

TEACHER TRAINING NEEDS IN TECHNICAL VOCATIONAL EDUCATION AND TRAINING (TVET) FOR JOB CREATION AND NATIONAL DEVELOPMENT

BY

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Abstract

This study examined teacher training needs in TVET for job creation and national development. The design of the study was a survey and was conducted in Adamawa State. The population of the study consisted of 64 teachers, made up of 20 from construction trades and 44 from mechanical engineering trades in College of Education Hong and three Government Science and Technical Colleges of Adamawa State. Structured questionnaire tagged "Teacher training needs by TVET teachers for job creation and national development" was developed and validated by two experts from Modibbo Adama University of Technology Yola. Mean and standard deviation was used to answer the research question. While t-test was used to test the null hypothesis at 0.05 level of significance. The findings of the study revealed that TVET teachers required training in areas of learning and innovative; communication, media and technology; life and career. Moreover, study also revealed no significant differences between the mean responses of teachers of construction trades and teachers of mechanical engineering trades on teacher training needs for job creation and national development. The study concluded by recommending among others that training and re-training of TVET teachers should take global perspectives.

Key words: Training, job creation, 21st Century Skills, Construction trades and Mechanical Engineering Trades.

Introduction

The rapid move in recent decades to a global knowledge economy, driven by constant evolution in Information and Communication Technologies (ICT), has created significant socio-economic and technological opportunities (Oakley, 2008). Equally, countries are confronted with enormous challenges on the need to rethink their educational and social systems to fine tune with the current technology trends. Technical teacher education institutions are considering how to effectively prepare future teachers of Technical Vocational Education and Training

(TVET) to teach skills for success in this complex and rapidly changing world.

It is unreasonable to expect that our students will ever gain the skills and knowledge to succeed in the 21st century if they are taught by educators trained using primary models developed in the 19th century (Atomic learning, 2009). Modern students are not contented with text-based and verbal instruction (Burns, 2002). Today's students are hyperactive on internet and learn in a web-world where information is available at the fingertips. Today's world places both exciting and intimidating expectations on tomorrow's teachers. Thus, Technical teacher

training programmes in universities and colleges of education in developed nations have taken new dimensions in preparing their products to fit in the 21st century workforce. To this end, Technical teachers should go beyond middle class success in the conduct of manual teaching or use of routine skills that can be accomplished by machines, media and information platforms. Rather, focus on how to acquire creative thinking, flexible problem solving, collaboration, innovative skills and technology literacy (Robinson & Kay, 2010).

It may seem obvious that teacher preparatory programmes should have one common goal: preparing today and tomorrow's teachers to work with changing needs of modern students. Adaptations of the existing teacher education programmes by integrating 21st century skills development and training as a standard practice in education programmes may be intimidating. However, it is a needed change that will affect the success of TVET for job creation and national development in no distant future. Twenty first century success in career and lifelong learning lies in the ability to communicate, share, and use information to solve complex problems; ability to adapt and innovate in response to new demands and changing circumstances; ability to command and expand the power of technology to create new knowledge (Pacific Policy Research Centre, 2010). Twenty first century skills are a series of higher-order skills, abilities, and learning dispositions that have been identified as basic requirement for success in 21st century society and workplaces by educators, business leaders, academics, and governmental agencies (Dede, 2009 & Cuba, 2015). These skills differ from traditional academic skills in that they are not primarily content knowledge-based, but rather prepare students to master in preparation for success in a rapidly changing, digital society (Graham, 2015). Technical teachers require these skills, as it will help them to prepare

students to live and work in an information-age society.

A few key items according to Atomic learning (2009) include professional development and training in:

1. Concept Training on what 21st century skills are and the potential impact they have on education, the nation, and the world.
2. Development Projects to practice the application of 21st century skills i.e. training future teachers on how to apply 21st century concepts in a classroom situation.
3. Assessments to monitor training progress and verify that future teachers are 21st century oriented.

Moreover, skills needed by Technical teachers in this global skills and knowledge economy of the 21st century apart from the core educational courses include: learning and innovation skills; information, media and technology skills as well as life and career skills (Potter, Whitener & Sikorsky, 2014).

