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Effects of Professional Status, Subject Discipline and Computer Access on Computer Attitudes among Teacher Educators in Nigerian Colleges of Education

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Abstract: The study examines the effects of professional status, subject discipline and computer access in computer access on computer attitudes of lecturers in selected Nigerian Colleges of Education. A total of 265 College of Education teachers participated in the study by responding to a questionnaire and a computer attitudinal scale. The obtained information was analyzed using both descriptive and inferential statistics. Findings revealed that the computer attitudes of college teachers were somewhat positive with little variance. It was also revealed that subject discipline and computer access had effect on computer attitudes while professional status did not.

Key words: Computer attitudes, professional status, computer access, teacher educator subject discipline

INTRODUCTION

As Nigeria envisages a computer-rich classrooms envisioned by the National IT policy (2000). The four key elements of successful integration of IT into the classroom need be improved and made cohesive. These four key elements were identified by Aston[1] to be Curriculum, Hardware, Software and most importantly Teacher Education and Professional Development.

On Teacher Education, the National Council for Accreditation of Teacher Education[2] challenged higher education to incorporate technology across the entire teacher education programme, not just as a "Computer Literacy" class added to existing curriculum. This report emphasized that teacher education has the responsibility of preparing students in the technology-driven 21st century. Actually those requiring training are not only the teachers who will deliver the curriculum, other groups that must be targeted include teacher trainers within the country, because "today, teacher candidates will teach tomorrow as they are taught today" NCATE[2]. But if teacher trainers would benefit from training, their attitudes constitute a major factor[3]. Even upon training, teachers' positive attitudes toward computers are recognized as a necessary condition for effective computer use in classroom[4]. Computer attitudinal studies of teacher trainers therefore provide information about their readiness for and disposition towards integrating computers into the curriculum. Such information is needful in identifying where and who would be the targeted audience of computer literacy campaign and training.

Identification of factors affecting computer attitudes among teacher trainers would be of assistance in the diagnosis of any problem at hand and a prognosis of what step the National Commission of Colleges of Education or government could take in order to help teacher educators acquire favourable attitude. Furthermore knowing this factor would allow better direction of efforts to assist specific subject discipline and status. It will also assist in identifying leaders in peer learning.

It is on this note that this study seeks to investigate some factors affecting the computer attitudes of College of Education teachers in Nigeria. Colleges of Education are considered the starting point of enquiries of this nature because they produce greater portions of school teachers for primary and secondary schools. Also, in Nigeria, National Certificate of Education is the least nationally officially recognized teaching certificate. It is therefore judged orderly to commence the attitudinal investigations of teacher trainers from this level.

To this end, this study is designed to answer the following research questions.

1. What are the attitudes of College of Education teachers towards computer?
2. Does the professional status of College of Education teachers significantly affect their computer attitudes?
3. Does the subject discipline of College of Education teachers significantly affect their computer attitudes?

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4. What is the interactive effect of subject discipline and professional status of College of Education teachers on their attitudes toward computers?
5. What is the effect of College of Education teachers' computer access on their computer attitudes?

MATERIALS AND METHODS

Two hundred and sixty-five College of Education teachers randomly selected from five Colleges of Education were used as subjects. The colleges were:

1. Adeyemi College of Education, Ondo, Ondo State.
2. Osun State College of Education, Ilesa, Osun State.
3. Federal College of Education, Osiele, Abeokuta, Ogun State.
4. Adeniran Ogunsanya College of Education, Oto-Ijanikin, Lagos State.
5. Federal College of Education (Technical), Akoka, Lagos State.

The study made use of Selwyn-soh Computer Attitudinal Scale, a British scale originally designed by Selwyn[5] of the University of Cardiff and adapted for Singapore teachers by Soh[6]. Selwyn-Soh computer attitudinal scale is a 21-item Likert-format consisting of five sub-scales, namely affective component, perceived usefulness factor, behavioral factor, perceived control factor and defense factor. The scale, together with a questionnaire enquiring some demographic factors of the teacher educators was administered on them by the researchers over a short period of time.

The information collected was analysed using Analysis of Variance.

RESULTS

The general computer attitude of College of Education teachers appeared fairly good with a mean of $\bar{x}$=79.0 and relatively little dispersion (Table 1).

The seven teaching professional cadres in Nigerian College of education were collapsed into three as follows: Assistant Lecture, Lecturer III, Lecturer II as Junior Academic Cadre, Lecturer I and Senior Lecturer as Intermediate Academic Cadre and Principal Lecturer, Chief Lecturer and Reader constitute the Senior Academic Cadre.

