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STRATEGIES FOR EFFECTIVE TEACHING OF BUSINESS EDUCATION IN TERTIARY INSTITUTIONS IN ANAMBRA STATE

A. U. Okeke [1] & Isabella Anagbogu[2]
[1,2]*Department of Technology and Vocational Education, Nnamdi Azikiwe University*
au.okeke@unizik.edu.ng &Isabella.anagbogu@gmail.com

Abstract
The study ascertained business educators' rating of equipment maintenance strategies for effective teaching of business education in tertiary institutions in Anambra State. Two research questions guided the study and four hypotheses were tested at 0.05 level of significance. The study adopted the descriptive research design. The population of the study comprised 122 business educators in the six tertiary institutions in Anambra State. The instrument for data collection was a 22-item questionnaire structured on a 5-point rating scale of Very High Extent (VHE), High Extent (HE), Moderate Extent (ME), Low Extent (LE) and Very Low Extent (VLE). The instrument was validated by three experts in business education in Nnamdi Azikiwe University, Awka. To determine the reliability of the instrument, a pilot test was conduct. Test on reliability of the instrument using Cronbach Alpha method which yielded the scores of 0.73, 0.76, for clusters B_1 and B2 respectively. Descriptive statistics of mean and standard deviation was used to answer the research questions and determine the homogeneity or otherwise of the respondents' views. The hypotheses were analyzed with one way Analysis of Variance and t-test. Findings revealed that business educators rated to a high extent that preventive and corrective measures were effective equipment maintenance strategies for effective teaching of business education in tertiary institutions in Anambra State. Findings also showed that gender and institution type influenced the respondents' opinion. Based on these findings, the researchers recommended that administrators of business education programme in tertiary institutions should regularly organize training programme for business educators and technologist on preventive strategies for maintaining equipment in the business education programme.
Keywords. Equipment maintenance, strategies, teaching, Business Education.

Introduction

Education is an important instrument for the development of human capital of any nation. This is because education is the tool that is used to shape the mind of a child. According to the Federal Government of Nigeria (FGN) (2013), the goals of education includes the development of an individual into a morally sound, patriotic and effective citizen, total integration of the individual into the immediate community, the Nigerian society and the world, inculcation of national consciousness, values and national unity as well as the development of appropriate skills, mental, physical and social abilities and competences to empower the individual to live and contribute positively to the society. Okoro (2018) stated that education is the practice of teaching and learning, in a school system in particular. In Nigeria formal education is carried out at three levels; primary, secondary and tertiary.

The tertiary level of education is the highest level of education in Nigeria. The tertiary level of education is the engine room of human capital development. The world depends on her graduates

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from tertiary institutions to form a core part of the human capital that stimulates economic development. In this light, the goals of tertiary education which stated that the nation's tertiary institutions shall be the cradle of national development by producing graduates who are well equipped with the prerequisite knowledge and skills to function effectively in the real world (Federal Republic of Nigeria (FRN), (2013). Okoro (2018) opined that tertiary education is the training received by students at the Colleges of Education, Polytechnics and Universities. The business education programme is an academic programme offered at the tertiary level of education in Nigeria that is geared towards empowering its recipients with business skills.

The business education programme according to Okoli (2010) is an important part of general education which emphasizes skills and competency acquisition for use in offices and business-related occupations. Business education is generally recognized as an education for and about business because it does not only provide general awareness of the business world but also prepares students for professional careers in the world of work. According to Nwazor, and Onokpaunu (2015), the objectives of business education at all levels of education is to enable recipients to develop basic skills for personal use in the future; acquire basic knowledge and skills of business education; relate the knowledge and skills acquired to national development; develop basic skills in office occupation; prepare students for further training in business studies and provide orientation and basic skills with which to start a life of work for those who may not undergo further training. In order to achieve these laudable objectives, it is important that the business education programmes in tertiary institutions use the required equipments for teaching and learning.