Learning and Innovation Skills

Wagner (2016) noted that learning and innovation skills are necessary to require by any Technical teacher to success in this technology driven society. These skills include:

1. Critical Thinking and Problem Solving skills: the skills needed to effectively analyze and evaluate evidence, arguments, claims and beliefs; solve different kinds of non-familiar problems in both conventional and innovative ways.
2. Communication Skills: Skills required to articulate thoughts and ideas effectively using oral and written communication skills in a variety of forms and contexts.
3. Collaboration Skills: Skills needed to demonstrate the ability to work effectively and respectfully with diverse teams.

Creativity and Innovation Skills: skills needed to make wide range of idea creation, techniques to create new and worthwhile ideas

Information, Media and Technology Skills

The basic skills required of the TVET teachers on information, media and technology skills according to Crockett (2016) are:

1. Information Literacy Skills: skills to access and evaluate information critically and competently; manage the flow of information from a wide variety of sources.
2. Media Literacy skills: skills to understand both how and why media messages are constructed; create media products by understanding and utilizing the most appropriate media creation tools, characteristics and conventions.
3. ICT (Information, Communications, and Technology) Literacy Skills: skills to use technology as a tool to research, organize, evaluate and communicate information.

Life and career skills

Today's life and work environments require far more than thinking skills and content knowledge (Dede, 2009). Potter, Whitener and Sikorsky viewed that cultivating the ability to navigate the complex life and work environments requires students to pay rigorous attention to developing adequate life and career skills. These skills include:

1. *Flexibility and adaptability skills:* This particular skill helps one to incorporate feedback effectively; deal positively with praise, setbacks and criticism; understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments (Oakley, 2009). It helps to adapt to varied roles, jobs responsibilities, schedules and contexts. It also helps to work effectively in a climate of ambiguity and changing priorities.
2. *Initiative and self-direction Skills:* this skill helps the learner to manage goals and time

through Setting goals with tangible and intangible success criteria; balance tactical (short-term) and strategic (long-term) goals; utilize time and manage workload efficiently (Crockett, 2016). It also helps one to work independently by monitoring, defining, prioritizing and completing tasks without direct oversight (Wagner, 2016). In addition, its prepares one to be self-directed learners through going beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise; demonstrating initiative to advance skill levels towards a professional level; demonstrating commitment to learning as a lifelong process.

3. *Social and cross-cultural skills:* The skills helps to interact effectively with others; know when it is appropriate to listen and when to speak; conduct one selves in a respectable and professional manner. It also help one to work effectively in diverse teams; respect cultural differences and work effectively with people from a range of social and cultural backgrounds; respond open-mindedly to different ideas and values; leverage social and cultural differences to create new ideas and increase both innovation and quality of work(Cuba, 2015).

4. *Productivity and accountability skills:* This skill helps to manage projects through Setting and meeting goals, even in the face of obstacles and competing pressures; prioritizing, planning and managing work to achieve the intended result (Graham, 2015). The skills also helps to produce results through demonstrating additional attributes associated with producing high quality products including the abilities to:

- a. Work positively and ethically
- b. Manage time and projects effectively
- c. Multi-task

- d. Participate actively, as well as be reliable and punctual
 - e. Present oneself professionally and with proper etiquette
 - f. Collaborate and cooperate effectively with teams
 - g. Respect and appreciate team diversity
 - h. Be accountable for results
5. *Leadership and responsibility skills:* these skills according to the State Board of Education North Carolina (2006) are needed by teachers to guide, lead students to impart success through:
- a. Use interpersonal and problem-solving skills to influence and guide others toward a goal
 - b. Leverage strengths of others to accomplish a common goal
 - c. Inspire others to reach their very best via example and selflessness
 - d. Demonstrate integrity and ethical behavior in using influence and power
 - e. Act responsibly with the interests of the larger community in mind