The F value of 1.189 in Table 2 reveals no significant difference in computer attitudes across professional status.

Six subject areas were identified in the study. These include Art, Science, Vocational Education, Technical Education, Social Science and Core Education. The F value of 3.722 in Table 3 is significant at 0.05 level of significance implying that computer attitudes vary

Table 1: Computer attitudes of college of education teachers

N	$\bar{x}$	SD	Min	Max
265	79.00	10.20	44.0	105.00

Table 2: Effect of professional status on computer attitudes of college of education teachers

	Sum of squares	d.f	Mean square	F-value	p-value
Between groups	246.908	2	123.454	1.189	0.306
Within groups	27210.088	262	103.855		
Total	27456.996	264			

Table 3a: Effect of subject discipline on computer attitudes of college of education teachers

	Sum of squares	d.f	Mean square	F-value	p-value
Between groups	1840.449	5	368.090	3.722	0.003
Within groups	25616.548	259	98.906		
Total	27456.996	264			

Table 3b: Multiple comparisons of computer attitudes according to subject area

					95% Confidence interval	
(I) S.Area	(J) S.Area	Mean difference (I-J)	Std. Error	Sig.	Lower bound	Upper bound
1.00	3.00	4.2883	3.69630	0.247	-2.9903	11.5669
	4.00	2.7838	2.31220	0.230	-1.7693	7.3369
	6.00	1.7572	2.08554	0.400	-2.3496	5.8640
2.00	1.00	3.9836*	1.99362	0.047	0.0579	7.9094
	3.00	8.2719*	3.50584	0.019	1.3684	15.1755
	4.00	6.7674*	1.99362	0.001	2.8417	10.6932
	5.00	3.0946	1.84547	0.095	-0.5394	6.7287
	6.00	5.7409*	1.72562	0.001	2.3428	9.1389
4.00	3.00	1.5045	3.69630	0.684	-5.7741	8.7831
5.00	1.00	0.8890	2.18575	0.685	-3.4151	5.1931
	3.00	5.1773	3.61855	0.154	-1.9482	12.3028
	4.00	3.6728	2.18575	0.094	-0.6313	7.9769
	6.00	2.6462	1.94441	0.175	-1.1826	6.4751
6.00	3.00	2.5311	3.55891	0.478	-4.4770	9.5392
	4.00	1.0266	2.08554	0.623	-3.0802	5.1333

*The mean difference is significant at the .05 level; Core Education = 1, Science = 2, Technical = 3, Vocational = 4, Bus/Soc.sc = 5, Arts = 6

Table 4: The interactive effect of subject discipline and professional status on computer attitudes of college of education teachers

Source	Type III Dependent variable	Sum of squares	d.f	Mean square	F-value	Sig.
Corrected model	CADRE	21.527[a]	47	0.458	0.827	0.779
	Subject area	122.460[b]	47	2.600	0.741	0.890
Intercept	CADRE	399.768	1	399.768	721.429	0.000
	Subject area	1693.209	1	1693.209	481.343	0.000
Computer attitude	CADRE	21.527	47	0.458	0.827	0.779
	Subject area	122.460	47	2.606	0.741	0.890
Error	CADRE	120.247	217	0.554		
	Subject area	963.336	217	3.518		
Total	CADRE	923.000	265			
	Subject area	4313.000	265			
Corrected Total	CADRE	141.774	264			
	Subject area	885.796	264			

a. R squared =0.152 (Adjusted R. squared = -0.032); b. R squared =0.138 (Adjusted R. squared = -0.048)

Table 5a: Effect of computer access on computer attitudes

	Sum of squares	d.f	Mean square	F-value	Sig.
Between groups	2640.520	3	880.173	9.257	0.000
Within groups	24816.477	261	95.082		
Total	27456.996	264			

Table 5b: Multiple Comparisons of Computer Attitude According to Computer Access

(I) C.ACCS	(J) C.ACCS	Mean difference (I-J)	Std. Error	Sig.	95% Confidence interval Lower bound	Upper bound
2.00	1.00	2.2110	1.58361	0.164	-0.9073	5.3293
3.00	1.00	2.9012	2.55269	0.257	-2.1253	7.9277
	2.00	0.6902	2.67914	0.797	-4.5853	5.9657
4.00	1.00	7.4424*	1.42890	0.000	4.6287	10.2560
	2.00	5.2314*	1.64418	0.002	1.9938	8.4689
	3.00	4.5412	2.59069	0.081	-0.5601	9.6425

*The mean difference is significant at the 0.05 level

across the subject discipline. A further attempt was also made to locate the differences with the aid of LSD post hoc analysis (Table 3b).

