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**Abstract**

*The study sought for strategies for empowering construction technology education stakeholders through research. Two (2) research purposes, questions and null hypotheses were raised to guide the study. A Modified Delphi design was used, covering a population of 181 which comprise construction technology teachers, administrators of science and technology based institutions and construction technology professionals in Benue State. A Delphi panel of 45 was purposively sampled for the study and a 4-point scale 11 item questionnaire titled: Empowering Construction Technology Education Stakeholders (ECTES) was used as instrument for data collection. The descriptive statistics of mean and standard deviation were used to answer all the research questions whilst the One-way Analysis of Variance (ANOVA) was deployed to test the null hypotheses at .05 significance level. Findings from data analysed revealed amongst others that: Government need to set up construction technology research award council, agencies of government should regularly conduct training for construction technology education stakeholders on new trends in research, government and private organization should always provide grants for research in construction technology. Based on the findings, recommendations were made that: Government should establish construction technology research institute and construction technology research award council among many others.*

**Keywords:** Research, Empower, Construction Technology Education

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**Introduction**

One of the greatest challenges facing the Nigeria's educational system particularly, construction technology education is lack of sufficient documentation of research data. Even where few claim to have existed, the authenticity, validity and credibility are always in doubt. Construction technology as an important form of technology education cannot afford to consistently rely on fallacious data to make decisions as it borders on the further development, reshaping and advancement of the area. Generally, education entails problem solving. Individuals receive education of whatever kind to be able to surmount or tackle the challenges inherent within the environment. Buttressing further, Emaikwu (2013) pointed out that even the creator in his own wisdom did not reveal all things to mankind when he first created him. This is clearly manifested in the inquisitive nature of man from time immemorial to probe into the unknown aspect of his environment. Nworgu (2006) corroborated that in spite of the age-long attempts by man to fully comprehend his environment, what is in the know today about the environment still remains infinitesimal when compared with what is yet to be known.

Man's quest to unravel the unknown or solve problems within his/her environment point to the need for research to be frequently conducted. In fact, sometimes, more problems emerge when trying to solve others and this has kept man researching on a daily basis. Education wise, knowledge has been compartmentalized, and construction technology is one domain area. Construction technology education programmes provides an opportunity for students to learn the fundamentals of blueprint reading, estimation of building codes and ordinances, frame construction, roof framing, interior and exterior finishing and the safe operation and maintenance of tools and equipment (Don, Liz, James, Bob & Mike, 2013). According to Jaggar and Smith (2007), The main focus of construction technology education programme is to produce competent personnel that plans, designs, constructs, alters, refurbishes, maintains, demolishes and eventually repairs all kinds of buildings. There is no gain over stressing that construction technology education as a knowledge area is still evolving and confronted with numerous unresolved problems. Attempting to find lasting solutions to problems bordering on education has made it imperative for extensive research in the area.

Educational research according to American Educational Research Association (AERA, 2017) is the field of study that examines education and learning processes and human attributes, interactions, organizations, and institutions that shape educational outcomes. In the words of Emaikwu (2013), research is a process of arriving at dependable solutions to problems through planned and systematic collection, classification, analysis and interpretation of data. From its logical point of view, educational research is the application of scientific methods to problem-solving which involves careful observations, reliable measurements of phenomena, objective interpretation of facts, and validation of accepted theories or their revision based on new evidence (Osuala, 2001). Looking at research broadly, Shuttleworth (2008), allude that research include any gathering of data, information, and facts for the advancement of knowledge, whilst Creswell (2008) regard the concept to be a process of steps used to collect and analyse information to increase ones understanding of a topic or issue. According to Creswell, the steps involve posing a question, collecting data to answer the question and presenting answers to answer the question. The Merriam-Webster Online Dictionary defines research as *an studious inquiry or examination; especially investigation or experimentation aimed at the discovery and*



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interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws.

