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**Elizabeth D. Richard
Robert W. Clark
Co-Editors**

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Even though space does not permit us to include the names of many others who contributed their valuable time and talent in service to the *Journal*, we do thank them as well. Since 1993, they have served as associate editors; co-editors; guest, style, copy, and managing editors; managing reviewers; members of the editorial board; regional editors; and publishers.

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International Journal of Vocational Education and Training

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Message from the Editors

As co-editors of the International Journal of Vocational Education and Training, we'd like to welcome you to Volume 24, Number 2. This is our second edition, and we are pleased to present you with these articles from across the globe. As career and technical educators in the United States, we have extensive experience in workforce training. Our specialty areas include workplace learning, academic and technical subject integration, teacher education, and administrative leadership in career and technical education. This edition consists of two sections, a research section and a practical application section. The research section includes articles addressing studies of training, economic development, and other TVET related matters from multiple countries. They include problem statements, literature reviews, research questions, research methodology, data analysis, and conclusions or recommendations. They are based on new knowledge acquired because of the detailed studies. The current issues section includes articles describing "best practices" and evolving strategies for addressing TVET issues that may be found across borders. These articles are designed to offer thoughts, suggestions, and ideas on how to solve practical problems that impact TVET daily.

As technology advances and economies change, businesses must innovate to remain competitive. With trade barriers shifting and borders opening, competition across the world means that companies must innovate, or risk becoming obsolete. In business and industry, nothing remains the same and nothing is static. Companies know they must create an advantage against the competition to remain relevant and dynamic. With strong research, job training, an understanding of markets and products, solid manufacturing processes, and culture driven innovation, companies enhance their chances of economic growth by meeting marketplace demands. Within the operational structure of business and industry, nothing is more important than the knowledge and productivity of employees. Without their talent, skill, and ability to innovate, the company will remain at a disadvantage. Funds allocated to TVET instructions that operate programs that are properly aligned with industry expectations are well invested into a company and a country's future. Well trained employees do more work faster. Highly skilled individuals can induce businesses to make relocation to certain areas a priority. Strong TVET institutions that innovate and grow along with industry generate tremendous returns from highly technical education programs, resulting in highly qualified employees. The articles in this edition stress the connection between TVET institutions, governments, and industry to demonstrate how they must work together for economies to grow and people to live productive lives through improved standards of living. We hope you enjoy these articles and find them informative and creative. Please remember that articles published in the journal come from different areas of the world, and therefore are written by authors who may not speak English as their primary language. While great care has been taken to correct word usage, sentence structure and syntax, there may be some errors that were overlooked. Please note that the articles in this journal do not reflect the position of the journal's editorial staff, reviewers, or policy of IVETA.

Dr. Robert W. Clark
Dr. Elizabeth D. Richard
IJVT Co-editors

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Section One – Research Articles

Perception of Automobile Maintenance Professionals on the Maintenance of Modern Automobiles in Niger State, Nigeria

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Abstract

The research study determined the perception of automobile maintenance artisans and technicians on the maintenance of modern automobiles in Nigeria. The study was a survey research in which data was collected through a 39 items questionnaire on a population of 150 respondents conveniently sampled from Kontagora, Suleja and Minna. The data were analyzed using Mean and Standard Deviation on a 4-point scale. Findings of the study revealed among others that the perception of automobile maintenance artisans and technicians on the maintenance of modern automobiles in Niger State has changed dramatically due to the numerous challenges posed by modern vehicles during maintenance and repair. This is due to several factors among which includes: defects of the indigenous apprenticeship method of training artisans, poor training facilities, poor curriculum in formal schools and too much emphasis in theory against practical's in formal training institutions. The study recommended among others: the urgent need to retrain and equip the automobile artisans and technicians with the necessary work skills to enable them cope with the current challenges experienced in maintenance of modern vehicles.

Key Words: Perception, Automobile, Automobile Maintenance, Professionals Modern Automobiles

Introduction

In recent years, automobile maintenance activities in automobile workshops has changed from the manual method of diagnosing faults to the use of electronic Diagnostic Scan Tools which includes equipment and machines to enhance accuracy in fault diagnosis, maintenance and repairs. The change in the expected maintenance practices is due to the numerous innovations in modern motor vehicles. These innovations are designed primarily to increase fuel economy, safety, low pollution level and improved comfort. These innovations which are embedded in various new systems and sub systems in modern automobiles includes :On-Board Diagnostics (OBD), Anti-Lock Braking System (ABS), Automatic Brake Differential (ABD), Electronic Differential Lock (EDL), Integrated Starter Generator (ISG), Malfunction Indicator Lamp (MIL), Mechatronics Transmission Module (MTM), Electronic Control Unit (ECU)/Computer Control Module (CCM), Adaptive Cruise Control (ACC), Electronic Battery Sensor (EBS), Sensor and Actuator Systems, Safety Airbag Systems, Electronic Ignition System, Computer Controlled Ignition System, Electronic Fuel Injection System, Electronic Engine Management System among others (Odigiri & Ede, 2010; Schwaller, 1993; Hillier & Peter, 2004).

Automobile safety is another area where electronics have enabled improvements because the design of motor vehicle is now dependent on microcomputers which can analyze data and then

help to incorporate improved safety into the basic vehicle structure Kirpal (2006a). Safety system such as anti lock braking and the airbag deployment system could not function efficiently or reliably without the use of electronics. These technological innovations have changed the perception of automobile maintenance professionals in the maintenance of modern vehicles in Nigeria. This is true because new work skills characterized by a shift towards the use of mechatronics technology, scan tools, equipment and machines for automobile diagnosis and repairs are now a mandatory requirement in the automobile maintenance service sector.

In Nigeria, the automobile maintenance service sector is dominated by roadside auto mechanics (automobile artisans), craftsmen, master craftsmen and technicians. Ogwo and Oranu (2006) described road side auto mechanics (automobile artisans) as motor vehicle maintenance personnel who have acquired informal vocational training in motor vehicle maintenance and repairs through the apprenticeship system of training. According to the National Board for Technical Education (NBTE)(2001) an automobile craftsman is expected to test, diagnose, service and completely repair any fault on the motor vehicle to the manufacturers specification. The polytechnics and colleges of technology that offer National Diploma (ND) and Higher National Diploma(HND) leading to the production of automobile technicians and technologists for the automotive industry. The colleges of education and the universities operate the Nigeria Certificate of Education (NCE) and Bachelor's degree programs which lead to the production of automobile instructors and automobile engineers. Operationally in the context of this study, the automobile technician training encompasses all categories of automobile professionals in the formal sector and includes among others: craftsmen, master craftsmen, lower and higher technicians.

These automobile maintenance professionals are currently experiencing deficiencies regarding their technical expertise needed for effective maintenance of modern vehicles entering Nigeria from various manufacturers globally. According to Ogwo (2004); Odigiri & Ede (2010) many automobile maintenance professionals now believe that the traditional apprenticeship method of training artisans is ineffective and rapidly losing significance because the current trend in automobile maintenance and repairs deprives auto mechanics of job satisfaction creates job insecurity. The inadequacy of the apprenticeship system coupled with poor curriculum and the inconsistency in organizing retraining courses makes the identification of and the appropriate application of sensors, actuators and vehicle identification number (VIN) difficult. The authors further stated that new work skills and a strong knowledge of automobile mechatronics are needed by automobile maintenance professionals to meet the current challenges in the maintenance and repair of modern vehicles.

Several factors have been attributed to the current difficulties experienced by automobile maintenance professionals in the maintenance of modern vehicles in Nigeria. Okoro 1993; Ogwo and Oranu (2006) lamented on the problem of skill acquisition in the informal apprenticeship system which is devoid of training curriculum,scientific knowledge, theoretical principles and is characterized by the haphazard /disorderly nature of training plus the low level of education of the trainees. They also addressed the belief of too much emphasis on theory rather than practical training in the formal sector technical and technological institutions. Additionally, there is poor collaboration between automobile industry and training institutions and centers. Elobuike(1999) stated that this poor linkage/collaboration has deprived automobile mechanics of the correct procedures for servicing and repairs of new automobile systems and subsystems. This lack of alignment has also led to unintended ignorance, negligence to safety rules and safe work practices by artisans, craftsmen and technicians which periodically creates complications of minor electronic faults during repair work that involves the automobile's electronic control unit.

