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**FACTORS INFLUENCING THE ACQUISITION OF COMPUTER-BASED TEST TRAINING BY CHEMISTRY STUDENTS OF ANAMBRA STATE COLLEGES OF EDUCATION**

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**ABSTRACT**

This study is based upon the conception that students perform poorly in computer-based examinations. The study therefore investigated on the factors that influence the acquisition of computer-based test training using chemistry education students in Anambra state Colleges of Education. In each of the factors identified there was no significant difference on the response of the students in both Colleges of Education. Concerted efforts by the students, themselves, trainers and students' institutions were advocated towards improving the training of CBT to enhance achievement in CBT examinations.

**Key Words:** Computer based training, assessment, formative examination

**INTRODUCTION**

The role of assessment is obvious in every teaching and learning. According to Jekayinfa (2012) when an assessment is given at the end of any exercise in form of practicals, tests, assignments and examinations is used to test the understanding of different teaching impacted

on any trainee. Assessment is inherently a process of professional judgment. This professional judgment is the foundation for assessment and as such needed proper understanding of a concept. Puger (2014) defined assessment as the process of identifying, gathering and interpreting information about students learning. It involves making reports on the learners' achievement over a given concept. Akoh (2018) viewed assessment inform of an examination which is a diagnostic process that measures an individual behaviour, motivation, attitudes and so on. This examination can be formative as well as summative.

Formative examinations occur throughout the learning process. It provides multiple opportunities for students to demonstrate attainment of identified targeted goals without being concerned about grading while summative examination is a high-stake type of assessment for the purpose of making final judgment about students' achievement and instructional method effectiveness. Summative examinations form an end-point that sums-up the performance of learners' level of achievement. Examples of summative examinations are chapter or unit tests, projects, end of the term or semester examinations, external examinations and so on.

Recently most of these summative examinations are done using computers which is also used in scoring multiple choice items. In most institutions of higher learning, computers are widely used to assess students summatively, especially in subjects with large population. New emerging technologies challenges the traditional ways of teaching and learning and the way education is managed.

According to Bonvert (2013) rapid communication had made an increased access to Information and Communication Technologies (ICT) and this had made learning a true lifelong activity. In response to this rising tide on the use of Information and Communication Technology (ICT) in educational sector all over the world, has brought to concern the awareness and the ease of accessing the facilities of computers in learning among the students particularly in institutions of higher learning. For this purpose, most of these institutions brought out a course as computer-based test when is handled by Afrihub and Information and Communication Technology centres situated in these institutions to train the students on the skills of computer, yet the ease of using computers in taking examinations has become a challenge among chemistry education students. Based on this, the study has carried out a research to identify the factors that influenced the computer-based test training among chemistry students of colleges of education in Anambra State.

These factors are classified into students-related factors which are the factors contributed by students themselves, teacher/lecturer-related factors which are factors that may be caused by these teachers/lecturers and school related factors which are the factors that may be contributed by students-own schools.

### **RESEARCH QUESTIONS**

Three research questions guided the study and they include:

1. Is there any difference in the mean response of chemistry students of Federal College of Education (T) Umunze and Nwafor Orizu College of Education Nsugbe on the influence of students-related factor on CBT (computer-based test) training?
2. Is there any difference in the mean response of chemistry students of Federal College of Education (T) Umunze and Nwafor Orizu College of Education Nsugbe on the influence of teacher/lecturer-related factor on CBT (computer-based test) training?
3. Is there any difference in mean response of chemistry students of Federal College of Education (T) Umunze and Nwafor Orizu College of Education Nsugbe on the influence of school-related factor on CBT (computer-based test) training?

### **HYPOTHESES**

Three null hypotheses were tested at 0.05 alpha levels.

