

Sustaining Building Construction Technologists Self-Employment Through Competency Based Training

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ABSTRACT: *The study determined competency based training as a practical tool for sustainable self-employment of building construction technologists in Enugu state. Two research questions were answered and two hypotheses were tested at 0.05 level of significance. Descriptive survey design was adopted for the study. The population for the study was 115 practicing building construction technologists. Instrument for data collection was a structured questionnaire. Two experts validated the instrument for data collection. The internal consistency of the instrument items was determined by the use of Cronbach alpha reliability method and 0.84 reliability coefficient was obtained. The data generated were analyzed using mean to answer research questions while t-test was used to test the hypotheses. Findings revealed that competency based training have the potentials to foster and sustain self-employment of building construction technologists. It can sustain self-employment of building construction technologists by equipping them with common building construction competencies such as in-depth knowledge of construction practice, building drawing and interpretation competencies, building performance analytical competency and, determination of building materials behaviours among others. It was recommended that strong partnership between training institutes and dynamic building construction industries should be encouraged. This partnership would provide an environment for students to interact with experts such that, up-to-date competencies that meets labour needs would be transmitted to participating learners.*

KEYWORDS: competency-based training, building construction technologist, self-employment, sustainability.

INTRODUCTION

Competency based training (CBT) is an educational approach which is centered on skill development and acquisitions (Makhatini, 2018). It is a new research area that is being projected

by researchers in disciplines with bias in industrial technology to enhance hands on-practical learning. CBT focuses on the demonstration and acquisition of specific and generic skills and competencies required for a particular job or vocation. Unlike the traditional methods of training skilled workforce which relied heavily on theoretical knowledge, competency-based educational training emphasizes the power of practical skills and its application in real-world context (Makhatini, 2018). Competency-based training is gaining ground speedily in the training of technologists in the fields of vocational and technical education, engineering, development of professional programmes and workforce training initiatives in the western clime.

Competency-based training was defined by Billet (2015) as an approach to learning and skill development that focuses on the mastery of specific skills or competencies rather than the completion of predetermined curriculum or the accumulation of credits or grades. CBT is designed to ensure that learners acquire the necessary knowledge, skills and abilities to perform specific tasks or duties effectively. In this type of training programme, the concern of the curriculum developers is on demonstrating proficiency in predetermined competencies or learning outcomes (Govender & Wait, 2018). These competencies are typically defined based on industry needs and standards of operation, job requirements or specific learning outcomes. Learners progress through the programme by successfully completing assessments that evaluate their mastery of each competency. Olabiyi, & Ipinlaye (2019) reported that competency based training is fast gaining ground in training institutions because of its ability to improve the prospects of its learners in several ways including;

Mastery orientation: It provides learners with opportunity to demonstrate mastery of each competency before advancing to the next level or stage.

Personalizes learning: Learners exposed to this type of training progress at their own pace and can focus on areas where they need improvement.

Flexible learning pathways: learners are provided with multiple pathways to achieve mastery of competency. It allows learners to choose their learning methods and resources at will.

Real-world application: competencies are often designed to be applicable in real-life situations, preparing learners for practical application of their skills.

CBT provides a learner-centered approach that focusses on tangible skills and ensures that individuals are prepared for the demands of specific industries or job roles. It is a common fact that industries are seeking for individual building construction technologists with relevant skills and qualifications for employment. At the same time, it has become a paradox that large number of universities and allied institutions produces large number of graduates that go jobless yearly irrespective of the constant complain of industries over lack of competent job seekers. The above assertion made Olabiyi & Ipinlaye (2019) to report that industrial technical education students must be technically competent and well equipped with complementary life skills to be able to secure either industrial employment or maintain self-employment. It is in line of the forgoing, that

the researcher examined the fundamental principle of competency based training. Competency based training main principle is to ensure that individuals learners are able to perform specific tasks seamlessly in a specified job setting. Exposing building construction technologist through competency based training would result to the possession of the right skills combination necessary to maintain self-employment.

