

INNOVATIVE PRACTICES REQUIRED FOR PROMOTION OF GREEN JOB
OPPORTUNITIES AMONG TECHNICAL VOCATIONAL EDUCATION AND
TRAINING GRADUATES IN THE 21ST CENTURY

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Abstract

This study examined the innovative practices required for the promotion of green job opportunities for Technical Vocational Education and Training graduates in the 21st Century. Two research questions and two null hypotheses guided the study. The study used survey research design and was carried out in public universities in South-East Nigeria. The population was 573 vocational educators drawn from 10 public universities in South-East Nigeria. A questionnaire which was validated by three experts was used for data collection. Cronbach Alpha reliability method was used, and a general reliability coefficient of 0.79 was obtained. Data collected were analyzed and hypotheses tested using mean, standard deviation and t-test statistic. The study recommended that training toolkits, operational training manuals used in the training of learners for green job opportunities be translated into the language that the learners are conversant with; TVET graduates in the course of their learning should be subjected to research and undergo training on green job matters; there should be constant incorporation of the latest development in green jobs in teaching and learning of TVET courses; TVET educators should undergo training in specific green sectors to improve the quality of knowledge transferred to TVET students with regards to green practices.

Keywords: Innovative, Innovative Practices, Green Jobs, Promotion of green jobs, Technical Vocational Education and Training (TVET)

Introduction

Globalization of business and the consequent reorganization of the workplace require a more adaptable labour force. Achieving adaptable labour force requires countries to rethink the nature and ways they embrace innovation in every sector of the economy. Essentially when one talks about innovation, one is talking about change, and this change can take several forms. Thus, innovation is a positive, constructive, and productive change. Change is inevitable so as to maintain a competitive advantage in the face of constantly changing

demographics. technologies and globalization trend (Siltala, 2010). Scores of definitions have been offered for innovation, each seeming to grow larger. Edison, Ali, & Torkar (2013) defined innovation as encompassing the entire process, starting from a kernel of an idea continuing through all the steps to reach a marketable product that changes the economy. Innovation can therefore be seen as the process that renews something that exists and not as is commonly assumed, the introduction of something new. According to Anthony, Johnson, Sinfield, and Altman (2008), the

central meaning of innovation thus relates to renewal. For this renewal to take place especially in the promotion of green job opportunities among technical vocational education and training graduates. It is necessary for vocational educators to change the way, methods and approaches used in the teaching of vocational courses. Vocational educators must choose to do things differently, make choices outside their normal norms. Innovation in any sector requires specific tools, rules, and discipline (Iansiti, Lakhani, Karim, 2017). In the context of this study, the attention of the researcher is on the innovative practices required for the promotion of green jobs. For any job to exist and survive especially in a changing and competitive world there must be a paradigm shift from the old ways of doing things to the new. New ways, methods and approaches in doing things must be adopted and championed. Innovative practices are those new ways, methods and approaches that should be adopted or utilized in the teaching and learning of technical vocational education and training for the promotion of green job opportunities that have 21st century relevance. There are new and latest skills, abilities, competencies required to function well in green jobs. These include; skills on how to keep toxin-free homes, skills on organic gardening, public transit, energy conservation, water conservation, biodiversity, solar and wind power, local and natural food processing and preservation, environmental health management, waste reduction and reuse or recycling, consumerism. Others include skill on how to construct green building, wildlife parks and nature, environmental education, green tourism, climate change, sustainable agriculture, green business, green media, sustainable forestry, sustainable living among others.

The green job is a joint initiative of the United Nations Environment program

(UNEP). the International Labour Organization (ILO), the International Organization of Employers (IOE) and the International Trade Union Confederation (ITUC) (Obasi, 2017). The author noted that in the UNEP green jobs report of September, 2008, the initiative defined green jobs as decent works which contribute directly to reducing the environmental impact of enterprises economic sectors or the economy as a whole by reducing energy and restoring ecosystems. Green jobs must be decent in nature; in fact it must be a job that offers adequate wages, safe working conditions, job security, reasonable career prospects, and workers rights. Green jobs in the opinion of Speer (2017) are those jobs involved in the protection of biodiversity and the environment. The jobs have been broadened to include the creation of jobs contributing to resource efficiency as well as occupations which play central role in greening industries across the economy. Speer further opined that green jobs include new job opportunities across a wide spectrum of occupations, from managers and scientists to technicians and farmers, and for a wide range of job seekers in rural and urban population. The main areas of economic activity that have the best potential for generating new green jobs are renewable energy, construction, transport, recycling, forestry and agriculture.