Peter (2009) emphasized that the current maintenance challenges during instructional process, equipping training institutions and centers with diagnostic scan tools, equipment machines

and other training facilities was suggested to help the situation. The perception of automobile training and repair experts in the automobile industry and training institutions are diverse and sometimes conflicting as new technologies in motor vehicles creates new maintenance challenges for automobile service personnel while adversely affecting their training, work output and job satisfaction. These factors lead the researcher to analyze the perception of automobile maintenance professionals on the maintenance of modern automobiles in Nigeria.

Statement of the Problem

New technological innovations in automobile technology which focuses on improving drivability, comfort, low environmental pollution and safety have greatly generated numerous maintenance challenges to automobile artisans, craftsmen, technicians and professionals in Nigeria. The perception of these automobile personnel which was previously based on manual dexterity and has now changed dramatically because the manual method, traditional apprenticeship method and high levels of theoretical knowledge of training automobile maintenance professionals and sub professionals is no longer an effective way to address the current trends and challenges in the maintenance of modern vehicles. To acquire more knowledge about the situation, this study analyzed the perception of automobile maintenance professionals on the educational and training programs available to new learners and automotive repair professionals in Nigeria.

Purpose of the Study

The major purpose of the study was to conduct research on the perception of automobile maintenance professionals on the maintenance of modern automobiles in Nigeria.

Specifically, the study:

- Identified the perception of automobile maintenance professionals on the current trends in the maintenance of modern automobiles in Nigeria.
- Determined the factors affecting the maintenance of modern automobiles in Nigeria.
- Identified the perception of automobile maintenance professionals on how to improve the maintenance of modern motor vehicles.

Research Questions

The following research questions guided the study:

1. What is the perception of automobile maintenance professionals on the current trends in the maintenance of modern automobiles in Nigeria?
2. What are the factors affecting the maintenance of modern automobiles in Nigeria?
3. What is the perception of automobile maintenance professionals on how to improve on the maintenance of modern motor vehicles?

Research Hypotheses

The following null hypotheses guided the study:

- H₀₁: There is no significant difference in the mean responses of road side automobile artisans and automobile technicians on the current trends in the maintenance of modern automobiles in Nigeria.
- H₀₂: There is no significant difference in the mean responses of road side automobile artisans and automobile technicians on the factors affecting the maintenance of modern automobiles in Nigeria.
- H₀₃: There is no significant difference in the mean responses of road side automobile artisans and automobile technicians on the perception of automobile

maintenance professionals on how to improve on the maintenance of modern motor vehicles.

Methodology

Survey research design was adopted by the researcher to implement the research on the perception of automobile maintenance professionals on the maintenance of modern automobiles in Niger State, Nigeria. The study was carried out in Kontagora, Suleja and Minna. The study used a population of 150 respondents comprising of 50 automobile technicians and 100 road side automobile artisans. A 39 item questionnaire structured on a 4-point scale response option was used to collect data from the respondents to indicate the degree to which respondents accept or reject each item. The questionnaire was validated by three experts from Peugeot maintenance service units in Minna and Zuba, and an automobile lecturer from Department of Industrial and Technology Education of Federal University of Technology, Minna. Corrections were made before it was administered. The Mean and Standard Deviation (SD) were used to answer the research questions. Therefore items with mean score below 2.50 -cut off point were rejected while those with mean score of 2.50 and above were accepted. The t-test statistics was used to test the hypotheses at 0.05 level of significance .The t-critical value for accepting or rejecting the null hypotheses was ± 1.98 .

Results

Research Question One

What is the perception of automobile maintenance professionals on the current trends in the maintenance of modern automobiles in Nigeria?

Hypothesis One

There is no significant difference in the mean responses of road side automobile artisans and automobile technicians on the current trends in the maintenance of modern automobiles in Nigeria.

The presentation on table 1 below shows that all the items presented had their weighted mean values ranged from 2.47-3.75. This values are above the cutoff point of 2.50 which signifies that the respondents agreed with the items on the current trends in the maintenance of modern automobiles in Nigeria.

The t-test analysis revealed that all the items had their t-calculated values less than the t-table value of ± 1.98 . This implies that there was no significant (NS) difference in the mean ratings of the responses of the respondents on the current trends in the maintenance of modern automobiles in Nigeria. Therefore we do not reject the null hypothesis.

Table 1

t-test analysis of mean responses of respondents on the current trends in the maintenance of modern automobiles in Nigeria.

Item Statement	X	SD ₁	X ₂	SD ₂	t-cal	REM
Traditional apprenticeship method of training is rapidly losing significance.	3.33	0.60	2.82	0.40	0.34	NS
Artisans, craftsmen and technicians now require new work skills in mechatronics.	3.68	0.30	3.05	0.10	0.88	NS
Identification and application of sensors and actuators in automobiles poses problem to auto mechanics.	3.34	1.20	2.97	0.30	0.62	NS
Auto mechanics faces challenges in the interpretation of vehicle identification number to ascertain vehicle characteristics.	3.00	0.36	3.06	0.70	1.25	NS
Mechanics faces challenges in the interpretation of diagnostic trouble codes.	3.01	1.21	3.75	0.65	1.21	NS
Description of the operation of each of the new automobile systems poses problems to auto mechanics.	3.10	0.83	2.71	1.27	0.60	NS
Owners of modern vehicles in Nigeria lack confidence in auto mechanics.	3.20	0.32	3.01	0.81	0.50	NS
A fault in electronic control unit creates tension and fear in auto technicians.	3.71	1.00	3.36	0.72	0.59	NS
Complication of faults in modern vehicles is a common practice among auto mechanics.	3.56	1.39	3.70	0.63	0.50	NS
Repair of computerized ignition system poses a threat to auto mechanics.	3.71	1.29	3.45	0.74	0.21	NS
Increase in electronic subsystems in automobiles makes mechanics redundant in their places of work.	3.51	1.11	3.44	0.67	0.23	NS
Auto technicians are deficient in the appropriate work tools needed	3.23	1.00	4.41	0.71	0.57	NS
Current trends in automobile maintenance and repairs deprive auto mechanics of job satisfaction	3.20	0.9	3.11	0.78	0.59	NS

*Note : REM=Remark

Research Question Two

What are the factors affecting the maintenance of modern automobiles in Nigeria?

Hypothesis Two

There is no significant difference in the mean responses of road side automobile artisans and automobile technicians on the factors affecting the maintenance of modern automobiles in Nigeria.

Table 2

t-test analysis of mean responses of respondents on the factors affecting the maintenance of modern automobiles in Nigeria.

Item Statement	X ₁	SD ₁	X ₂	SD ₂	t-cal	REM
Low level of education among automobile artisans.	3.56	0.13	2.61	0.48	0.89	NS
Inadequacy of the apprenticeship system and its disorderly nature of training.	3.53	0.81	3.81	0.59	0.78	NS
Inconsistency in curriculum review.	3.46	0.54	3.21	0.58	1.43	NS
Inadequate knowledge of the scientific and theoretical principles in automobiles.	3.65	0.59	3.43	0.70	1.23	NS
Absence of government in the affairs of auto mechanics in the informal sector.	3.41	0.92	2.97	1.01	0.64	NS
Inconsistency in organizing retraining courses on recent innovations.	2.55	0.88	2.56	0.81	0.56	NS
Absence of diagnostic scan tools, equipment and modern facilities in training centers and institution.	2.90	1.77	2.73	0.74	0.55	NS
Poor collaboration between automobile industry and training institutions.	2.51	0.73	2.70	1.07	0.54	NS
Problem of identification and selection of appropriate work tools for new automobile systems.	2.57	0.73	2.53	0.90	0.35	NS
Inadequate knowledge of the principle of operation of electronic control unit.	2.53	0.81	2.53	0.49	0.52	NS
Ignorance of the correct procedures for servicing and repair of modern vehicles.	2.65	0.92	2.70	2.70	0.57	NS
Absence of standard code of practice and licensing of auto mechanics.	2.73	0.63	2.83	0.89	0.67	NS

The data analysis in table two revealed that all the items had their mean values ranged from 3.56-3.81. Since the values are above the cutoff point of 2.50, it indicates that the respondents accepted all the items as the factors affecting the maintenance of modern automobiles in Nigeria. The t-test analysis also revealed that all the items had their t-calculated values less than the t-table value of ± 1.98 . This implies that there was no significant (NS) difference in the mean ratings of the responses of the respondents on the factors affecting the maintenance of modern automobiles in Nigeria. Hence we do not reject the null hypothesis.