From Table 3b, each of the mean difference of 3.9836, 8.2719, 6.7674 and 5.7409 is significant at 0.05 level of significance thus implying that Science teacher educators ($\bar{x}$=82.6) have more positive computer attitudes than their Core Education($\bar{x}$=78.6), Technical($\bar{x}$=74.3), Vocational ($\bar{x}$=75.8) as well as Arts ($\bar{x}$=76.5) counterparts.

From Table 4, it is observed that the interaction of subject discipline and professional status of College of Education teachers does not appear to affect their computer attitude significantly.

Computer access is free, restricted, occasional or entirely none. It thus follows from Table 5a that computer attitude is significantly affected by computer access.

From Table 5b the mean differences of 7.4424 and 5.2314 are each significant at 0.05 level of significance indicating higher computer attitude on teacher educators with Free access when compared with those of No and Occasional access.

DISCUSSION

From the fore going, the attitude of College of Education teachers towards computer was fairly positive. This might be due to increasing awareness of Information Technology in the society and increasing computer density in the Colleges of Education. The researchers observed a ratio of 2 1/2:1 of teachers to computer -a tremendous improvement on the past when the number of installed computers was estimated at 440,000 in Nigeria with a population of 115 million[7]. The use of computers in result processing and students' registrations has also made many teachers to appreciate the intricate processor that computers can carry out within a very short period. Even though teaching with computers is still an impossible sight in all of these colleges; college teachers would be ready at this stage to start integrating computers into the classroom if taught the skills. Furthermore, the study revealed that the professional status of the college teachers did not affect their computer attitudes.

This is somewhat opposed to what obtains in the business sector. Studies have shown that high business executives resisted the introduction of computers in the workplace as against the managers[8]. This was seen from power point of view. An executive's social class and way of life is dependent on retaining power-the loss of which during the computer learning period would be both embarrassing and destructive to his or her position. Thus, it was the anticipated opinions of the authors that computer attitude of college teachers would differ across cadre. Another reason why this was anticipated was because age is somewhat directly proportional to professional cadres of college of education teachers. It was therefore expected that age factor would affect the computer attitude of Senior Academic Staff as it is still widely thought that adults are naturally wary of computers reinforced by the popular axiom that "you can't teach an old dog new tricks".

Nevertheless, some other factors i.e. Income and Access may have compensated for this. Senior Academics tended to have better access to computers at work than their junior counterparts. This is because Senior Academics often occupy positions to which computers are attached. Also, higher income may have fostered computer ownership among them. Apart from these, power retention in the academics would not hinder acquisition or learning of new skills like computers, knowledge is dynamic and everyone is open to current trends no matter the cadre.

But subject discipline affects computer attitudes. The humanities and non-science related disciplines' do not have the same attitude as their science and technical based counterparts. It appears the humanities are still of the opinion that computers are scientists' machine. This feeling is not cadre dependent as it was observed that cadre and subject discipline does not interact to affect computer attitude.

CONCLUSION AND RECOMMENDATIONS

It seems, at present, that attitudinal problem towards computers is no more prominent among college teachers. The wide-ranging importance and implications of computer technology in education and other endeavours appear to have been recognized. There has not been much research done and data collected on this issue in Nigeria and many other third world countries. It is important to extend this investigation to university teacher educators and repeated overtime to see whether and how these attitudes change with time. To help college teachers' computer attitudes, resources need be allocated by the Federal Ministry of Education through the National Commission for Colleges of Education (NCCE) to build computer laboratories enriched with internet and educational software since it has been established by this study that the access to computers enhances positive attitudes. This is also supported by Yildir and Tsong[9].

Furthermore, training of college teachers not just for computer literacy but emphasizing competence in the integration of computers into instruction would be of tremendous benefit. This has hardly happened. Few of these teachers have taken the initiative of registering in available private computer schools around which offer little on classroom use of computers.

On how the teacher educators are to be trained, a formal training programme organized by the college authority in turns for different subject disciplines could start the process, this is necessary since the attitudes vary with subject discipline thus training together teachers of approximately equal attitudinal level would ensure better direction of efforts. NCCE had issued a circular of compulsory computer literacy for all college lecturers, assistance to acquire the said literacy should be provided since computer literacy is context dependent, the needed computer literacy for teachers trainers is not such that can be acquired from conventional computer schools around but such as delivered by teachers education curriculum planners and supervisors such as NCCE or individual college authorities (though with uniform curriculum across the country). Subsequently, an on-going training whereby a core of highly motivated teacher educators that would pass on their knowledge and pedagogical agenda onto their colleagues can ensue, thus fostering collaborative team learning, as proposed by Chen[10].

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