Equipment are portable or heavy mechanical devices required for vocational and technical operations in the laboratories, workshops or field laboratories for skills acquisition (Uzoigwe, 2010). Equipment is fixed or movable items provided in the school to facilitate effective teaching and learning. Equipment is the instructional backbone for effective teaching in science, technology, engineering and vocational oriented courses. Equipment such as good and functional computers, typewriters, stop watches, tape recorder/consoles, photocopier, file trays, file cabinets, adding and listing machines, punching machine and perforators among others are used in business education programme (Onyesom, 2013). This equipment must be available, adequate and functional in order to achieve the laudable objectives of business education. However, Ubulom and Ogwunte (2017)observed that the supply of equipment such as typewriters and computers to business education departments is limited considering the increase in students' enrolment. Onyesom (2013) asserted that relevant equipment for teaching and learning of business education programmes are inadequate in educational institutions in Nigeria. Due to inadequate funding of vocational and technical education programmes, Uzoigwe (2010) posited that there is an alarming growth of non-functioning workshops and equipment in the area of business education. Amanchukwu, Stanley and Ololube (2015) opined that students offering business education are finding it difficult to acquire the needed skills and competencies of the business world as a result of inadequate equipment and other instructional resources. The present state of equipment in business education programmes could be responsible for the unemployability of business education graduates in the world of work.

One of the fundamental ways of reducing the negative effects of inadequate equipment is through maintenance. Maintenance is a systematic and continuous repair and care of item of equipment, so they remain operational for a long time. The European Federation of National Maintenance Societies in Agoha (2008) defined maintenance as all objective actions taken to retain or restore an item of equipment to a state in which it can perform the required functions. Maintenance involves inspecting, repairing and servicing of equipment for optimal functioning and effective performance. Equipment that

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receives adequate maintenance is less likely to breakdown or fails before, during and after usage. Effective equipment maintenance extends the lifespan of old and new equipment respectively. Ahuja and Khamba (2008) posited that equipment maintenance strategies include breakdown maintenance, preventive maintenance, predictive maintenance, corrective maintenance, computerization management systems, reliability centred maintenance, productive maintenance and total productive maintenance.

For the purpose of this paper, preventive measure strategy, corrective measure strategy, computer management system strategy and inventory control are taken into consideration. Preventive measure strategy is a type of maintenance that involves periodic inspection, lubrication, cleaning and testing of equipment used in the teaching and learning processes to avoid breakdown. Moore (2012) defined preventive maintenance strategy as an activity performed on a certain schedule to avoid breakdowns or deterioration of equipment. Moore further maintained that preventive measure strategy is used to delay the breakdown of equipment and significantly reduce the severity of any breakdown that might occur. On the other hand, corrective maintenance strategy is another type of maintenance strategy that is employed when there is a complete breakdown of equipment. Ogbuanya (2009) averred that corrective maintenance strategy is usually more costly than preventive measures because it is performed whenever the equipment stops working or starts failing. Alihayea (2012) expressed the view that actions, such as repairs, replacements or restoration will be carried out after the occurrence of the breakdown of equipment. Business educators have a direct responsibility of ensuring that equipment used in teaching are regularly maintained and secured from damage, theft and vandalism to enhance students' learning (Okoye, 2016). However, certain factors like gender and institutional type could influence business educators' opinion on the best equipment strategies to adopt for effective teaching of business education in tertiary institutions. However, these views are theoretical and have not been empirically proven in Anambra State. This study sought to empirically determine business educators' ratings of equipment maintenance strategies for effective teaching of business education in tertiary institutions in Anambra State.

Statement of the Problem

In this era of accelerated technological and industrial advancement, the abysmal state of dysfunctional and lack of modern instructional equipment needed to effectively carry out the teaching and learning of business education courses to realize the expected learning outcome, apparently portends a grave threat to the system. Suffice it to say that close observations from tertiary institutions in Anambra State, suggested that equipment for learning of business education programme seem to be inadequate and out-dated, and this could deny most of the students the opportunity to have some hands-on exercises that would enable them to acquire relevant skills to excel in their profession.