Research Question Three

What is the perception of automobile maintenance professionals on how to improve on the maintenance of modern motor vehicles?

Hypothesis Three

There is no significant difference in the mean responses of road side automobile artisans and automobile technicians on the perception of automobile maintenance professionals on how to improve on the maintenance of modern motor vehicles.

Table 3

t-test analysis of mean responses of respondents on the perception of automobile maintenance professionals on how to improve on the maintenance of modern motor vehicles.

Item Statement	X ₁	SD ₁	X ₂	SD ₂	t-cal	REM
Review of automobile technology curriculum to cope with new challenges.	3.09	0.68	2.90	0.70	0.44	NS
Organizing retraining courses to upgrade the work skills of auto mechanics.	2.77	0.48	2.75	0.71	0.83	NS
Master craftsmen should be taught modern teaching procedure.	3.68	1.10	3.10	1.41	0.67	NS
Review of teacher training curriculum in training institutions.	2.70	1.15	2.95	0.45	1.26	NS
Developing practical curriculum for training apprentices in the informal sector.	3.04	0.96	3.40	0.41	1.17	NS
Certification of training offered by informal apprenticeship system.	3.74	1.39	3.12	1.07	0.65	NS
Combining vocational automobile training with evening school in informal sector.	3.68	0.36	2.90	0.69	0.53	NS
Teaching automobile professionals modern diagnostic and service procedures.	3.11	0.42	2.71	0.74	0.56	NS
Training workshop and institution should be updated to reflect the work place.	3.35	1.12	2.65	1.15	0.66	NS
Conducting research to identify maintenance challenges from new vehicles.	3.11	0.42	2.71	0.74	0.56	NS
Establishing strong linkage between auto industry and training institutions.	2.63	0.45	2.72	0.64	0.59	NS
Emphasizing current maintenance challenges during instructional process.	3.35	1.12	2.65	1.15	0.66	NS
Equipping training institutions and centers with diagnostic scan tools, equipment and other training facilities	2.82	1.08	2.65	1.13	0.60	NS

Table three shows that all the items presented had their weighted mean values ranged from 2.90-3.74. This values are above 2.50 indicating that the respondents agreed to the items on the perception of automobile maintenance professionals on how to improve on the maintenance of modern motor vehicles. The t-test analysis shows that all the items had their t-calculated values less than the t-table value of ± 1.98 . This implies that there was no significant (NS) difference in the mean ratings of the responses of the respondents on the perception of automobile maintenance professionals on how to improve on the maintenance of modern motor vehicles. Consequently, the null hypothesis is not rejected.

Summary of Major Findings of the Study

Regarding the perception of automobile maintenance professionals on the current trends in the maintenance of modern automobiles in Nigeria, the study revealed among the following perceptions among respondents:

- The traditional apprenticeship method of training is disorderly, inadequate, ineffective and rapidly losing significance
- Current trends in automobile maintenance and repairs create redundancy and deprive auto mechanics of job satisfaction.

- Auto mechanics face challenges in the interpretation of vehicle identification numbers and in the interpretation of diagnostic trouble codes.
- A fault in electronic control unit creates tension and uncertainty in auto technicians as complication of faults in modern vehicles is a common experience among auto mechanics.

Factors affecting the maintenance of modern automobiles in Nigeria, included:

- Low level of education among automobile artisans, absence of training curriculum and haphazard nature of apprenticeship training.
- Inconsistency in curriculum review and the lack of organization of retraining courses on recent innovations.
- Poor collaboration between automobile industry and training institutions contribute to ignorance of the correct procedures for servicing and repair of modern vehicles.
- The absence of diagnostic scan tools, equipment and modern facilities in training centers and institution is problematic to creating strong training programs.

The perception of automobile maintenance professionals on how to improve on the maintenance of modern motor vehicles the following:

- Reviewing and changing automobile technology curriculum to address new challenges
- Conducting research to identify maintenance challenges and organization of retraining courses to upgrade the work skills of auto mechanics
- Equipping training institutions and centers with diagnostic scan tools, equipment and other training facilities
- Establishing strong linkages between auto mechanics workshops & training institutions to assure the availability new information and retraining courses to upgrade technician's work skills.

Discussion

From table one, the analysis showed that the respondents agreed with the 13 items to be among the major perception of automobile maintenance professionals on the current trends in the maintenance of modern automobiles in Nigeria. For instance, the opinion of the respondents that the traditional apprenticeship method of training is disorderly, inadequate, ineffective and rapidly losing significance is in agreement with the views of Okoro (1993). Okoro (1993) also revealed that apprenticeship training does not often involve teaching of theoretical principles and the mode of training does not prepare apprentices to effectively judge situations based on important theoretical principles. He further stated that the absence of theoretical principles in apprenticeship training leads to poor performance skills in roadside mechanics.

According to Ogwo (2004); Odigiri & Ede (2010) these automobile maintenance professionals now believe that the traditional apprenticeship method of training artisans is ineffective and rapidly losing significance, as the current trend in automobile maintenance and repairs deprives auto mechanics of job satisfaction, creates fear and job insecurity. Findings from study also confirm that roadside auto mechanics and technicians find it difficult to diagnose and repair most electronic faults in modern vehicles. This is in agreement with Rajput (2007) who asserted that modern automobile engines are sufficiently complex to discourage even the professional mechanics because modern vehicles rely on Hi- Tech electronics for controlling

almost every system ranging from engine management to entertainment systems and climate control systems.

The acceptance of all the items on table two revealed that all the items are valid factors affecting the maintenance of modern automobiles in Nigeria. The respondents also identified the following issues: low level of education among automobile artisans, absence of training curriculum and haphazard nature of apprenticeship training; poor curriculum ,inconsistency in curriculum review and organization of retraining courses on recent innovations; poor collaboration between automobile industry and training institutions leading to ignorance of the correct procedures for servicing and repair of modern vehicles, absence of diagnostic scan tools, equipment and modern facilities in training centers and institution and too much emphasis on theory than practical's in formal technical and technological institutions. The respondent views were also supported by Ogwo (2004) who lamented that the crude methods , manual tools and equipment used by roadside mechanics usually complicates minor automobile faults or create new problems in the system.

Okoro (1993) pointed out the "lack of curriculum" as one of the lapses in the indigenous apprenticeship in Nigeria. He further stated that the absence of curriculum is the cause of the disorderly, unorganized and unstructured nature of the automotive training provided by roadside mechanics. Alabi (2006) attributed the poor maintenance skills in roadside auto mechanics and technicians to the inadequate training facilities in most automobile workshops and training institutions in Nigeria. The inadequacy of the apprenticeship system coupled with poor curriculum and the inconsistency in organizing retraining course makes identification and appropriate application of sensors, actuators and vehicle identification number (VIN) difficult. Odigiri & Ede (2010) also complained of too much emphasis on theory than practical's in the formal sector technical and technological institutions leading to the production of graduates who are skill deficient.

The acceptance of items 27-39 in table three showed the perception of automobile maintenance artisans and technicians on how to improve on the maintenance of modern motor vehicles in Nigeria. The perception of the respondents concerning regular review of the automobile technology curriculum and involvement in retraining courses was supported by Okorie (2000) who stated that the new technologies in modern vehicles demand new work skills and thus new technical educational requirements. The author added that the re-training of automobile artisans and technicians is necessary in order to upgrade their technical knowledge and vocational skills to cope with new maintenance challenges posed by modern vehicles. According to UNESCO - Nigeria: 2008- 2011 regular review of automobile technology curriculum would enable the school programs to reflect the automobile work place. Also the findings also revealed that, regular review of the technical teacher training curriculum is necessary for effective implementation since this will equip technical teachers with technical and pedagogical skills they will need to facilitate teaching and learning of the new work skills.

On the hypotheses, the study found out that there was no significant difference in the mean ratings of the responses of the respondents on the following: the current trends in the maintenance of modern automobiles in Nigeria; the factors affecting the maintenance of modern automobiles in Nigeria, and the perception of automobile maintenance professionals on how to improve on the maintenance of modern motor vehicles. Consequently, the opinions of the respondents did not differ in all the items identified. This suggests that automotive technicians are faced with a lot of problems in the maintenance of modern automobiles in Nigeria. There is a strong need to initiate improvement techniques to improve maintenance of automobiles in the work place. Therefore all three null hypotheses (H_{01} , H_{02} , and H_{03}) for the study were not rejected. .