These skills will definitely prepare TVET teachers to be broad-based and teach comfortably with the present technology and future innovations. Thus, effective, efficient and lifelong learning will be enhanced. Consequently, if TVET teachers decline from acquiring learning and innovation skills, digital literacy skills and career and life skills in addition to their core subject knowledge. Focus on traditional routine skills and manual labour will make schools to be deficient in preparing students with basic employability skills (North American Council for Online Learning and the Partnership for 21st Century Skills, 2006). As the Chinese old adage said, life is a series of natural and spontaneous changes do not resist it but follow the change to stay relevant. Hence, TVET teachers should, embrace the change and

acquire skills in tune with technology driven society to train students who will adapt to the changing environment of present and future workforce (Robinson & Kay, 2010). It is on this backdrop the researchers want to determine the training required by the teachers of TVET in Adamawa State.

Purpose of the study

The purpose of this study was to find out the teacher training needs in TVET for job creation and national development. The study specifically determined the:

1. Teacher training needs in TVET for construction trades and mechanical engineering trades teachers of College of Education and Technical Colleges in Adamawa State.

Research Questions

1. What teacher training needs in TVET required by construction trades and mechanical engineering trades teachers of College of Education and Technical Colleges in Adamawa State for job creation and national development?

Hypothesis

H₀₁: There is no significant difference between the mean responses of construction trades and mechanical engineering trades teachers of College of Education and Technical Colleges in Adamawa State on teacher training needs in TVET for job creation and national development.

Methodology

The study was a survey design and was conducted in Adamawa State. All construction and mechanical engineering trade teachers of College of Education Hong and technical colleges of Mubi, Numan and Yola were used for the study. The population of the study consisted 64 and made up of 24 construction and 40 mechanical engineering trade teachers.

Twelve item structured questionnaire on a rating scale tagged: training required by the TVET teachers for job creation and national development was validated by three experts from the Department of Technology Education Modibbo Adama University of Technology Yola. Their suggestions and observations were considered to draft the final copy of the instrument. In order to find the reliability of the instrument, the instrument was tested on 10 teachers of technical college and 8 lecturers of Federal college of Education (Technical) in Gombe State using Cronbach Alpha. The reliability coefficient was for construction trades teachers was 0.746 and that of mechanical engineering trades was 0.720. The

average score of the reliability of coefficient was found to be 0.733. The researchers administered and collected the questionnaire within two weeks of administration. The data collected was analysed using mean and standard deviation. Mean and standard deviation was used to answer the research question. While t-test tested the null hypothesis at 0.05 level of significance. The mean of 3 was taken for the decision rule. Hence, items with mean of 3.0 and above was taken as accepted, while items below were rejected. In addition, at 0.05 level of significant, when t-calculated value is greater than the t-critical, reject the null hypothesis and otherwise, accept the null hypothesis.

Analysis

Research Question 1

What teacher training needs in TVET required by construction trades and mechanical engineering trades teachers in College of Education and Technical Colleges in Adamawa State required for job creation and national development?

Table 1: mean and standard deviation of Teacher Training needs in TVET

S/N	Teacher Training Needs	$\bar{x}_1$	SD ₁	$\bar{x}_2$	SD ₂	$\bar{x}_G$	SD _G	Remark
Learning and innovation skills								
1	Critical Thinking and Problem Solving skills	4.38	0.77	4.36	0.72	4.37	0.75	Accepted
2	Communication Skills	4.13	0.91	3.79	1.15	3.96	1.03	Accepted
3	Collaboration Skills	4.11	0.94	4.07	1.03	4.09	0.99	Accepted
4	Creativity and Innovation Skills	4.00	0.93	3.71	1.03	3.86	0.60	Accepted
Information, media and technology skills								
5	Information Literacy Skills	4.08	1.05	4.00	1.00	4.04	1.1	Accepted
6	Media Literacy skills	3.77	0.99	3.80	0.94	3.79	0.72	Accepted
7	ICT skills- to use technology as a tool to research, organize, evaluate and communicate information.	3.92	1.10	3.86	0.83	3.89	0.85	Accepted
Life and carrier skills								