Sadly, there is no gainsaying that where equipment is not functional or adequately provided, teaching and learning of business education programme would suffer greatly. This phenomenon could lead to the production of poorly prepared, unskilled and unproductive graduates who could end up unemployable, and eventually resort to constituting themselves into nuisance and public menace. Cognizant of the factthat, the equipment required for teaching business education courses is quite expensive and in short supply demands for appropriate maintenance of available ones, in order to prevent the programme from becoming wholly theoretical. The situation highlighted above, among the seemly non-existent extensive empirical study on business educators' rating of equipment maintenance strategies needed for effective teaching and learning in the State seem to militate against the realization of the objectives of the programme. It is against this backdrop that this study aimed to

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ascertain business educators' rating of equipment maintenance strategies needed for effective teaching and learning in tertiary institutions in Anambra State.

Purpose of the Study

The purpose of this study was to ascertain business educators` rating of equipment maintenance strategies for effective teaching of business education in tertiary institutions in Anambra State. Specifically, the study sought to determine the rating of business educators on:

1. preventive measures as a strategy for equipment maintenance for effective teaching of business education in tertiary institutions in Anambra State
2. corrective measures as a strategy for equipment maintenance for effective teaching of business education in tertiary institutions in Anambra State.

Research Questions

The following research questions guided the study:

What is the rating of business educators on?

1. preventive measures as a strategy for equipment maintenance for effective teaching of business education in tertiary institutions in Anambra State?
2. corrective measures as a strategy for equipment maintenance for effective teaching of business education in tertiary institutions in Anambra State?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. Male and female business educators do not differ significantly in their mean ratings on preventive measures as a strategy for equipment maintenance for effective teaching of business education in tertiary institutions in Anambra State.
2. There is no significant difference in the mean ratings of business educators in universities, polytechnics and colleges of education on preventive measures as a strategy for equipment maintenance for effective teaching of business education in tertiary institutions in Anambra State.
3. Male and female business educators do not differ significantly in their mean ratings on corrective measures as a strategy for equipment maintenance for effective teaching of business education in tertiary institutions in Anambra State.
4. There is no significant difference in the mean ratings of business educators` in universities, polytechnics, and colleges of education on corrective measures as a strategy for equipment maintenance for effective teaching of business education tertiary institutions in Anambra State.

Methods

The descriptive survey research design was adopted for the study. The study was carried out in Anambra State. The State has 21 local governments. The population of the study comprised 122 business educators from public tertiary institutions in Anambra State which include Nnamdi Azikiwe University Awka, Nwafor Orizu College of Education Umunze, Chukwuemeka Odumegwu Ojukwu University Igbariam, Madonna University Okija and Federal Polytechnic Oko. The instrument for data collection was a structured questionnaire titled "Equipment Maintenance Strategies for Effective Teaching of Business Education Questionnaire" (EMSETBEQ) developed by the researcher based on information gotten from the review of related literature. The instrument has two sections: - A and B.

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Section A contained two items on the demographic data of the respondents. They are gender and type of institution. While Section B is broken into two clusters: B_1 and B_2 containing 11 items on prevent strategies and 11 items on corrective strategies of equipment maintenance for effective teaching of business education in tertiary institutions in Anambra State. The instrument was structured on a five-point rating scales of Very High Extent (VHE), High Extent (HE), Moderate Extent (ME), Low Extent (LE) and Very Low Extent (VLE). The instrument was validated by three experts in business education in Nnamdi Azikiwe University, Awka.