Conclusion

The automobile is an indispensable means of transportation in modern societies because it is essential in people's lives whether used for daily transportation or used for pleasure. The study

supported the idea that the automobile artisans and technicians have ill-perception in relation to the challenges faced in the maintenance and repair of modern automobiles in Nigeria. This is due to several factors ranging from defects of the indigenous apprenticeship method of training artisans, poor training facilities, poor curriculum in formal schools and too much emphasis in theory as opposed to practical laboratory experience in repairing automobiles. Therefore there is urgent need to retrain and equip the automobile artisans and technicians with the necessary work skills to meet the current challenges experienced in the maintenance and repair of modern motor vehicle in Nigeria.

Recommendations

- To improve on the maintenance of modern vehicles in Nigeria, the study recommends the following:
- Reviewing automobile technology curriculum to address new challenges in automobile repair.
- Conducting research to identify maintenance challenges and organization of retraining courses to upgrade the work skills of auto mechanics.
- Equipping training institutions and centers with diagnostic scan tools, equipment and other training facilities.
- Establishing strong linkage between auto mechanics workshop & training institutions for availability of new information and retraining courses to upgrade technician's work skills.
- Emphasizing current maintenance challenges during instructional process.
- Instructing master craftsmen on the use of modern teaching procedure.
- Combining vocational automobile training with evening school in informal sector

References

- Alabi, A. O. (2006). *The Roles of Electronic Control Unit in Modern Motor Vehicles*. Lagos: Federal Government Press 28 – 32.
- Elobuiké, H.U.(1999). Relevance of technical college electrical/ electronics and mechanical/ automotive programmes to the needs of industries in Anambra, Ebonyi and Enugu states. Department of Vocational Teacher Education, University of Nigeria, Nsukka.Unpublished (Ph.D) thesis.
- Hillier, V. A. W. and Peter, C. (2004).*Fundamentals of Motor Vehicle Technology*. 5th Edition Nelson Thornes Ltd. United Kingdom. 150 – 156.
- Kirpal, S. (2006) *Automobile Engineering*, (1) . Delhi :Lomus offset press.National Board for Technical Education (NBTE) (2001).National technical certificate examination (craft level) syllabus for engineering trades based on the NBTE Modular curricular. Kaduna:NBTE.
- Odigiri, A.M.and Ede, E.O.(2010).Integration of new technological innovations in automobiles into the curriculum for Nigerian technical college programmes. *International Journal of Vocational and Technical Education*, 2 (5), 89-94.
- Ogwo, B. A. & Oranu R. N. (2006). *Methodology in formal and Non-formal Technical Vocational Education*. Nsukka: University of Nigeria Press Ltd p. 1 – 13
- Okoro, O. M. (1993) .Principles and Methods in Vocational and Technical Education in Nigeria. University Trust publishers. Nsukka, 58 – 59.
- Ogwo, B.A.(2004).Informal Sector Technical Skills Development Experiences in the Maintenance of Modern Automobiles in Nigeria. Retrived on August 12th from <http://www.intech.unu.ed>
- Peter, D. (2009). Innovation in motor vehicles. Retrieved on 12th June from <http://innovation.journal/data/html>.
- Rajput, R. K. (2007). *Internal Combustion Engines*. Laxmi Publications Ltd New Delhi 135 – 139.
- Schwaller AE (1993). Motor automotive technology. New York:Delmar publishers Inc.
- UNESCO-Nigeria (2008-2011). UNESCO-Nigeria TVE Revitalization Project (Phase II),In support of Revitalization of Technical and Vocational Education (TVE) in Nigeria. Retrieved from <http://unesco-nigeriatve.org>

Factors Affecting Quality Implementation of Basic Technology Curriculum in Secondary Schools in Nigeria

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Abstract

This study sought to establish factors affecting the quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State, Nigeria; and to see if agreement on these factors varied between teachers in private schools and those in public schools. Three research questions guided the study; and three hypotheses were tested at 0.05 level of significance. A survey research design was used on a population of 43 (N=43) basic technology head teachers of secondary schools. Because a census population could be accessed, no sampling technique was used. The instrument for data collection was a questionnaire administered to all 43 head technology teachers in Ethiope East LGA. Cronbach Alpha technique was used to ascertain reliability. Data were analyzed using mean for the research questions and t-test for hypotheses. The results revealed general agreement on the problems affecting implementation of basic technology curricula in secondary schools in Nigeria, with no significant difference between private school and public school educators.

Key Words: Factors, Quality Implementation, Basic Technology, Curriculum, Secondary Schools

Introduction

Vocational education differs in both concept and status in different nations of the world. In Nigeria, vocational education programs are offered at the pre-vocational and vocational schools at the post-primary level; and at the technical colleges, the polytechnics, and colleges of technical education at the postsecondary level (Akpan, Usoro, Akpan, & Ekpo, 2010). According to Nwiyi and Okorie (2014), vocational education is that aspect of education that gives its recipients the opportunity to acquire practical skills as well as some basic scientific knowledge. Similarly, Oni (2007) defined vocational education as that type of education which fits the individual for gainful employment in occupations requiring semi-skilled workers, technicians or sub-professionals. Pre-vocational subjects offered at the post-primary level include: Basic Technology, Practical Agriculture, Home Economics and Business Studies according to the Federal Republic of Nigeria (FRN) in 2004.

Basic technology, which is one of the core subjects among the pre-vocational subjects of the junior secondary school, is made up of other sub-subjects such as technical drawing, applied electricity, wood work, metal work, basic electronics and ceramics. It also involves academic practical study of materials and sources of energy with the ultimate intention of applying knowledge from the study to provide a comfortable environment for man (Onwuzurigbo, 2007). According to Elom and Okolie (2014), the study of basic technology has helped to reduce ignorance of technology because it gives opportunities to students to use tools and machines that are used in the industrial process; and it provides skills that help the learners to handle any piece of work given to them. Students who have acquired basic technology knowledge and do not have the means of continuing their education may be employed as craftsmen in industries (Elom & Okolie).

Uwameiye (2006) observed that through basic technology, students are assisted in exploring the various areas of technology, which may be helpful when making intelligent career choices. Basic technology has three main objectives as stated by the FRN (2004);

1. To provide pre-vocational orientation for further technology.
2. To provide basic technology literacy for everyday living
3. To stimulate creativity.

These objectives will only be achieved if basic technology curriculum is well implemented in the junior secondary schools. According to Fafunwa (2001) the major goal of technology education is to prepare the students to be productive citizens; giving them the skills, knowledge and attitudes related to the needs and problems of their immediate environment. However, it appears that the reverse has been the case in Nigerian public schools recently. It does not seem as though effective teaching of basic technology as well as proper management of the public schools is occurring. At the junior secondary school, students are expected to be exposed to fundamental skills needed to be relevant in the society. They are supposed to acquire skills in wood work, metal work, electrical and electronics and local crafts so that those who will leave the schools at the junior secondary school level will fit in the world of work. This implies a systematic arrangement of all vocational subjects under one subject at the Junior Secondary School level.