Green jobs or green-collared jobs, according to the United Nations Environment programme (2016), are jobs in agricultural, manufacturing, research and development, administrative and service activities that contribute(s) substantially to the preserving or restoring environmental quality. To the author, green jobs include jobs that help to protect ecosystems and biodiversity, reduce energy, materials and water consumption through high efficiency strategies, decarbonize the economy and minimize or altogether avoid generation of

all forms of waste and pollution. Green jobs are classified as jobs in business that produce goods or services that benefit the environment or conserve natural resources (Bureau of Labour Statistics, 2017). They are jobs in which workers' duties involve making their establishment's production processes more environmentally friendly while using fewer natural resources. It includes jobs which seek to use and develop renewable forms of energy as well as increase their efficiency. Green jobs to ILO.Org (2016) are decent jobs that contribute to the preservation and restoration of the environment, be it in the traditional sectors, such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and efficiency. Green jobs may be found in the area of water conservation, sustainable forestry, bio-fuels, geothermal energy, environmental remediation, sustainability, energy auditors, recycling, electric vehicles, solar power and wind energy (Cecere, Grazia, Mazzanti and Massimiliano, 2017). These jobs seek to enforce regulations, support education, and increase public influence for the benefit of the environment. Green jobs help to limit greenhouse gas emissions, minimize waste and pollution, protect and restore ecosystems and support adaptation to the effects of climate change (Elliott and Lindley 2017). In the level of enterprise, green jobs are being distinguished by their contribution to more environmentally friendly processes. They can produce goods or provide services that will benefit the environment through green building, energy conservation, clean transportation among others. In fact, Green jobs can reduce water consumption and improve recycling systems, reduce energy consumption and improve the use of renewable energy. The striking question now is how green job opportunities can be promoted for TVET graduates especially in

this 21st century that is characterized with high unemployment rate.

Promotion is any activity that supports or encourages a cause, venture, or aim. It is the act of helping something to happen, develop or increase. It is the act of furthering the growth or development of something (Merriam-Webster 2018). Based on this information, promotion of green jobs among TVET graduates means all the activities embarked upon in the cause of supporting, encouraging and helping vocational graduates acquire the needed skills and competencies that will position them well for green jobs. Countries like Egypt have done a lot in promoting green jobs among its youths. The project "Decent Jobs for Egypt's Young People (DJEP)" done in Egypt was aimed at creating job opportunities for youth and TVET graduates in environmentally sustainable activities and has promoted green jobs at both national and local levels. Technical and Vocational Education and Training (TVET) is education and training which provides knowledge and skills for employment (UNESCO-UNEVOC, 2017). According to Springer Link (2018), technical and vocational education and training (TVET) is particularly important for promoting economic development, expanding employment size and improving the quality of employment. TVET as explained by Okwor (2017) is a comprehensive term referring to those aspects of educational process involving, in addition to general education, the study of technologies and related science and acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economics and social life. To the author, the key mission of TVET is to provide trained manpower in applied science, technology, and business particularly at craft, advanced craft and technical levels. To provide technical knowledge and vocational skills

necessary for agricultural, commercial, industrial and economic development. To give training and impact necessary skills to individual for self-reliance economically and to groom people especially TVET graduates who can apply scientific knowledge to the improvement and solution of environment problems for the use and convenience of man which is the hallmark of green Jobs.