The reliability of the instrument was established by administering 20 copies of the questionnaire to 20 business educators from tertiary institutions in Enugu State who are not part of the population of the study in a pilot test. The reliability of the instrument was determined using Cronbach alpha co-efficient which yielded the scores of 0.73, 0.76, for clusters B_1 and B2respectively. 122 copies of the questionnaire were administered to the respondents in their institutions with the help of research assistant in the office of the Head of Department (HOD) in each institution. The research assistants in each institution were guided by the researcher on how to direct the respondents in filling the questionnaire efficiently. The research assistants in the HOD's offices of the various institutions helped to distribute the instrument to the lecturers, followed them up and retrieved the copies. This procedure enhanced the distribution and collection of 119 questionnaires. Descriptive statistics of mean and standard deviation was used to answer the research questions and determine the homogeneity or otherwise of the respondents' views. Any items with mean rating below 2.50 was regarded as high extent while any item between 2.50 and above is considered low extent. The hypotheses were analyzed with one way Analysis of Variance and t-test. If the calculated t-value is equal to or greater than the p-value, it wasaccepted. If otherwise, it wasrejected. Also, the hypotheses of no significant difference were accepted at 0.05 level of significance, if the calculated F-value is less than the table value. Otherwise, itwas rejected.

Results

The results are presented in the order of the research questions and the corresponding hypothesis.

***Research Question 1*:** What is the rating of business educators on preventive measures as a strategy for equipment maintenance for effective teaching in tertiary institutions in Anambra State?

Table 1

Respondents` mean ratings on preventive measures as a strategy for equipment maintenance for effective teaching

SN	Preventive Measures	Mean	SD	Remark
1	Carrying out routine maintenance activities on items of equipment	4.67	0.67	VHE
2	Inspecting equipment before use	4.19	0.45	HE
3	Inspecting equipment after use	3.97	1.00	HE
4	Adjustment of disposable parts on regular basis	4.24	0.72	HE
5	Replacement of disposable parts on regular basis	4.17	0.89	HE
6	Testing for signs of equipment overheating	3.98	0.72	HE
7	Proper storage of equipment to prevent degradation	4.18	0.87	HE
8	Cleaning all equipment with link free rags	4.04	0.76	HE
9	Lubricating equipment parts to avoid physical damages	4.25	0.78	HE
10	Reviewing performance of equipment used in teaching/learning	4.28	0.71	HE

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11	Updating records when changes are made to equipment	4.31	0.81	HE
	Cluster Mean	4.21		HE

Data in Table 1 shows that business educators rated all the items listed on preventive measures high extent except item one which is rated very high extent. The cluster mean score value of 4.21 indicates that overall, preventive measures is rated by business educator's high extent as a strategy for equipment maintenance for effective teaching in tertiary institutions in Anambra state.

***Research Question 2*:** What is the rating of business educators on corrective measures as a strategy for equipment maintenance for effective teaching in tertiary institutions in Anambra State?

Table 2
Respondents` mean ratings on corrective measures as a strategy for equipment maintenance for effective teaching

SN	Corrective Measures	Mean	SD	Remark
1	Rectifying causes of equipment breakdown	4.38	0.66	HE
2	Repairing damaged equipment parts	4.18	0.76	HE
3	Refurbishing damaged equipment items	3.85	0.99	HE
4	Training of equipment educators	4.13	0.81	HE
5	Greasing of equipment items on schedule	4.12	0.72	HE
6	Ensuring that moving parts of equipment are always well cleaned	4.61	0.61	VHE
7	Equipment manufacturers sending their sending their personel	3.92	0.94	HE
8	Overhauling of any equipment item functioning below capacity	3.93	0.84	HE
9	Eliminating the source of equipment failure	3.61	1.14	HE
10	Verifying specific type of equipment repair	3.69	0.93	HE
11	Proper arrangement serviced equipment after use	4.08	0.94	HE
	Cluster Mean	4.05		HE

Data in Table 2 shows that business educators rated all the items listed on corrective measures high extent except item 6 which they rated very high extent. The cluster mean score value of 4.05 indicates that overall, corrective measures is rated by business educator's high extent as a strategy for equipment maintenance for effective teaching in tertiary institutions in Anambra state.