After the introduction of Basic Technology in schools, the government envisioned that, for its desired goals to be met, adequate facilities should be provided for effective learning. Consequently, sets of Basic Technology equipment, machines and tools were provided to schools all over the country. Qualified teachers were also assigned to teach these subjects in the schools. However, there appears to be a consensus that a positive effect of these measures has not been realised since their inception (Ezendu, 2003). Reports from different states in Nigeria indicated poor performance of students in their Junior Secondary School Examination in Basic Technology (Lenga, 2001; Nwoji, 2000). According to Ekefre, as cited in Akpan, et al.(2010), many students cannot interpret simple machine drawings. The teaching of Basic Technology does not provide appropriate job training and experience in any specific trade or industrial area. No student, upon completion of the training, can carry out simple daily maintenance of motor vehicles in terms of checking the oil level in the engine and water level in the radiator. Akpan, et al. ascribed poor performance of students in Basic Technology to insufficient tools, equipment, materials and teachers. The poor performance may be caused by various factors in the basic technology curriculum implementation process. Some of the factors that may affect quality implementation of basic technology curriculum could be a result of government related factors, school related factors, and/or teacher related factors. In Nigeria, there is growing dissatisfaction over students' academic achievement in many of the school subjects, especially in the sciences and pre-vocational subject such as Basic Technology. These subjects are the foundation on which further learning are built, hence it has become necessary to investigate some critical variables which affect the quality implementation of Basic Technology curriculum. Quality assurance focuses on all aspects of the education process; teacher, student, environmental and organizational factors. These factors are examined to determine the level or quality of input necessary to achieve the desired output. Obomanu (2001) has identified factors which affect students' academic achievement in school subjects to include: student factors, teacher factors, and societal factors. However, efforts have not been made to investigate the potency of these factors on students' academic achievement in each of the subjects. Idialu (2013) citing Uwameiye (2011) have equally identified gender factors and environmental factors on students' academic achievement. These factors should be examined to form a basis of quality assurance in the teaching and learning of each subject. With the absence of

appropriate remediation in the teaching and learning variables, results could lead to ineffective teaching, poor student academic achievement and in the case of basic technology, poor student attitude and lack of interest in the subject. This study seeks to assess the factors affecting quality implementation of basic technology in public and private secondary schools in Isoko North LGA of Delta State, Nigeria.

Statement of the Problem

Okolie, Elom and Inyiagu (2014), observed that poor student performance in basic technology has been pervasive in many Nigerian schools in recent years; and has attributed the poor performance to both institutional and non-institutional causes. This situation raises the issue of whether the basic technology curriculum is well implemented in both public and private secondary institutions in Delta State.

Purpose of the Study

The purpose of this study was to determine the factors that affect quality implementation of basic technology curriculum in public and private secondary schools in Isoko North LGA of Delta State, and to determine the level of agreement between private and public school head technology teachers concerning these factors. Specifically, this study sought to determine:

- The government related factors that affect quality implementation of basic technology curriculum in public and private secondary schools in Isoko North LGA of Delta State, and the level of agreement between public and private school teachers concerning these factors.
- The school related factors that affect quality implementation of basic technology curriculum in public and private secondary schools in Isoko North LGA of Delta State, and the level of agreement between public and private school teachers concerning these factors.
- The teacher related factors that affect quality implementation of basic technology curriculum in public and private secondary schools in Isoko North LGA of Delta State, and the level of agreement between public and private school teachers concerning these factors.

Research Questions

The following research questions guided the study:

1. What are the most common government related factors affecting quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State; and does agreement of these factors differ between public and private school teachers?
2. What are the most common school related factors affecting quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State; and does agreement of these factors differ between public and private school teachers?
3. What are the most common teacher related factors affecting quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State; and does agreement of these factors differ between public and private school teachers?

Limitations of the Study

This study was limited to 43 basic technology head teachers from public and private secondary schools in Isoko North LGA of Delta State. While 100% return rate was achieved, no sampling was done so results cannot be applied to any group other than the population studied. It cannot be applied to all basic technology curricula in the country of Nigeria, or any other region or country.

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

There is no significant difference in the mean response of public and private school teachers on the government related factors that affect quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State.

There is no significant difference in the mean response of public and private school teachers on the school related factors that affect quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State.

There is no significant difference in the mean response of public and private school teachers on the teacher related factors that affect quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State.

Methods and Procedure

The survey research design was used in this study. This design was appropriate because no variable was manipulated. The population of this study was 43 basic technology teachers from the 21 public and 22 private secondary schools in Isoko North LGA of Delta State. Census population was used. The instrument for data collection was a 15 item questionnaire titled "Factors Affecting Quality Implementation of Basic Technology Curriculum in Secondary Schools Questionnaire." It was made up of 3 sections. Section 1 is on Government Related Factors, Section 2 is on School Related Factors, and Section 3 is on Teacher Related Factors. All sections have 5 items each, and responses are based on a Likert-type 4-point scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) with corresponding values of 4, 3, 2, and 1 respectively. The questionnaire was validated by the researcher's supervisor and all suggested corrections were made. The questionnaire was administered to 10 basic technology head teachers from secondary schools in Ethiope East LGA of Delta State who were not part of the study area. Data collected were analyzed using Cronbach Alpha Technique to ascertain the reliability of the instrument which yields 0.64 coefficients. This result implies that the instrument was reliable. The questionnaire was administered to all 43 basic technology head teachers in the study region. The researcher met with each instructor and collected the completed questionnaires, so a 100% response rate was achieved. Mean and standard deviation were used to analyze data for the research questions, while t-test was used to test the hypotheses at .05 level of significance. The decision point was 2.50; indicating that any mean response of 2.50 and above was regarded as 'Agreed' while mean responses below 2.50 were regarded as 'Disagreed'. Furthermore, it was decided that where the t-calculated value was equal or greater than the critical t-value, it indicates significant difference; therefore, the null hypothesis will be rejected. All statistical analyses were performed with statistical package for social sciences (SPSS) software.

Results and Discussion

The results of this study were presented according to the research questions and hypotheses.

Research Question 1: What are the most common government related factors affecting quality implementation of basic technology curriculum in secondary schools in Isoko North LGA

of Delta State; and does agreement of these factors differ between public and private school teachers?

Table 1 revealed that The government related factors affecting quality implementation of basic technology curriculum are poor funding of basic technology curricula; poor provision of instructional materials for teaching and learning of basic technology; poor provision of qualified basic technology teachers; inadequate infrastructural facilities such as workshops, classrooms, and libraries; and poor training and retraining schemes for basic technology teachers. These findings are in line with the research results of other studies. Obamanu (2001) identified factors which affect students' academic achievement in school subjects to include student factors, teacher factors, and societal factors. These correspond with the study of Adejoh (2006) citing Bazza, which revealed the major problems affecting implementation of the basic technology programme in the junior secondary schools include: lack of well equipped libraries, nonpayment of teacher's allowances and fringe benefits, nonchalant attitude by the government, lack of workshops, and lack of adequate seats among others.

Table 1

Mean response teachers on the government related factors that affect quality implementation of basic technology curriculum in Isoko North LGA of Delta State

Government Related Factors Affecting Quality Implementation of Basic Technology Curriculum	Public School Basic Technology Head Teachers(N=21)		Private School Basic Technology Head Teachers (N=22)	
	Mean	Remark	Mean	Remark
Poor Funding of basic technology curriculum	3.45	Agreed	3.23	Agreed
Poor provision of instructional materials for teaching and learning of basic technology	3.35	Agreed	3.23	Agreed
Poor provision of qualified basic technology teachers	3.12	Agreed	3.00	Agreed
Inadequate infrastructural facilities such as workshop, classroom, and library	3.05	Agreed	3.43	Agreed
Poor training and retraining scheme for basic technology teachers	3.56	Agreed	3.76	Agreed
Grand Mean	3.31		3.33	

Research Question 2: What are the most common school related factors affecting quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State; and does agreement of these factors differ between public and private school teachers?

Table 2 revealed that the school related factors affecting quality implementation of basic technology curriculum are poor supervision of instruction by school administrators; lack of qualified basic technology teachers; lack of instructional and consumable materials to teach basic technology; lack of well-equipped basic technology workshops; and insufficient time and periods allocated for teaching basic technology. The poor performance may be caused by various factors in the basic technology curriculum implementation process. A major setback in effective curriculum implementation is the problem of unqualified teachers, especially specialist teachers in vocational and technical subjects (Ajibola, 2008; Nwiyi & Okorie, 2014; Nwiyi & Uriah, 2007). These findings correspond with Offorma (2005), who opined that the vocational and technical subjects are not effectively implemented as most of the subjects are not offered due to lack of

teachers, and workshops for practical work; and further noted that where there are teachers, the delivery is usually theorized because of lack of competence on the part of the teacher.

Table 2

Mean response of teachers on the school related factors that affect quality implementation of basic technology curriculum in Isoko North LGA of Delta State..