Self-employment according to Ashforth (2014) refers to work arrangement in which an individual operates their own businesses independently. Individuals in self-employment are responsible for the management of their business activities. They source for their clients/customers and provide products and services. Self-employment offers certain level of independence and autonomy. It can be pursued on a full time bases or part-time and it can involve working with team of one's employers. Self-employment has the potential for higher earnings and provides individuals with the opportunity to shape their own careers and build businesses based on strengths and interests. However, a self-employed building construction technologist has lots of roles as well as challenges to manage in order to keep afloat in the vocation.

Building construction technologist plays crucial role in the construction industry. they contribute to the planning, development and maintenance of buildings and infrastructures (Deb & Singh, 2014). They possess a combination of technical knowledge, problem-solving abilities and practical skills. A competent building construction technologist have rich possession of architectural drafting and design, project management, robust knowledge of building codes & regulation (Jackson, 2015). Other skills and competencies basically acquired through competency-based training include, solid understanding of construction materials, technique and process, knowledge of building systems such as heating, ventilation and air-conditioning (HVAC) and building information modelling (BIM) amongst others. The acquisition of these competencies provides building construction technologist with the necessary skills to contribute to the successful planning, design, construction and maintenance of buildings and other infrastructural projects. Hence a competent building construction technologist is a potential job creator.

The present state of competency acquisition by building construction technologist in Enugu state has not been promising irrespective of numerous number of educational training institutions that trains learners theoretically and on-the hand experiment. Efforts to close this gap necessitates the need to provide other training methods that will supplement the lecture-based training which has limitations. Thus, the need for this study.

Statement of the Problem

Skills and competencies acquisition, knowledge & experiences, attitudes /practices dominated the Technology and Vocational Education (TVE) curriculum of Nigerian universities. TVE curriculum was designed in such a manner as to equip the graduates of the programme for industrial relevance and comforting self-employment upon the completion of the programme. Irrespective of the

highlighted laudable objectives of the programme, they exist high rate of unemployment of TVE graduates (Ugwuoke, Ezeji, Edeh, & Etonyeaku, 2016). The cause of unemployment as reported by Ugwuoke et al included: lack of appropriate skills and competencies to carry out specified job designs, poor problem solving approaches resulting from student's inability to make seamless transitions between theories and practices. The apparent lack of appropriate skills and competencies among TVE-building construction technology graduates is due to the deployment of lecture teaching method which is characterized with theorization that does not cater for diverse learning styles.

To reverse the above trend, they would be need to reposition TVE- building construction technology programme back to its fundamental responsibility of preparing individuals for work. It was in order to bridge this gap that industrial placement was introduced in the education of learners with bias in engineering and technology to serves as a tool for acquiring appropriate work competencies and skills. However, research evidence on the resourcefulness of industrial placement in fostering employability competencies on TVE- building construction technology graduates suggests its unsatisfactory state in helping students acquire the necessary work competencies (Olabiyi, et al, 2019). Is it therefore necessary to examine the potentials of competency-based training as a complementary training style that will improve learner's competency acquisition for self-employment? This question constitutes the problem to which the study sought to address.

Purpose of the Study

The main purpose of the study was to examine competency based training as a practical tool for training sustainable self-employed building construction technologists in Enugu state, Nigeria. Specifically, the study sought to determine:

1. Common building construction technology competencies acquired through exposure to competency based training for sustainable self-employment.
2. Potentials of competency based training in sustaining self-employment of building construction technologists in Enugu State.

Research Questions

The following research questions guided the study:

1. What are the common building construction technology competencies acquired through exposure to competency based training for sustainable self-employment?
2. What are the potentials of competency based training in sustaining self-employment of building construction technologists in Enugu State?

Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance:

H0₁: There is no significant difference in the ratings of male and female building construction technologists on the common building construction technology competencies acquired through exposure to competency based training for sustainable self-employment

H0₂: There is no significant difference in the ratings of male and female building construction technologists on the potentials of competency based educational training in sustaining self-employment of building construction technologists in Enugu State.