***Hypothesis 1*:** Male and female business educators do not differ significantly in their mean ratings on preventive measures as a strategy for equipment maintenance for effective teaching in tertiary institutions in Anambra State.

Table 3
The t-test summary of the difference between the mean ratings of male and female business educators on preventive measures as a strategy for equipment maintenance for effective teaching

Source of variation	Gender	N	Mean	SD	α	z-Cal	Df	p- value	z.Crit	Decision
Preventive measures as a strategy	Male	66	46.21	2.78	0.05	0.291	117	0.771	1.960	Sig
	Female	53	46.36	2.65						

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Data in Table 3 shows that *p*-value is greater than the chosen significance level α = 0.05, *p* (0.771) > 0.05, at 117 degrees of freedom. This suggests that there is significant difference in the mean ratings of male and female business educators on preventive measures as a strategy for equipment maintenance for effective teaching in tertiary institutions in Anambra state. Therefore, the null hypothesis is rejected.

***Hypothesis 2*:** There is no significant difference in the mean ratings of business educators in universities, polytechnics and colleges of education on preventive measures as a strategy for equipment maintenance for effective teaching in tertiary institutions in Anambra State.

Table 4
ANOVA result of the difference in the mean rating of business educators in universities, polytechnics and colleges of education on preventive measures as a strategy for equipment maintenance for effective teaching

Preventive measures	Sum of Squares	df	Mean of Square	SD	F	p-val	Decision
Between groups	27.643	2	13.813	2.69	1.908	0.153	
Within groups	840.215	116	7.243				Sig
Total	867.849	118					

Data in Table 4 show that *p*-value is greater than the chosen significance level α = 0.05, p (0.153) > 0.05. This result indicates that there was significant difference in the mean ratings of business educators in universities, polytechnics and colleges of education on preventive measures as a strategy for equipment maintenance for effective teaching in tertiary institutions in Anambra State. Therefore, the null hypothesis is rejected.

***Hypothesis 3*:** Male and female business educators do not differ significantly in their mean ratings on corrective measures as a strategy for equipment maintenance for effective teaching in tertiary institutions in Anambra State.

Table 5
The t-test summary of the difference between the mean ratings of male and female business educators on corrective measures as a strategy for equipment maintenance for effective teaching

Source of variation	**Gender**	**N**	**Mean**	**SD**	**α**	**z-Cal**	**Df**	**p- value**	**z.Crit**	**Decision**
corrective measur	Male	66	44.05	3.18	0.05	1.912	117	0.058	1.960	Sig
es as a strategy	Female	53	45.08	2.56						

Data in Table 5 shows that *p*-value is greater than the chosen significance level α = 0.05, *p* (0.058) > 0.05, at 117 degrees of freedom. This suggests that there is significant difference in the mean ratings of male and female business educators on corrective measures as a strategy for equipment maintenance for effective teaching in tertiary institutions in Anambra state. Therefore, the null hypothesis is rejected.

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***Hypothesis 4*:** There is no significant difference in the mean ratings of business educators in universities, polytechnics and colleges of education on corrective measures as a strategy for equipment maintenance for effective teaching in tertiary institutions in Anambra State.

Table 6
ANOVA result of the difference in the mean rating of business educators in universities, polytechnics and colleges of education on corrective measures as a strategy for equipment maintenance for effective

Corrective measures	Sum of Squares	df	Mean of Square	SD	F	p-val	Decision
Between groups	17.683	2	8.842	2.95	1.013	0.366	Not Sig
Within groups	1012.065	116	8.725				
Total	1029.748	118					

Data in Table 6 shows that *p*-value is greater than the chosen significance level α = 0.05, p (0.366) > 0.05. This result indicates that there was significant difference in the mean ratings of business educators in universities, polytechnics and colleges of education on corrective measures as a strategy for equipment maintenance for effective teaching in tertiary institutions in Anambra State. Therefore, the null hypothesis is rejected.