School Related Factors Affecting Quality Implementation of Basic Technology Curriculum	Public School Basic Technology Head Teachers (N=21)		Private School Basic Technology Head Teachers (N=22)	
	Mean	Remark	Mean	Remark
Poor supervision of instruction by school administrators	3.34	Agreed	3.20	Agreed
Lack of qualified basic technology teachers	3.28	Agreed	3.13	Agreed
Lack of instructional and consumable materials to teach basic technology	3.04	Agreed	3.00	Agreed
Lack of well-equipped basic technology workshop	3.12	Agreed	3.33	Agreed
Insufficient time and period allocated for teaching basic technology	3.59	Agreed	3.66	Agreed
Grand Mean	3.27		3.26	

Research Question 3: What are the most common teacher related factors affecting quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State; and does agreement of these factors differ between public and private school teachers?

Table 3 revealed that the teacher related factors affecting quality implementation of basic technology curriculum are poor preparation of lessons by basic technology teachers; poor teaching methods used by basic technology teachers; poor presentation of lesson by basic technology teachers; poor evaluation strategies employed by basic technology teachers; and poor attitude of basic technology teachers towards the teaching of basic technology. These findings are in line with the result of other studies. Omo-Ojugo and Oluwerei (2008) identified lack of adequate instructional materials and ineffective teaching methods as factors responsible for poor implementation of technical/vocational curricula. Also, Stone as cited by Adejoh (2006), states that the major difficulty in sciences is the method by which the subjects are customarily taught without regards to instructional materials. Similarly, Ogunleye (2000) found out that in the era of technological advancement, technology has had minimum impact on education. This is because 80% of teachers in Nigeria are mostly using the chalkboard and textbook method (traditional method) in teaching. Olayiwola (1999) observed that, the assessment by the teachers seem to be far too product-oriented and not enough process-conscious.

Table 3

Mean responses of teachers on the teacher related factors that affect quality implementation of basic technology curriculum in Isoko North LGA of Delta State

Teacher Related Factors Affecting Quality Implementation of Basic Technology Curriculum	Public School Basic Technology Head Teachers (N=21)		Private School Basic Technology Head Teachers (N=22)	
	Mean	Remark	Mean	Remark
Poor preparation of lesson by basic technology teachers	3.39	Agreed	3.29	Agreed
Poor teaching methods used by basic technology teachers	3.46	Agreed	3.33	Agreed
Poor presentation of lesson by basic technology teachers	3.22	Agreed	3.10	Agreed
Poor evaluation strategies employed by basic technology teachers	3.15	Agreed	3.26	Agreed
Poor attitude of basic technology teachers towards the teaching of basic technology	3.66	Agreed	3.46	Agreed
Grand Mean	3.38		3.29	

Respondents agreed with all the item statement in Table 3 above.

Hypothesis 1: There is no significant difference in the mean response of public and private school teachers on government related factors that affect quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State.

Table 4 revealed that hypothesis 1 which stated that there is no significant difference in the mean response of public and private school teachers on government related factors that affect quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State was not rejected because the t_{cal} (-.211) was less than the t_{crit} (1.684) at df (41).

Table 4

Analysis of responses from basic technology head teachers of public and private school teachers on government related factors that affect quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State.

Group	N	Mean	S	df	tcal	Tcrit	Decision
Public School	21	3.31	0.22	41	-0.211	1.684	Accept
Private School	22	3.33	0.28				

$p < 0.05$

Hypothesis 2: There is no significant difference in the mean response of public and private school teachers on school related factors that affect quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State.

Table 5 revealed that hypothesis 2, which stated that there is no significant difference in the mean response of public and private school teachers on school related factors that affect quality

implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State, was not rejected because the t_{cal} (.147) was less than the t_{crit} (1.684) at $df(41)$.

Table 5

Analysis of responses from basic technology head teachers of public and private school teachers on school related factors that affect quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State.

Group	N	M	SD	DF	t_{cal}	T_{crit}	Decision
Public School	21	3.27	0.21	41	.147	1.684	Accept
Private School	22	3.26	0.25				

$p < 0.05$

Hypothesis 3: There is no significant difference in the mean response of public and private school teachers on teachers' related factors that affect quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State.

Table 6 revealed that hypothesis 3 which stated that there is no significant difference in the mean response of public and private school teachers on teachers related factors that affect quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State was not rejected because the t_{cal} (1.683) was less than the t_{crit} (1.684) at $df(41)$.

Table 6

Analysis of responses from basic technology head teachers of public and private school teachers on teachers' related factors that affect quality implementation of basic technology curriculum in secondary schools in Isoko North LGA of Delta State.

Group	N	Mean	SD	DF	t_{cal}	T_{crit}	Decision
Public School	21	3.38	0.20	41	1.683	1.684	Accept
Private School	22	3.29	0.13				

$p < 0.05$

Summary, Conclusion, and Recommendations

The major findings of the study revealed that the government, school and teacher factors affecting quality implementation of basic technology curriculum in public and private secondary schools in Isoko North LGA of Delta State are agreed upon by both secondary and private head technology teachers in those schools.

Top government related factors agreed upon by all teachers in the study are poor funding of basic technology curriculum; poor provision of instructional materials for teaching and learning of basic technology; poor provision of qualified basic technology teachers; inadequate infrastructural facilities such as workshop, classroom, and library; and poor training and retraining schemes for basic technology teachers.

The top school related factors agreed upon by all teachers in the study include poor supervision of instruction by school administrators; lack of qualified basic technology teachers; lack of instructional and consumable materials to teach basic technology; lack of well-equipped basic technology workshop; and insufficient time and periods allocated for teaching basic technology.

Teachers related factors agreed upon by all teachers in the study include poor preparation of lessons by basic technology teachers; poor teaching methods used by basic technology teachers; poor presentation of lesson by basic technology teachers; poor evaluation strategies employed by

basic technology teachers; and poor attitudes of basic technology teachers towards the teaching of basic technology

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

- Delta State Ministry of Basic Education should adequately fund the implementation of basic technology in secondary schools in Isoko North LGA of Delta State.
- Delta State Ministry of Basic Education should adequately provide human and material resources for quality implementation of basic technology in secondary schools in Isoko North LGA of Delta State.
- Delta State Ministry of Basic Education should provide training and re-training scheme for basic technology teachers for quality implementation of basic technology in secondary schools in Isoko North LGA of Delta State.
- School administrators should adequately monitor and supervised the implementation of basic technology in secondary schools in Isoko North LGA of Delta State.
- Basic technology teachers should be well prepared for quality implementation of basic technology in secondary schools in Isoko North LGA of Delta State.

The results of this study should be significant to principals, teachers, parents, students, Delta State Ministry of Basic Education, and future researchers. Results of this may allow all stakeholders of the education system to think differently about the allocation of resources and training the human capital necessary for basic technology education.

References

- Adejoh, M.A. (2006). Evaluation of the integrated science and introductory technology programmes in secondary schools in Benue State. A Thesis Submitted to the Department of Science and Technology Education, Faculty of Education, University of Jos.
- Ajibola, M.A. (2008) Innovation and curriculum implementation for basic education in Nigeria: Policy priorities and challenges of practices and implementation. *Research Journal of International Studies and Issues* 8,(4), 51-58.
- Akpan, G.A., Usoro, H.S., Akpan, I.G., & Ekpo, A.B. (2010). Effects of team teaching on students performance in introductory technology in secondary schools in Akwa Ibom State Nigeria. *African Research Review*, 4(3b), 41-54.
- Elom, E.N. & Okolie, U.C. (2014). Impediments to effective teaching and learning of basic technology in Nigerian public secondary schools. *Journal of Research & Method in Education*, 4(3), 45-51.
- Ezendu, S. A. (2003). Instructional material needs of introductory technology classes in Enugu State. *Nigerian Journal of Curriculum Studies*, 10 (1), 138 – 147.
- Fafunwa, B. A. (2001). Conscious planning of educational system. *Journal of Educational Research*, 5(2), 32-36.
- Federal Republic of Nigeria (2004) *National policy on education*. Lagos: NERDC.
- Idialu, J.O. (2013). Meeting the challenges of vision 20:2020 through science, technology and mathematics in Nigeria: Dilemma in the implementation of STM policy in South South zone of Nigeria. *Journal of Science and Technology Education. Special Edition*, 31 – 39.
- Lenga, F. K. (2001). Girls' strengths and weaknesses in learning of science, mathematics and technology subjects. *Proceedings of FEMSA/AFCLIST Gender Workshop*. Nairobi, Kenya. December 6-8.
- Nwiyi, G.U. & Okorie, F.S. (2014). Problem militating against curriculum implementation on vocational technical subject in secondary schools in Nigeria. *African Education Indices*, 7(1), 1-7.
- Nwiyi, G.U. & Uriah O.A. (2007) Teacher empowerment and commitment to duty in Rivers State. *Journal of Pedagogy and Educational Development, Rivers State College of Education*, 12(1) 84-89.
- Nwoji, R. J. (2000). Improving the teaching and learning of introductory technology through the use of media. *Journal of Science Teachers Association of Nigeria*, 16 (16), 45 – 50.
- Obomanu, B. J. (2001). Implementation concerns of the junior secondary school pre-vocational courses in Nigerian Schools: *Nigerian Journal of Curriculum Studies*, 8 (1), 173 – 178.
- Offorma, G.C. (2005) *curriculum for wealth creation* paper presented at the seminar of the World Council for Curriculum and instruction (WCU) held at the Federal College of Education, Kano Nigeria.