METHOD

Descriptive survey design approach was adopted for the successful conduct of the study. The choice of this research design agrees with Eze (2015) who claimed that descriptive survey design is useful in exploring people's perceptions, opinions and preferences towards problems. The design style also ensures extensive flexibilities in data collection and analysis. The study covered Enugu State. Enugu State is predominantly rural and agrarian, with a substantial of its working population engaged in farming, trading and provision of services such as building construction. A total of 115 registered building construction technologists formed the population for the study. There was no sampling because the population was manageable. The instrument for data collection was a 25 item structured questionnaire consisting of three sections. Section A sought personal information from respondents which included; gender, rank, qualification, and years of experience. Section B specifically aimed at determining the common building construction technology competencies acquired by building construction technologists. Section C was aimed at determining the potentials of competency based training in sustaining self-employment of building construction technologists. The questionnaire was structured along five point likert scale. Draft copies of the instrument were given to two practicing Engineers in the Departments of Public Building and Lands/Housing Development of Ministry Works Enugu State to ensure the validity of the instrument. The reliability of the instrument yielded Cronbach alpha value of 0.84. The data analysis was carried out using SPSS v-25. Raw data was first coded and fed into the SPSS programme. Mean, standard deviation and t-test statistic were used to analyze the data. The cut-off set for accepting or rejecting an item was set at 3.50. Hence, items with mean values of 3.50 and above were accepted while, items below mean value of 3.50 were rejected. The hypotheses were tested at 0.05% level of significance. whenever the t-value was equal or greater than the p-critical (0.05), the null hypothesis was accepted. The null hypotheses were rejected when t-value becomes less than the p-critical value. The instruments return rate was 100%.

RESULTS

Table 1: Mean and SD ratings of male and female building construction technologists on the common building construction technology competencies acquired through exposure to competency based training. (N=115)

S/N	Item statements	Mean	SD
1.	Knowledgeable in interpreting building codes & regulations	4.09	0.85
2.	Knowledgeable in engineering principles	4.09	0.66
3.	Knowledge of building materials	4.31	0.65
4.	Knowledgeable in construction practice	4.17	0.69
5.	Communication & collaboration competent	2.95	0.77
6.	Proficiency in creating and interpreting building drawings	4.18	0.69
7.	Knowledgeable in project management principles	4.08	0.85
8.	Ability to prepare technical reports	2.90	0.76
9.	Knowledgeable in smart building principles	4.08	0.85
10.	Proficiency in building systems such as HVAC	4.17	0.69
11.	Proficiency in analysis of building performances	4.05	0.85
12.	Construction site knowledge & protocols	4.31	0.63
13.	Knowledgeable in green house construction	2.90	0.78
14.	Knowledgeable in building information modelling (BIM)	4.17	0.70

Table 1 shows the responses of building construction technologists on the common building construction technology competencies acquired through exposure to competency based training. The respondents agreed to all the items shown in the table 1 except items 5, 8 & 13. The findings based on the 3.50 baseline for agreement, revealed that building construction technologists shared a common opinion on the common building construction competencies such as good knowledge of construction practice, good knowledge of building material behaviour and many more as vital in sustaining self-employment of building construction technologists in Enugu State.

Table 2: t-test on the mean ratings of male and female building construction technologists on common building construction technology competencies acquired through exposure to competency based training

Building technologists	N	Mean	Std. Deviation	t-test	df	Sig.	Dec.
Male	96	3.93	0.38	1.743	113	0.192	Do not reject H ₀₁
Female	19	3.77	0.28				

The t-value for the difference in mean ratings of male and female building construction technologists on common building construction competencies acquired through exposure to competency based training for sustainable self-employment in Enugu state was 1.743 significant at 0.192 level of significance. This value is higher than the set level of significance of 0.05 for the study. The null hypothesis is therefore not rejected. This implies that building construction technologists hold same opinion on the common building construction technology competencies that is acquired through exposure to competency based training.

Table 3 : Mean and SD ratings of male and female building construction technologists on the potentials of competency based educational training in sustaining self-employment of building construction technologist in Enugu State.