Discussion of Findings

The result of the analysis of preventive measures as a strategy for equipment maintenance as shown in Table 1 indicated that business educators rate preventive measures as a strategy for equipment maintenance for effective teaching in tertiary institutions at a high extent. This is encouraging, out of the eleven items, ten of them were rated at a high extent while one (item one) was rated at a very high extent. These high extents indicate that inspecting equipment before and after use, carrying out routine maintenance activities on items of equipment, cleaning all equipment with link free rags, testing for signs of overheating etc are all effective preventive strategies for equipment maintenance. This is supported by the opinion of Uzoigwe (2010) who submitted that preventive measures strategy is the maintenance task undertaken by operational staff for the purpose of preventing the breakdown of an equipment or asset. This task involves cleaning, testing inspection, lubricating and routine checks. Similarly, Ado (2014), said preventive measures strategy helps in preventing the wear and tear or sudden failure of equipment components. Business educators on this basis need to develop the required competencies to use this strategy effectively.

Lin, Lee and Su (2015) in their study opined that if preventive strategy is effectively used for equipment maintenance, it will help in preventing the failure of equipment before it occurs thereby minimizing total maintenance costs.The findings of the study indicates that there is significant difference in the mean ratings of male and female business educators on preventive measures as a strategy for equipment maintenance for effective teaching and findings also indicated that business educators in tertiary institutions in Anambra state differ significantly in their mean ratings on preventive measures as a strategy for equipment maintenance for effective teaching as a result of type of institution disagreed with the findings of Okafor (2003) who discovered that there are careless use of school equipment as well as inadequate routine checks on equipment due to lack of school equipment maintenance and security interest and skills among male and female business educators and

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that if all the strategies for equipment maintenance are been put in place there will be less wear and tear and sudden failure of equipment component resulting to effective teaching in tertiary institutions.

The result of the analysis of corrective measures as a strategy for equipment maintenance as shown in Table 2 indicated that business educators rate corrective measures as a strategy for equipment maintenance for effective teaching in tertiary institutions at a high extent. This is encouraging, out of the eleven items, ten of them were rated at a high extent while one (item 17) was rated at a very high extent. This result indicates that business educators are of the opinion that rectifying causes of equipment breakdown, repairing damaged equipment parts, refurbishing damaged equipment items, and training of equipment educators amongst others are all effective corrective strategies for equipment maintenance.

This was supported by Ado (2014) who asserted that corrective maintenance strategy involves fault detection, fault isolation, fault elimination through adjusting, aligning, calibrations, reworking, removing, replacing or renovation. Aishayea (2012) enumerated other strategies as accurate identification of incipient problems, verification of repair, proper repair procedures, a complete repair procedures and the required labour skills, specific tools, parts and equipment. All these activities when properly undertaken help to keep the equipment items in a working condition to achieve educational goals.

The findings of the study showed that there is significant difference in the mean ratings of male and female business educators on corrective measures as a strategy for equipment maintenance for effective teaching and findings also showed that business educators in tertiary institutions in Anambra state differ significantly in their mean ratings on corrective measures as a strategy for equipment maintenance for effective teaching as a result of type of institution disagreed with the findings of Uzoigwe (2010) who in his study discovered that the available equipment in tertiary institutions are not religiously maintained and properly kept because business educators may not have adequate maintenance and security skills due to the nature of training they received.

Conclusion

Based on the findings of the study, the researchers concludes that application of preventive and corrective equipment maintenance strategies will be effective for teaching of business education in tertiary institutions in Anambra State. It is therefore imperative that business educators seriously apply preventive and corrective equipment maintenance strategies in the business education programme in tertiary institutions.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Administrators of business education programme in tertiary institutions should regularly organize training programme for business educators and technologist on preventive strategies for maintaining equipment in the business education programme.
2. Administrators of business education programme should partner with partner with private equipment maintenance firms so as to ensure that faulty equipment are fixed on time so as not to affect the teaching and learning process.

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