Since the world is moving towards green economy as such high demand of green jobs, TVET has an important role to play in transfer of knowledge and skills relevant to the new development. This transfer will not only create employment for TVET graduates, but will equally bring rapid technological progress especially in the area of equipment production, low carbon economy and environmentally friendly commercial activities. Thus, adopting innovative practices in teaching and learning of TVET courses will continue to have significant implications for TVET graduates. As such, understanding and anticipating changes that will emerge as a result of shift to green jobs and green economy has become crucial for designing responsive TVET systems and, more broadly, effective skills policies. The adaptation of innovative practices in the supply of skills to the rapidly, and in some cases radically, changing needs in sectors such as information technology, energy conservation, green business, green economy among others has become a central focus of TVET systems. Globally, the skill requirements and qualifications demanded for job entry especially the green jobs are rising. This reflects a need for not just a more knowledgeable and skilled workforce, but one that can adapt quickly to green jobs and new emerging technologies in order to drive the green economy forward. It is against this backdrop that the researchers seek to identify innovative practices required for the promotion of green job opportunities

for Technical vocational Education and Training graduates in the 21st century.

Purpose of the Study

The main purpose of the study was to identify innovative practices required for the promotion of green job opportunities among Technical vocational Education and Training graduates in the 21st century. Specifically, the study identified the:

1. Innovative training and initiative practices required for the promotion of green job opportunities among Technical vocational Education and Training graduates.
2. Challenges Technical vocational Education and Training graduates face in the acquisition of innovative practices for the promotion of green job opportunities.

Research Question

Based on the specific purpose of the study, the following research questions were formulated to guide the study:

1. What are the innovative training and initiative practices required for the promotion of green job opportunities among Technical vocational Education and Training graduates?
2. What are the Challenges Technical Vocational Education and Training graduates face in the acquisition of innovative practices for the promotion of green job opportunities?

Journal of Vocational Education, Training & Research

Hypothesis

HO1: There is no significant difference between the mean ratings of vocational educators in federal universities and those in state universities on the innovative training and initiative practices required for the promotion of green jobs opportunities among TVET graduates.

HO2 There is no significant difference between the mean ratings of male and female vocational educators on the Challenges TVET graduates face in the acquisition of innovative practices for the promotion of green jobs opportunities.

Methodology

Survey research design was adopted for the study. In the opinion of Fraenkel, Wallen and Hyun (2012), survey design involves asking the same set of questions (often prepared in the form of a written questionnaire or ability test) to a large number of individuals. The area of the study was South-East Nigeria. The population for the study comprised 197 vocational educators drawn from 5 federal and 5 state universities in South East Nigeria. Due to the relatively manageable size of the population, the entire population was involved in the study; therefore, there was no sampling. The instrument for data collection was a structured 23-item questionnaire titled "innovative practices for green job Questionnaire" (IPGJQ). The questionnaire was structured on a four-point rating scale of "Strongly Agree" (SA)- 4 points, "Agree" (A)-3 points, "Disagree" (D) - 2 points, and "Strongly Disagree" (SD) - 1 respectively. The instrument was validated

by three experts. One from measurement and evaluation unit of the Department of science Education and two from the Department of Business Education, all in University of Nigeria, Nsukka, Enugu State. Cronbach Alpha reliability method was used and an overall reliability coefficient of 0.77 was obtained. Copies of the questionnaire were distributed through the help of research assistants and the collection was on the spot to avoid losing on transit. 195 copies of the questionnaire out of 197 administered were used representing 99% rate of return. Two were not used as a result of mutilation. The data collected were analysed using mean and standard deviation for answering the research questions while t-test statistic was used for testing the null hypotheses at 0.05 level of significance. The null hypothesis of no significant difference was accepted for items whose p-values were greater than 0.05 level of significance while null hypothesis of no significant difference was rejected for items whose p-values were less than 0.05 level of significance.

Results

Result of the Innovative training and initiative practices required for the promotion of green job opportunities among Technical vocational Education and Training graduates. HO1: There is no significant difference in the mean ratings of vocational educators in federal university and those in state university on the innovative training and initiative practices required for the promotion of green jobs opportunities among TVET graduates.