(N=115)

S/N	Item statements	Mean	SD
15.	Development of comprehensive skills	4.07	0.85
16.	Provides specialization opportunities	4.08	0.66
17.	Ensures quality assurance	2.91	0.78
18.	Provides adaptability to industry trends	4.10	0.86
19.	Makes building technologists relevant	4.09	0.65
20.	Provides entrepreneurial skills	4.10	0.66
21.	Provides networking opportunities	2.94	0.78
22.	Fosters recognition and certification	2.85	0.87
23.	Provides marketability	4.10	0.64
24.	Provides successful self-employment	4.31	0.66
25.	Provides continued professional development	4.00	0.85

Table 3 shows respondents mean rating on the potentials of competency based educational training for sustainable self-employment, using the 3.50 cut-off point as basis for agreement on the

potentials. From the mean responses it would be seen that the respondents agreed on items 15, 16, 18, 19,20, 23,24 & 25 as potentials of CBET. The respondents did not agree on items 17, 21 & 22.

Table 4: t-test on the mean ratings of male and female building construction technologists on the potentials of competency based educational training in fostering sustainable self-employment of building construction technologists.

Building Technologist	N	Mean	Std. Deviation	t-test	df	Sig.	Dec.
Male	96	3.81	0.36	0.721	113	0.612	Do not reject H ₀
Female	19	3.74	0.39				

The t-value for the difference in mean ratings of male and female building construction technologists on the potentials of competency based educational training in fostering sustainable self-employment of building construction technologist in Enugu state was 0.721 significant at 0.612 level of significance. This value is higher than 0.05 level of significance set for the study. The null hypothesis is therefore not rejected. This implies that building construction technologists agreed on the itemized potentials of CEBT in fostering sustainable self-employment of building construction technologist in Enugu State.

DISCUSSION

The study sought to establish the utilization of competency based training as a complementary training tool, required for the training of building construction technologists in higher institutions for sustainable self-employment. Findings from the study indicated that competency based training is appropriate for seamless acquisition of the following building construction technology competencies: ability to determine building materials behaviour, ability to interpret building codes & regulations, and knowledge of construction practice. Other competencies acquired through CBET include; ability to analyze building performances, knowledge of building information modelling and construction site protocols. The findings agree with what Sjo, & Hellstr—om, T (2019) reported that competency based training promotes critical thinking, problem solving, and prepares its learners with skills for success in the complex world of work. Furthermore, Jackson (2015) reported that combining traditional academic study or formal learning, with learner's exposure to the world-of-work via hands-on experiment fosters employability competencies critical to learner's entry into the workforce, thereby, leveraging career management competencies.

Findings of the study also revealed that competency based training have the potentials to sustain self-employment of building construction technologists. Respondents agree that the following potentials; exposure to industrial needs & trends, career pathway revelation, development of comprehensive skills and provision of employment market are precursors to self-employment and are acquired through experience. The finding is congruent with Nwachukwu, Bakare & Jika, (2009) who reported that competencies required for sustainable self-employment are acquired through experience and training.

The findings of the study revealed no significance difference between male and female building construction technologists on common building construction competencies needed for sustainable employment, and potentials of CBET in fostering sustainable self-employment. This would suggest that building construction technologists have same perception about the concept of CBET as a tool for sustaining self-employment. The finding is consistent with the study conducted by Makhatini (2018) who reported no significance difference on common work integrated competencies acquired for sustaining self-employment. The clear implication of the findings reveals the need by training institutes in Enugu State to adopt CBET as a complementary tool for training building construction to boost employability index of its graduates.

CONCLUSION

The study sought to validate the concept of competency based training as a practical tool for sustainable self-employment of building construction technologists in Enugu state. The findings suggested that CBET should be adopted as a complementary training tool for the training of building construction technologist in universities and other higher institutions. This is because CBET has the potentials to reveal students career pathways, develops student's generic skills and sustain employment opportunities. The study also highlighted common building construction technology competencies whose acquisition via CBET enhances building construction technologist's practical performances. It is the believe of the researcher that if the concept of competency based training is adopted by building construction technology training institutes tutors, it would help students to develop career path and practical skills which are requisite for self-employment.

Recommendations

The following recommendations was made based on the findings of the study;

1. Competency based training should be encouraged by building construction technology curriculum developers to address ever changing building construction technology competencies demands.
2. Effective partnership between training institutes and relevant building construction industries should be encouraged. This would provide an environment for learners to

interact with experts such that, up-to-date competencies that meets labour needs would be transmitted to participating learners.

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