1. There is no significant difference in the mean response of chemistry students of Federal College of Education (T) Umunze and Nwafor Orizu College of Education Nsugbe on the influence of students-related factor on CBT (computer-based test) training.
2. There is no significant difference in the mean responses of chemistry students of Federal College of Education (T) Umunze and Nwafor Orizu College of Education Nsugbe on the influence of teacher/lecturer-related factor on CBT (computer-based test) training.
3. There is no significant difference in mean response of chemistry students of Federal College of Education (T) Umunze and Nwafor Orizu College of Education Nsugbe on the influence of school-related factor on CBT (computer-based test) training.

### **RESEARCH METHODS**

The research adopted a descriptive survey design. This design was considered appropriate for the study because according to Nworgu (2015) “descriptive survey involves those studies which aim at collecting data on, and describing in a systematic manner the characteristics features or facts about a given population” (p.96).

The sample involved two hundred and twenty-eight third year chemistry students of Federal College of Education (T) Umunze and Nwafor Orizu College of Education Nsugbe. No sampling was done because the whole population was used since, the population can be managed. The instrument for data collection was an item questionnaire which has 4-point scale response of Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2 and Strongly Disagree (SD) = 1. The face validity of the instrument was determined while the reliability was established using Cronbach alpha and the coefficient of internal consistency was found to be 0.68. The research questions were answered using mean and standard deviation while the hypotheses were tested at 0.05 alpha levels using z-test.

**Table 1:** Mean Responses of Chemistry Students in FCE(T) Umunze and NOCE Nsugbe on Influence of Student-related Factors.

S/N	Items	Umunze N = 117		Nsugbe N = 111	
		Mean	SD	Mean	SD
1	Shallow knowledge of ICT programmes in primary and secondary schools.	3.40	1.79	3.36	1.80
2	Poor knowledge of ICT facilities in primary and secondary schools.	2.89	1.70	2.83	1.68
3	Poor use of ICT materials to the teachers of primary and secondary schools.	3.20	1.87	3.24	1.83
4	Students are not interested in the CBT exercise for examinations but only for their personal needs.	3.02	1.74	3.00	1.73
<b>Average mean</b>		<b>3.13</b>	<b>1.76</b>	<b>3.11</b>	<b>1.76</b>

**Ho1:** Table 2: Z-test on Student-related Factors Mean Responses of Chemistry Students in FCE(T) Umunze and NOCE Nsugbe.

Schools	N	Mean	Std. Dev.	z-Value	df	Sig. P>.05
FCE(T)	117	3.13	1.76	.069	226	
NOCEN	111	3.11	1.76			

Table 2 shows that chemistry students of FCE(T) Umunze had a slightly higher mean score (mean = 3.13; SD = 1.76), but the difference is found to be non-significant ( $z = .069$ ;  $df = 22$ ;  $p > .05$ ). This implies that hypothesis 1 is accepted.

### RESULTS

**Table 3:** Mean Responses of Chemistry Students in FCE(T) Umunze and NOCE Nsugbe on Influence of Teacher/Lecturer-related Factors.

S/N	Items	Umunze N = 117		Nsugbe N = 111	
		Mean	SD	Mean	SD
5	Students are not effectively supervised by their computer trainers during the training exercise.	3.42	1.54	3.42	1.59
6	Trainers do not give the students opportunity to interact with them before and after the training.	3.31	1.46	3.31	1.59
7	Students are not adequately exposed to the training exercise before embarking on the CBT examinations.	3.16	1.55	3.22	1.50

8	Majority of the trainers are not interested in the training exercise because they are not paid extra for the training exercise.	3.33	1.52	3.29	1.54
9	Majority of the trainers complain that they are not being motivated by their institutions for the exercise.	3.20	1.79	3.32	1.78
10	Majority of the lecturers and co-ordinators of the course involving CBT based examinations are not computer literate and as such could not help when a student have problems with the system.	3.09	1.78	3.10	1.68
11	Majority of the invigilators in CBT based examinations are not computer literate and as such could not help especially when a system develops fault in an examination hall.	3.11	1.78	3.09	1.56
<b>Average mean</b>		<b>3.23</b>	<b>1.63</b>	<b>3.25</b>	<b>1.61</b>

**Ho<sub>2</sub>:** **Table 4:** Z-test on Mean Response of Chemistry Students in FCE(T) Umunze and NOCE Nsugbe on Teacher/Lecturer-related Factors.