Table 1

S/N	Innovative training and initiative practices required for the promotion of green jobs opportunities among TVET graduates include:	X	SD	Rmks	Sig p-value	Rmks
	Translation of training toolkits into the official and local language of the graduates on the course of their training		3.41	71 A	61	NS

Journal of Vocational Education, Training & Research, Vol.4.2019

		Grand Mean			
2.	Translation of operational training manual into the official and local language of the graduates on the course of their training	3.56	.69	SA	.71 NS
3.	Incorporation of local initiatives of the graduates into the new ways of doing things for easy understanding	3.41	.80	SA	.58 NS
4.	Subjecting TVET graduates to undergo online green job training while in school	3.51	.93	SA	.61 NS
5.	Creating forums where TVET students will collaborate with others students outside their domain on green job issues	3.67	.77	SA	.82 NS
6.	Constant in-cooperation of latest green job developments in the teaching and learning of TEVT courses	3.56	.46	SA	.78 NS
7.	Forming group of volunteers that wil help in raising green job opportunitics awareness among TVET graduates	3.37	.81	A	.91 NS
8.	Training on the proper solid waste management, recycling, pollution and greenhouse gas reduction	3.88	.61	SA	.71 NS
9.	Training TVET students on the innovative ways to improve agricultural practices like solar drying, processing and packaging of products	3.51	.73	SA	.52 NS
10.	Developing TVET students on how to integrate environmental and labour market policies with green issues	3.66	.88	SA	.43 NS
11.	Training TVET students on how to develop skills to promote the development. dissemination and use of green technologies to support greener economics	3.99	.59	SA	.79 NS
12.	Guiding students to research on better ways of using organie manner, sustainable forestry. land management. wildlife conservation which are part of green jobs	3.60	.93	SA	.53 NS
13.	Training TVET students on how to invest in green infrastructures				3.45 .67 A
	.65 NS				

indicates that there were no significant differences in the mean ratings of vocational educators in federal universities and those in state universities on the 13 innovative training and initiative practices required for the promotion of green job opportunities among TVET graduates. Therefore, the hypothesis of no significant difference was accepted on the entire 13 items.

The findings of this study on innovative training and initiative practices required for the promotion of green jobs opportunities for TVET graduates show that the respondents agreed on the three items in the Table I that is: translation of training toolkits into the official and local language of the graduates on the course of their training; Forming group of volunteers that will help in raising green job opportunities

awareness among TVET graduates and Training TVET students on how to invest in green infrastructures. While the remaining items like: translation of operational training manual into the official and local language of the graduates on the course of their training; incorporation of local initiatives of the graduates into the new ways of doing things for easy understanding; Subjecting TVET graduates to undergo online green job training while in school: Creating forums where TVET students will collaborate with others students outside their domain on green job issues; Constant in cooperation of latest green job developments in the teaching and learning of TEVT courses. Training on the proper solid waste management, recycling, pollution and greenhouse gas reduction among others.

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These findings corroborated with the report of International Labour Organization (ILO, 2016) on the project "Decent Jobs for Egypt's Young People (DJEP) which aims to create job opportunities for youth in environmentally sustainable activities and has promoted green jobs at both national and local levels. The project was funded by the Department of Foreign Affairs, Trade and Development Canada (DFATD), and has facilitated more than 3,000 employment opportunities for youth, with a particular of Minya, Port Said and the Red

There is no significant difference between the mean ratings of vocational educators in federal universities and those in state universities on the innovative training and initiative practices required for the promotion of green job opportunities among TVET graduates. This finding conformed to that of Taylor (2011) who asserted that Green careers whether obtained in University or any other institution focuses on creating green products or providing services in five distinct groups or segments. To the author, these segments include: Energy Efficiency that focuses on products and services that provide efficient use of energy, Recycling and reuse, pollution reduction and greenhouse gas reduction that focuses on pollution control methods, recycling of materials and the removal of hazardous waste, Renewable Energy that focuses on producing energy from renewable sources, Environmental compliance, education and training and public awareness helps to enforce the environmental protections and laws, educate and provide green job training or increase awareness about environmental issues. And Natural Resource Conservation that provides one with the opportunity to work with areas such as sustainable forestry, organic

agriculture, land management and conservation of water, soil or wildlife.