- Ogunleye, A.O., 2000. Towards the optimal utilization and management of resources for the effective teaching and learning of physics in schools. Proceedings of the 41st Annual Conference of the Science Teachers Association of Nigeria, (STAN), University of Lagos, Nigeria, 215-220.
- Okolie, U.C., Elom, E.N., & Inyiagu, E.E. (2014). Factors affecting students' performance on basic technology junior secondary school certificate examination. *Journal of Educational Policy and Entrepreneurial Research*, 1(1), 22-31.
- Olayiwola, MA. (1999). Achieving effective science, technology and mathematics (S.T.M.) delivery in the 21st century; some areas for consideration. *Journal of STAN*, 34 (1&2). 16-19.
- Omo-Ojugo C.O. & Oluwerei, O.F. (2008). School factors affecting the teaching and learning of business education studies in Nigerian school: *Pakistan Journal of social studies*, 5(7) 663-670.
- Oni, C.S. (2007) *Developing vocational education through computer literacy in Nigeria Junior Secondary School*, <http://www.ncsu.edu/median/simmer2007/oni/index.htm>. Retrieved 14th September, 2015.
- Onwuzurigbo, C. C. (2007). Strategies for effective study of introductory technology in junior secondary schools in Abakaliki. Unpublished B.Sc. Thesis, Department of Technology and Vocational Education. Ebonyi State University, Abakaliki.
- Uwameiye, O. (2006). Effect of reciprocal peer tutoring on the academic achievement of students in introductory technology. Unpublished B.Sc.Ed Thesis. Department of Technology and Vocational Education. Ebonyi State University. Abakaliki.

Status Of Technical Vocational Education And Training In Riverine And Rural Communities Of
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Nigeria

Abstract

Many believe that Technical and Vocational Education Training (TVET) has not been given the emphasis it deserves in the riverine and rural communities in the Niger Delta Region of Nigeria. The purpose of this study is to ascertain the status of TVET in riverine and rural communities of the Niger Delta Region and to suggest strategies that will make TVET a vital catalyst towards fast track economic growth and human capital development which has the potential to elevate the standard of living of the people living in the riverine and rural communities of the Niger Delta Region. The paper discusses the Concept of TVET and its Historical Development in Nigeria, the current status of TVET in Riverine and Rural Communities of Niger Delta Region; strategies for making TVET Work in the Niger Delta Region; establishing a model for World Class TVET Institutions in the Riverine and Rural Communities of the Niger Delta Region. TVET is an instrument for national and economic development and its benefits well known. TVET institutions should be established by government at all levels, inclusive of multinational companies, oil and gas exploration companies, and stakeholders from riverine and rural communities of the Niger delta Region to address the skill needs of the industries operating in the riverine and rural communities of the Niger Delta region of Nigeria. To make TVET work effectively in the riverine and rural communities of Niger Delta Region of Nigeria, it was recommended that TVET Committees should be set up by every riverine and rural community to handle issues related to acquisition of vocational skills in their areas. Additionally, a TVET Institution Establishment Fund should be promoted to government, multinational companies, and stakeholders of riverine and rural communities for the purpose of funding TVET and enhancing economic development in the region.

Keywords: TVET, Riverine Communities, Rural Communities, Niger Delta Region, Economic Development, & Nigeria.

Introduction

Nigeria is the most populous country in Africa. It lies between latitude 4 degrees North and 14 degrees North and also between longitude 3 degree East and 15 degree East Meridian. It is bounded on the North and North West by the Republic of Niger on the Northeast by the Republic of Chad, east by the Republic of Cameroon, south by the Atlantic Ocean and on the west by the Republic of Benin. It covers an area of 913,073 square kilometers (Etemike, Mordi, Jieh, & Akinwumi, 2006). Climatically, there are two well marked seasons which are the wet or rainy and dry with varying intensity. Specifically, there are five vegetation areas which are mangrove swamp, rain forest, guinea savanna, sudan savanna, and sahel savanna. The vegetations are further classified into two; these are the forest land and savanna land. The forest land is characterized by lagoons or creeks, thick mangrove swamp or thick tropical vegetation, while the savanna land presents with essential grassland vegetation and highlands.

Consequently, geographical location has a tremendous effect on the general lives of the people of Nigeria. Regarding population, coastal dwellers predominantly work in fishing and salt making while the forest dwellers largely practice farming and hunting, and the savanna dwellers have been both agriculturists and pastoralists. Also, Nigeria is a multi-ethnic entity with over 250 ethnic groups, the major ethnic groups are Yoruba, Hausa, and Igbo. Other ethnic groups includes; Ijaw, Urhobo, Edo, Itsekiri, Isoko, Ukwuani, Igala, Nupe, Tiv, Efik, Ibibios, and Kalabari.

Riverine communities are those areas that cannot be accessed by land transport and only through the waterways. The riverine communities are mostly located in the Niger Delta Region of Nigeria. The Niger-Delta Region is a very densely populated region sometimes called the Oil Rivers because it was once a major producer of palm oil. The area was the British Oil Rivers Protectorate from 1885 until 1893, when it was expanded and became the Niger Coast Protectorate. The Niger-Delta is defined officially by the Nigerian government, and it extends over about 70,000 km² and makes up 7.5% of Nigeria's land mass. Historically and cartographically, it consists of present day Bayelsa, Delta, and Rivers States. In the year 2000, the Federal Government of Nigeria under President Olusegun Obasanjo's regime included Abia, Akwa-Ibom, Cross River, Edo, Imo and Ondo States in the Niger-Delta Region. Over 30 million people of more than 40 ethnic groups including the Bini, Efik, Ibibio, Igbo, Annang, Oron, Ijaw, Itsekiri, Isoko, Urhobo, Ukwuani, and Kalabari, are among the inhabitants in the Niger-Delta Region.

Education in Nigeria

Education in Nigeria is an instrument par excellence for enhancing national development and also includes participation by non-governmental agencies, communities, and individuals as well as government intervention (Federal Government of Nigeria, 2004). The two main forms of education in Nigeria are formal and informal. Consequently, the goals of education in Nigeria are:

- The inculcation of national consciousness and national unity;
- The inculcation of the right type of values and attitude for survival of the individual and the Nigerian society;
- The training of the mind in the understanding of the world around; and
- The acquisition of appropriate skills and the development of mental, physical, and social abilities and competencies as equipment for individual to live in and contribute to the development of the society.

Levels of education in Nigeria include; Pre Primary Education, Basic Education, Secondary Education, Technical and Vocational Education, and Tertiary Education. This article will emphasize Technical and Vocational Education which is also referred to as Technical Vocational Education and Training (TVET).

Concept of Technical Vocational Education and Training (TVET)

TVET is an instrument for sustainable development and livelihood which has yielded effective results in developing economies around the globe. It is a tool for diversification of a national economy. According to Miuni, Yee, Tee, and Muhammad (2012), TVET is a component of educational activities oriented to provide the necessary knowledge and skills to perform a particular job post. Additionally, it acts as a supplement to other types of education by training people to become economically self-reliant. Similarly, Dike (2009) described TVET as education designed to develop occupational skills to give individuals the skills to live, learn, and work as a productive citizens in a global society.