Schools	N	Mean	Std. Dev.	Z-Value	df	Sig. P>0.05
FCE(T)	117	3.23	1.63	.067	226	
NOCEN	111	3.25	1.61			

From Table 4, students of NOCE Nsugbe had a higher mean score (mean = 3.25; SD = 1.61), but the difference is also not significant ( $z = .067$ ;  $df = 226$ ;  $p > .05$ ). Hence, hypothesis 2 is rejected.

**Table 5:** Mean Responses of Chemistry Students of FCE(T) Umunze and NOCE Nsugbe on Influence of School-related Factors.

S/N	Items	Umunze N = 117		Nsugbe N = 111	
		Mean	SD	Mean	SD
12	The training period of one semester is rather too short.	3.50	1.87	3.52	1.70
13	Inadequate infrastructural facilities.	2.92	1.71	3.50	1.88
14	Inadequate computer and ICT facilities.	3.21	1.89	3.06	1.75
15	Lack of maintenance on available infrastructural facilities.	2.98	1.73	3.18	1.93
16	Lack of maintenance on available computers and ICT facilities.	3.74	1.73	3.58	1.87
17	Increased workload or course load on students.	3.00	1.93	2.90	1.87
18	Poor shortage of ICT personnel to help students.	3.34	1.83	3.22	1.82

19	Time allotted on the school time-table for the training is not enough.	3.56	1.79	3.74	1.78
20	Poor management of the ICT centres/Afrihub.	2.79	1.76	2.78	1.76
21	Lack of effective supervision by the school authority on ICT training centre.	2.83	1.82	2.79	1.81
22	Lack of effective monitoring by the school authority on ICT trainers and trainees.	2.91	1.78	2.81	1.67
<b>Average Mean</b>		<b>3.16</b>	<b>1.53</b>	<b>3.20</b>	<b>1.53</b>

**Ho<sub>3</sub>:** **Table 6:** Mean Z-test of School-related Factors Mean Responses of Chemistry Students in FCE(T) Umunze and NOCE Nsugbe.

Schools	N	Mean	Std. Dev.	Z-Value	df	Sig. P>.05
FCE(T)	117	3.16	1.53	0.13	226	
NOCEN	111	3.20	1.53			

From Table 6, chemistry students of NOCE Nsugbe obtained a higher mean score (mean = 3.20; SD = 1.53) than their counterparts (mean = 3.16; SD = 1.53). However, this difference is not significant ( $z = 0.13$ ;  $df = 226$ ;  $p > .05$ ). Hence, it is concluded that there is no significant effect. Thus, hypothesis 3 is not rejected.

### DISCUSSION AND RECOMMENDATIONS

The findings of this study revealed that some factors influence the CBT training of students and these influence the effective performance of these students in the computer-based-test (CBT) examinations. The finding also revealed that there is no significant difference in the mean responses of the three factors identified. This implies that chemistry students in both Colleges experience similar difficulties in the identified factors.

Based on these findings, institutions of higher learning should ensure that students are adequately exposed to CBT training since they have poor background knowledge of ICT before entering the school. Opportunities should also be given to interact with their trainers to help solve most of their doubts and problems.

Adequate infrastructural facilities, computers and ICT facilities should be provided and those available should be well maintained for effective learning. Moreover, lecturers handling the general study (G.S) courses with high population especially those that involve CBT examinations should be computer-literate towards improving students' acquisition of computer skills.

Moreover, students themselves should improve their attitudes towards CBT training. However, if these identified factors are met to some extent, improvement of learning process should be enhanced especially in the CBT training.

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