Result on the Challenges Technical vocational Education and Training graduates face in the acquisition of innovative practices for the promotion of green job opportunities

HO2 There is no significant difference in the mean ratings of male and female vocational educators on the Challenges TVET graduates face in the acquisition of

innovative practices for the promotion of
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Table 2: Challenges TVET graduates' faces in the acquisition of innovative practices for the promotion of green jobs opportunities include

	x	SD	Rmk	greater than 0.05	level of significance
Staff with skills in specific green sector	3.71	.83	SA	.87	NS
Education among TVET students especially on					
Innovative practices for the promotion of green job opportunities, Therefore, the					
Innovative practices for the promotion of green job opportunities, Therefore, the	3.54	.67	SA	.52	NS
Incorporation of latest green job developments					
Teaching and learning of TEVT courses	3.86	.66	SA	.36	NS
Use of training manual and toolkit in another					
TVET students are not conversant with	3.47	.81	A	.92	NS
Encouragement of TVET students to research on green					
Encouragement of TVET students to research on green	3.88	.71	SA	.58	NS
Participation of students who what to research on green					
Participation of students who what to research on green	3.61	.83	SA	.62	NS
Incorporation of latest green skills among TVET staff	3.86	.59	SA	.83	NS
Management of funds meant for green projects	3.79	.76	SA	.69	NS
Understanding of green concepts among TVET students	3.63	.92	SA	.23	NS
Seeing green issues as non priority issues among TVET	3.55	.87	SA	.95	NS
Seeing green issues as non priority issues among TVET	3.70	.77	SA	0.66	NS

The data presented in Table 2 reveals that the mean rating of the respondents on item number one in the Table was 3.47. This indicated that the respondents agreed that item one was among the Challenges TVET graduates' face in the acquisition of innovative practices for the promotion of green job opportunities. On the other hand, the mean values of the remaining 9 items, ranged from 3.54 to 3.88. This implies that the respondents strongly agreed with the remaining 9 items as Challenges TVET graduates' face in the acquisition of innovative practices for the promotion of green job opportunities.

Data presented in Table 2 on the second hypothesis show that the p-values of the 10 items ranged from 0.23 to 0.87 which are all

hypothesis of no significant difference was accepted on the entire 10 items.

The findings of this study on the Challenges TVET graduates faces in the acquisition of innovative practices for the promotion of green job opportunities show that the respondents agreed on one item in the Table 2 that is: Preparation of training manual and toolkit in another language that TVET students are not conversant with was among the Challenges TVET graduates' faces in the acquisition of innovative practices for the promotion of green job opportunities. While the respondents strongly agreed that the remaining items like: Inadequate staff with skills in specific green sector, Non - collaboration among TVET students especially on green job matters, Delay in the incorporation of latest green job developments in the teaching and learning of TEVT courses among others were also Challenges TVET graduates' face in the acquisition of innovative practices for the promotion of green job opportunities.

The finding of this study is in line with the findings of Greenforall(2018)who stated that transition to green jobs or

green(er) economy requires new skills. According to the author, new Skills are needed for the emerging jobs and skills needed for the adjusting of the existing jobs. Without a suitably trained workforce the transition to green jobs will be impossible. Since skill gaps and shortages are already recognized as a major bottleneck in a number of sectors, such as renewable energy, energy and resource efficiency, renovation of buildings, construction, environmental services and manufacturing. It is now imperative to seek for innovative practices since the use of clean technology requires skills in technology application, adaptation and maintenance. The availability of workers and enterprises with the right skills for green jobs plays not only a critical role in initiating the transition to a green economy, but also in enabling a just transition that ensures social inclusion and decent work. Employers investing in new technologies in terms of self-development, training and capacity building need to be able to find workers with the right skills.

Furthermore, EU (2015) noted that environmental awareness among TVET graduates needs to be part of education and training at all levels. For green jobs to be promoted in any countries there are needs for strategies that combine energy, environment, education and skills development objectives and policies. Effective social dialogue, coordination among ministries and communication between employers and training providers will be key for the success of green job strategies. Seeing green issues as a priority issues among TVET graduates will allow for elaboration of in-depth programmes for potential skills upgrading and the redesigning of national vocational training and education schemes which the overall objective is to merge skills development with green policies and investment.

There is no significant difference between the mean ratings of male and female vocational educators on the Challenges TVET graduates face in the acquisition of innovative practices for the promotion of green jobs opportunities. This finding conformed to that of Marc Regional Green Job(2018)who asserted that Green jobs creation in any sector requires new competencies and skills form both male and female individual that will engaged in them. Those skills need, can be anticipated by making adjustments to existing education and training systems and by creating new trainings opportunities. These can be an important stepping stone for giving youth-(male and female), women and other disadvantaged groups access to green job and income-generation opportunities that will be created in a green economy.