colleges versus intra-school ($t=3.013$). There is, however no significant pair-wise difference between inter-colleges versus intra-department ($t=1.826$) and inter-colleges versus inter-department ($t=.936$) and inter-department versus intra-department. The result from the mean scores shows that inter-school ($X=15.395$) influence lecturers' skill in use of statistical tool skill more than those of inter-colleges ($X=12.382$), inter-department ($X=10.556$). That is, the more the inter-school researches, the more 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-school versus intra-department ($t=7.866$), inter-school versus inter-department ($t=5.956$), inter-colleges versus intra-school ($t=-4.538$) and inter-colleges versus ($t=3.328$). There is, however no significant pair-wise difference between inter-department versus intra-department ($t=1.910$) and inter-colleges versus inter-department ($t=1.000$). The result from the mean scores shows that inter-school ($X=17.772$) influence lecturers' skill in computer application in data analysis skill more than those of inter-colleges ($X=13.236$), inter-department ($X=11.855$) intra-department ($X=9.908$). It means that the more the inter-school researches, the more lecturers' skill in Computer application in data analysis.

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

Reporting 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-school versus intra-department ($t=4.061$), inter-school versus inter-department ($t=3.316$), inter-school versus intra-department ($t=-2.135$). There is, however no significant pair-wise difference between inter-colleges versus intra-department ($t=1.926$) and inter-colleges versus intra-department ($t=.744$). The result from the mean scores showed that it was inter-school ($X=15.371$) influence lecturers' skill in reporting writing skill more than those of inter-colleges ($X=13.237$), inter-department ($X=12.055$) and intra-department ($X=11.310$). That is, the more the inter-school researches, the more the lecturers are skilled in reporting writing.

Overall application 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-school versus intra-department ($t=40.123$), inter-school versus inter-department ($t=33.923$), inter-colleges versus intra-school ($t=-3.250$). There is, however no significant pair-wise difference inter-department versus intra-department ($t=1.171$), inter-colleges versus inter-department ($t=1.000$) and inter-colleges versus inter-department ($t=12.673$). The result from the mean scores shows that inter-school ($X=140.323$) influence lecturers' skill in overall application of research skill more than

those of inter-colleges ($X=13.073$), inter-department ($X=106.400$) and intra-department ($X=100.39$). This implies that the more the inter-school researches carried out by lecturers, the more their skill in overall application of research skill.

Hypothesis two

There is no significant influence of school base to conference training for research on lecturers’ application of research skills.

The independent variable in this hypothesis is conference trainings for research, categorized into 4 groups as none, between 1-5 times, between 6-10 times and 11 times and above. The dependent variables are the nine dimensions of application of research skills of colleges of education lecturers which has nine dimension namely; problem identification skill, literature review skill, sampling technique skill, instrumentation skill, use of statistical skill, computer application in data analysis skill, referencing skill, reporting skill and overall components of application of research skills. The statistical technique used to test this hypothesis is one-way-analysis of variance (ANOVA). The result of the analysis was presented in Table 4 and Table 5.

Table 4

Summary of descriptive statistics for the application of research skills based on conference trainings

S/No	Application of research skill variables	Groups (collaborative research)	N	Mean	SD
1	Problem identification skill	(1) none	260	12.781	4.989
		(2) 1-5 conference attended	168	12.316	4.903
		(3) 6-10 conference attended	85	12.024	4.835
		(4) 11 and above conference attended	37	11.351	4.968
		Total	550	12.426	4.942
2	Questions/ Hypothesis formulation skill	(1) none	260	14.458	5.618
		(2) 1-5 conference attended	168	14.482	5.193
		(3) 6-10 conference attended	85	13.753	5.136
		(4) 11 and above conference attended	37	13.459	5.660
		Total	550	14.289	5.417
3	Literature review skill	(1) none	260	12.689	4.915
		(2) 1-5 conference attended	168	12.280	4.557
		(3) 6-10 conference attended	85	11.318	4.497
		(4) 11 and above conference attended	37	11.297	5.055
		Total	550	12.258	4.772
4	Sampling technique skill	(1) none	260	12.273	5.075