8	Flexibility and adaptability skills:	3.85	1.17	4.00	0.76	3.93	0.94	Accepted
9	Initiative and self-direction Skills	4.15	1.19	4.07	1.16	4.11	1.07	Accepted
10	Social and cross-cultural skills	4.38	0.92	4.29	1.10	4.34	0.77	Accepted
11	Productivity and accountability skills	3.53	1.17	3.21	1.21	3.37	1.07	Accepted
12	Leadership and responsibility skills	3.77	0.92	3.79	1.08	3.78	0.895	Accepted

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N= 64

The analysis on table 1 indicated that all the items were accepted. Hence, the items on table 1 are the area of training required by the TVET teachers. Item 1 emerged with the higher mean of 4.37. Followed by item 10, 9 and 3 among others. While, item 11 have the least mean of 3.30.

Hypothesis

Ho₁: There is no significant difference between the mean responses of construction trades and mechanical engineering trades teachers in College of Education and Technical Colleges in Adamawa State on teacher training needs in TVET for job creation and national development

Table 3: t-test analysis of Teacher Training needs in TVET

Group	$\bar{x}$	SD	N	df	t-cal.	t-crit.	Decision
Construction	3.91	0.98	24	63	0.418	2.00	Accepted
Mechanical	4.01	1.00	40				

Key: $\bar{x}$ = Mean, SD = Standard Deviation, N = Numbers of Students, df = Degree of Freedom
t-cal. = Calculated T-value, t-crit. = Critical T-value

The analysis presented on the above table indicated that at 0.05 level of significant, t-calculated value was 0.418 and was less than the t-critical value of 2.00. This followed that the null hypothesis was accepted. Hence, the null hypothesis was upheld. Therefore, at 0.05 level of significant, there is no significant difference between the mean responses of construction trades and mechanical engineering trades teachers of College of Education and Technical Colleges in Adamawa State on teacher training needs in TVET for job creation and national development.

Findings

Base on the data analysed in the study, the findings revealed that TVET teachers and lecturers need training on the following key areas:

1. Learning and innovations skills.
2. Information, media and technology.
3. Life and carrier skills.

Discussion of Findings of the study

The discussion of the findings of this study is based on the research questions asked and null hypothesis formulated. The tabular analysis on the research question revealed that all the respondents agreed with all the questionnaire

items on table 1. This indicated that Technical teachers need training in these 3 key areas namely: Learning and innovations skills; information, media and technology; life and carrier skills.

However, both teachers in construction and mechanical engineering trades showed similar opinions on the teacher training needs. Thus, at 0.05 level of significant and 63 degree of freedom there is no significant difference between the mean responses of construction trades and mechanical engineering trades teachers of College of Education and Technical Colleges in Adamawa State on teacher training needs in TVET for job creation and national development.

The result of this study is in consonant with work of Uwaifo & Uwaifo (2009) who have advocated training and re-training practicing technical and prospective teachers to include proper use of machine tools and other equipment. The finding is also in line with the findings of Oakley (2009), Robinson and Kay (2010) who emphasizes that skills like self-direction, creativity, critical thinking, and innovation are today's survival skills, not only for career success, but for personal and civic quality of life as well. Hence, these skills are basic requirement relevant in an age where the ability to excel at non-routine work is not only rewarded, but expected as basic requirement. Therefore, the skills to impact into the learner to think critically, solve problems, communicate, collaborate, find good information quickly, and use technology effectively is well deserve by TVET teachers. Thus skills and knowledge of the 21st century will equip teachers of TVET and make them more effective, more empowered, more confident and a permanent self-learner.

Conclusion

The study identified three key areas where teacher training is required by Technical teachers in Adamawa State. These areas of

training include learning and innovation skills, information, media and technology skills as well as life carrier and skills. These skills will prepare Technical teachers to impact knowledge and skills to their students to cope with present challenges of the 21st workforce.

Recommendations

The following recommendations were made based on the findings of the study.

1. Training and re-training of TVET teachers should be globally focused.
2. Federal and State Government should make fund available for retraining of TVET teachers.
3. Technical teacher training institutions should change their training programmes and curriculums to reflect skills needed in 21st century.
4. Technical teachers should take advantages offer of ICT and update themselves through e-learning and other media and information platforms.

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