Having looked at these definitions of research by other experts, the authors are of the view that many have taken research to be a mere academic exercise. Others only think of the concept as an activity that must be carried as a precondition condition for been awarded degrees (Bachelor's, Masters and Doctorate) and in the end, copies are kept on the bookshelves. Well, other knowledge domain could afford to do so but not construction technology education. In construction technology education, researches are conducted to solve human challenges in the built-environment sector of the economy (Odu, 2010).

However, most of the researches carried out in construction technology education are what could be best described as arms -chair-researches'. Stakeholders in construction technology education (teachers, administrators, construction professionals) need to be properly empowered on how to carry out valid researches in construction technology. Babalola and Tiamiyu (2013) noted that empowerment is a multi-dimensional social process that helps people gain control over their own lives. It is a process that fosters power (that is, the capacity to implement) in people, for use in their own lives, their communities, and in their society, by acting on issues that they define as important. Construction technology research can be regarded as a viable instrument for the empowerment of individuals by imparting the requisite knowledge, skills and attitudes necessary for solving human challenges within the construction sector. The call for researches to have relevance to socio-economic development of the nation has never been as strongly advocated as it is being done in the present. This is because technology education as a form of education is targeted at solving human problems and the systematic way of achieving this is through carrying out valid researches.

Construction technology education exist to solve human problems in the housing and construction sector, conversely, research is the most suitable approach used for identifying and proffering solutions to whatever kind of human challenges. However, stakeholders in construction technology education have not been able to conduct ground breaking researches in Nigeria. Most of the researches conducted in technology education depend on unreliable data which robs such researches of the

desired credibility and authenticity. Yet, construction technology is one area that cannot afford to frequently rely on non-factual information. Reasons for this could not be completely divorced from lack of proper orientation and adequate knowledge about the nature of technology education researches. Other factors could be lack of funding and support from relevant organizations-private and public and the fact that stakeholders in construction technology education perceived research as a mere academic exercise rather than a problem solving venture. The proliferation of non-valid and authentic researches in technology education is worrisome, technology education trains individuals who in-turn provides essential services within the society. These services are connected with human lives; and the survival of the society cannot be hugely dependent on unrealistic researches, thus the need to fine tune strategies for empowering stakeholders in construction technology education with proper research skills and orientation.

### **Purpose of the Study**

The purpose of the study was to fine tune strategies for empowering construction technology education stakeholders through research. Specifically, the study sought to:

1. Determine the research challenges faced by construction technology education stakeholders;
2. Determine the strategies that can be put in place to empower construction technology education stakeholders through research.

### **Research Questions**

The following research questions were raised for the study:

1. What are the research challenges faced by construction technology education stakeholders?
2. What are the strategies that can be put in place to empower construction technology education stakeholders through research?

### **Research Hypotheses**

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

- H<sub>01</sub>:** There is no significant difference among the responses of administrators of science/technology based institutions, construction technology teachers and construction professionals on the research challenges faced by construction technology education stakeholders.

**H<sub>01</sub>:** There is no significant difference among the responses of administrators of science/technology based institutions, construction technology teachers and construction professional on the strategies that can be put in place to empower construction technology education stakeholders through research.

### Methodology

A Modified Delphi design was used, covering a population of 181 construction technology education stakeholders in Benue State. A Delphi panel of 45 was purposively sampled for the study and a 4-point scale 11 item questionnaire was used as instrument for data collection. In line with the purpose of the study, the descriptive statistics of mean and standard deviation were used to answer all the research questions whilst the One-way Analysis of Variance (ANOVA) was deployed to test the null hypotheses at 0.05 significance level. Bench mark means score was  $4+3+2+1/2 = 2.50$ . Items with mean score of 2.50 and above were considered and those with means score of 2.49 and below were not considered. When *F-ratio*, the null hypothesis was rejected otherwise, the null hypothesis was retained. The researchers conducted the analysis with the aid of Statistical Package for Social Sciences (SPSS) Version 20.