		(2) 1-5 conference attended	168	11.708	4.777
		(3) 6-10 conference attended	85	11.518	4.777
		(4) 11and above conference attended	37	10.892	5.363
		Total	550	11.891	4.964
5	Instrumentation development skill	(1) none	260	12.446	4.891
		(2) 1-5 conference attended	168	11.542	4.684
		(3) 6-10 conference attended	85	11.353	4.231
		(4) 11and above conference attended	37	11.486	5.162
		Total	550	11.936	4.763
6	Use statistical tool skill	(1) none	260	12.562	4.976
		(2) 1-5 conference attended	168	11.524	4.945
		(3) 6-10 conference attended	85	11.141	4.721
		(4) 11and above conference attended	37	12.297	5.125
		Total	550	12.007	4.959
7	Computer application in data analysis skill	(1) none	260	12.531	5.185
		(2) 1-5 conference attended	168	12.006	4.964
		(3) 6-10 conference attended	85	12.565	4.844
		(4) 11and above conference attended	37	12.838	4.868
		Total	550	12.396	5.039
8	Referencing skill	(1) none	260	12.954	4.993
		(2) 1-5 conference attended	168	12.214	4.920
		(3) 6-10 conference attended	85	12.365	4.800
		(4) 11and above conference attended	37	12.432	5.058
		Total	550	12.602	4.944
9	Reporting writing skill	(1) none	260	12.969	5.245
		(2) 1-5 conference attended	168	12.405	5.084
		(3) 6-10 conference attended	85	12.212	5.014

		(4) 11 and above conference attended	37	11.297	5.296
		Total	550	12.567	5.171
10	Overall application of research skills	(1) none	260	115.662	36.471
		(2) 1-5 conference attended	168	110.476	34.093
		(3) 6-10 conference attended	85	108.247	31.466
		(4) 11 and above conference attended	37	107.351	39.536
		Total	550	112.372	35.294

Table 5

Analysis of variance for the influence of conference trainings for research attended on lecturers' application of research skills

S/N	Application of research skill variables	Sources of variance	SS	Df	MS	F-ratio	p-value
1	Problem identification skill	Between Groups	91.275	3	30.425	1.248	.292
		Within Groups	13315.169	546	24.387		
		Total	13406.444	549			
2	Questions/hypothesis formulation skill	Between Groups	63.553	3	21.184	.721	.540
		Within Groups	16045.482	546	29.387		
		Total	16109.035	549			
3	Literature review skill	Between Groups	157.568	3	52.523	2.323	.074
		Within Groups	12343.770	546	22.608		
		Total	12501.338	549			
4	Sampling technique skill	Between Groups	92.344	3	30.781	1.251	.291
		Within Groups	13435.111	546	24.606		
		Total	13527.455	549			
5	Instrumentation development skill	Between Groups	130.163	3	43.388	1.922	.125
		Within Groups	12322.609	546	22.569		
		Total	12452.773	549			

Discussion

The finding revealed that there was a significant influence of movement from individual to collaborative research on application of research skills. Collaboration in research is as old as research itself. In collaborative research, a researcher poor skill (s) in a particular dimension can be complemented by another researcher's, thereby conducting acceptable and standard researches for knowledge creation and publication. The finding is supported by 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 so significant because the federal government and NCCE policies on lecturers' promotion depends on their number of publications. Probably movement from individual to collaborative research 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 application of research skills. School based leaning to conference training for research comes up once in a year or in a while. The training in conference takes just a day and individuals presentation cover the remaining period of the conference. This period is too short for any meaningful learning.

This finding contradicts that of Abels, Liebscher and Denman (2009) state who found out that workshop and conferences for training for research is necessary for update of research skills. They claimed that lecturers also had the opportunity to develop skills in movement from individual to collaborative research work and problem identification. They also developed their ability to discuss and report research findings".

Conclusion

From the result of this study, it can be concluded that lecturers 'movement from individual to collaborative research categorised in intra-department, inter-department, inter-schools and inter college enhanced application of research skills. In the other hand, school based leaning to conference training for research was categorised into none, 1-5, 6-10 and 11 and above attendances insignificantly enhance application of research skills in the nine dimensions under study among college of educations. On the part of conference training, it is so because most lecturers do not pay for conference training and therefore don't attend to improve on their research skills which is the main focused conference trainings.

Recommendations

To move the Colleges of Education in Nigeria forward in application of research skills towards knowledge creation, teaching and community services, the following recommendations should be urgently implemented:

- The Federal Government should consider movement from individual to collaborative research publication as criteria for promotion and advancement as this will encourage

movement from individual to collaborative research thereby improving application of research skills among lecturers of the same discipline and inter-disciplines.

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

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