### Results

**Research Question One:** What are the research challenges faced by construction technology education stakeholders?

**Table1: Mean and Standard Deviation of Construction Professionals, Administrators and Technology Teachers on Research Challenges faced by Construction Technology Education Stakeholders (n = 45)**

S/N	Perceived Challenges	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$	$\bar{X}_4$	$SD_t$	Remark
1	Funds for carrying out construction technology education researches are rarely provided	3.46	3.20	3.60	3.41	0.66	Considered
2	Lack of construction technology education specific research grants and organizations	3.23	3.00	3.66	3.30	0.83	Considered
3	Non-availability of competent researchers in the area of construction technology education	2.84	2.86	3.26	3.00	0.61	Considered
4	Non-existence of construction technology education specific research council, agencies and institutes	3.38	3.40	3.26	3.34	0.48	Considered
5	Perception of construction technology	3.53	3.53	3.46	3.51	0.55	Considered



education researches as mere academic activities

6 Lack of commitment on the part of critical stakeholders 3.46 3.40 3.40 3.41 0.54 Considered

**Grand Mean & Standard Deviation 3.33 0.61 Considered**

**Key:**  $M_1$  - Mean of construction professionals,  $M_2$  - Mean of administrators,  $M_3$  - Mean of Technology teachers,  $M_4$  - Average Mean,  $SD_1$  - Average Standard Deviation

Results of data presented in Table 1 show that respondents considered that lack of funds, grants and organization, non-availability of competent researchers and lack of commitment among others as the challenges associated with research among stakeholders in construction technology education.

**Research Question Two:** What are the strategies that should be adopted to empower construction technology education stakeholders through research?

**Table 2: Mean and Standard Deviation of Construction Professionals, Administrators and Technology Teachers on Strategies to Empower Construction Technology Education Stakeholders through Research (n = 45)**

S/N	Perceived Strategies	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$	$\bar{X}_4$	$SD_1$	Remark
1	Establishment of construction technology education research institute	3.38	3.33	3.10	3.27	0.73	Considered
2	Regular training of construction technology education stakeholders on research trends	2.92	3.06	2.60	2.86	0.74	Considered
3	Establishment of construction technology education research award council	3.30	3.20	3.13	3.20	0.70	Considered
4	Institution of construction technology education research grants and organization	3.07	3.06	3.13	3.09	0.71	Considered
5	Creating awareness on the importance of construction technology education research among critical stakeholders	2.92	3.00	3.40	3.11	0.76	Considered
<b>Grand Mean &amp; Standard Deviation</b>						<b>3.11</b>	<b>0.73 Considered</b>

**Key:**  $M_1$  - Mean of construction professionals,  $M_2$  - Mean of Administrators,  $M_3$  - Mean of Technology teachers,  $M_4$  - Average Mean,  $SD_1$  - Average Standard Deviation

Results of data presented in Table 2 show that respondents considered among others the establishment of construction technology education research institute, research

substantive construction technology education targeted research institutes, award councils and grants among many others that are in place specifically for the promotion and advancement of researches in the area of construction technology education. Recall that no one would want to engage in an unrewarding venture typical of the Nigerian people's culture. Putting in place construction technology education award council to give incentives to deserving construction technology education researches/researchers, stakeholders in the area will be motivated to embark on more ground breaking researches in construction technology education.

### **Conclusion**

Judging from the findings of the study, it can be concluded that lack of competent research personnel, funding and construction technology education research grants are some the challenges facing construction technology education stakeholders as regards to research. Also, it can be further concluded that suggested strategies such as establishment of construction technology education research institutes and award council among many others if adopted will go a long way in empowering construction technology education stakeholders to conduct ground breaking researches.

### **Recommendations**

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

1. Government and other relevant partners should always provide adequate funds and conduct training for construction technology education stakeholders on new trends in research.
2. Government should establish construction technology education focused research institutes, award council and institute construction technology education research grants. This will go a long way in motivating the interest of stakeholders to embark on ground breaking researches in construction technology education.

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