Supporting these views, Aina (2009) posited that TVET represents an education for skill building and skill identity, which ultimately becomes a means of livelihood. Wodi (2012), opined that TVET is aimed at producing semi skilled and technical manpower necessary to restore, revitalized, energize, operate, and sustain the national economy while substantially reduce unemployment. In addition, Oranu (2009) sees TVET as skill oriented, which addresses the cognitive and tactile components of education. TVET has a long history of providing individuals with workforce skills that lead to successful and permanent employment.

Historical Development of TVET in Nigeria

The British recognized the importance of TVET and laid the foundation for its importance in Nigeria. According to Adegbile in Igberadja (2015), in the premises of Yaba College of Technology, some organized training schemes were in operation. These training include:

- Lands and Survey Training School (1908),
- Marine Training School (1928) and
- Public Works, Posts and telegraphs and railway (1931)

Overall, a total of about three thousand technicians were trained through these schemes up to 1945. Yaba Technical Institute, which became Yaba College of Technology, was established in 1947 and inherited the building vacated by the earlier established Yaba higher College whose students were transferred to Ibadan with the beginning of Nigeria Premier University. Yaba Technical Institute formally started operations in 1948 and its functions were to provide;

- Pre-vocational courses in Engineering, printing and commercial subjects which were four years secondary technical or secondary commercial courses.
- Part time day and evening courses in Mechanical and electrical engineering, building construction.

The evening courses were intended mainly as in-service training program for employees of the Railways and United Africa Company (UAC). By October 1948, a total of five full-time and part-time courses ranging from Mechanical Engineering Assistants to Handicraft Instructors courses were offered with a total enrollment of approximately 400 students. The Electrical Engineering Assistants and Architectural Assistants courses were introduced in 1949 and Civil Engineering Assistants courses in 1950. In 1953, the institute had a total enrollment of six hundred students (600) half of whom were residential and studying on full-time basis. However, in 1959 the institute presented the first set of students to qualify for the city and guilds of London Institute Examinations in Building Construction and Electrical/Mechanical Engineering. Prior to this examination arrangement, the students had been assessed by means of internal diploma examinations. Similar examination institutes were established by the Colonial Masters in Enugu (1950); Illorin (1951); Kano (1953); Ijebuode and Ogbomosho (1959) all geared towards the provision of adequate manpower. In 1987, the National Council on Education (NCE) approved a broad classification of technical institutions as follows;

- **Best Centers:** Vocational schools at the post primary level which engage in artisan training to produce artisans. The courses lead to the award of ministry of labor trade test certificate and are tenable for employment especially in government.
- **Technical Colleges:** These are at the post junior secondary school level which produces craftsman and master craftsmen. These courses lead to the award of National Business Certificate (NBC) and National Technical Certificate (NTC) at the craft level. Advanced National Business Certificate (ANBC) and Advanced National Technical Certificate (ANTC) are also a part of the at master craft level. The certificates are awarded by the National Business and Technical Examination Board (NABTEB).
- **Apprenticeship Schemes:** These are training outfits, not necessarily component of the formal system, that form an integral part of Nigeria's technical education and training. Given their level of contribution to manpower production, they constitute an important component of the training system.. Similarly, due recognition must be accorded to the open apprenticeship scheme of the National Directorate for Employment (NDE), and popular road side apprenticeship motor mechanic scheme and numerous other semi skilled professional which constitute most of the artisans working in the industries.

- **The Polytechnics/Colleges of Technology:** This category includes; mono technics e.g. colleges of agriculture, school of survey, school of fisheries, etc. They are post secondary institutions which in most countries, emerged as a result of development amalgamation of lower level institution to satisfy needed manpower requirements in industry agriculture and commerce. The polytechnics in Nigeria represent the apex of technical and vocational education training.

Objectives of Technical College Education

The objectives of vocational and technical education as stipulated in the National Policy on Education (FRN, 2004) are to:

- Provide trained people in applied science, technology and business particularly at craft, advance craft and technical levels.
- Provide the technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development;
- Give training and impart the necessary skills leading to individuals who shall be self-reliant economically.

TVET Institutions in Nigeria are approved by National Board for Technical Education NBTE. The National Board for Technical Education is a principal component of the Federal Ministry of Education specifically created to handle all aspects of Technical and Vocational Education external to University Education. The National Board for Technical Education was established by Act No. 9 of 11th January, 1977. In addition to providing standardized minimum guide curricula for Technical and Vocational Education and Training (TVET), the Board supervises and regulates, through an accreditation process, the programs offered by technical institutions at secondary and post secondary school levels. It is also involved with the funding of polytechnic institutions owned by the Government of the Federation of Nigeria.

Status of TVET in the Riverine Communities in the Niger Delta Region of Nigeria

Despite the laudable goals of TVET in Nigeria, out of the 558 National Board for Technical Education approved TVET institutions, three are located in the Riverine Communities of the Niger Delta Region. The Riverine communities are at the disadvantage end due to poor access to TVET institutions (See Table 1 below).

Table 1
List of NBTE Approved TVET Institutions in Nigeria

Type of TVET Institution	Total Numbers	Numbers Located in Riverine Communities
Federal Polytechnics	28	1
State Polytechnics	39	0
Private Polytechnics	44	0
Federal Colleges of Agriculture	17	0
State Colleges of Agriculture	19	0
Federal Monotechnics/Specialized Institutions	22	0
State Monotechnics	2	0
Private Monotechnics	2	0
Federal Colleges of Health Technology	19	0
State Colleges of Health Technology and Allied Institutions	11	1
Private Colleges of Health Technology	6	0
Innovation Enterprise Institutions (IEIs)	140	0
Vocational Enterprise Institutions (VEIs)	77	1
Federal Technical Colleges	19	0
State Technical Colleges	110	0
Private Technical Colleges	3	0
Total	558	3

Source: National Board for Technical Education (2017)

From Table 1 above, only a few TVET institutions are located in the Riverine Communities of the Niger Delta Region resulting in poor access to TVET opportunities. This is true despite the fact that international organizations such as African Union (AU) and United Nation (UN) are calling for revitalization of TVET at all levels, improve participation in TVET, and the promotion of TVET to improve national economy. Additionally, TVET should reduce unemployment, poverty, youth restiveness, crime, and promote national security in developing nations like Nigeria. Consequently, there is a need to address the issue of poor access to TVET institutions in the Riverine Communities of the Niger Delta Region of Nigeria.

Making TVET Work in the Riverine Communities of the Niger Delta Region of Nigeria

In making TVET work in the Riverine Communities of the Niger Delta Region, advocacy efforts must be expanded to identify the vocational skills areas that must be developed based on the environmental and technological needs of the Riverine communities. These skill areas include Agricultural Science, Food Processing, Transportation Science, Oil and Gas, Hospitality and Tourism, Environmental and Health Science, Building Construction, Welding and Fabrication, General Electricity, Renewable Energy, Industrial and Environmental Safety, Catering, Fashion and Design, GSM Repairs, Marine Technology, Petrochemical Technology, Production Technology, and Information Communication Technology (ICT). With these areas being identified, TVET consultants need to be engaged to guide government and stakeholders of the Riverine Communities on the various TVET programs that should be operated in TVET institutions with a focus on the needs of the immediate environment where the TVET institutions will be located. The approach should be demand driven and should continue over time since the education is a continuous process and it changes over time to address the needs of the society. For example before starting a program, all stakeholders involve in engaging TVET graduates will be

consulted to identify their present needs in order to produce TVET graduates who will be able to impact the skill shortage in the labor market by finding gainful employment. This implies that if the labor market needs 300 plumbers, electricians, and welders, the TVET institutions will only produce plumbers, electricians, and welders to address the skill needs of the labor market. Furthermore, the TVET consultants engaged under the supervision of the government and stakeholders from the riverine communities will develop an action plan to guide in establishing TVET institutions that will help produced program graduates with the needed skills in developing the Niger Delta Region of Nigeria.

TVET Institutions and Implementation of TVET Programs in Riverine Communities of Niger Delta Region

Establishing TVET institutions is cost intensive, so it may be more successfully achieved and sustained through public and private partnerships. This implies that all stakeholders from the riverine communities have greater role to play in making TVET work in riverine communities through commitment of human, natural, and material resources. This approach could be advantageous to developing effective and demand driven TVET institutions in the riverine communities of the Niger Delta region.

Model for Establishing World Class TVET Institutions in the Riverine Communities of the Niger Delta Region

To develop critical insight into TVET and what it takes to implement it effectively, stakeholders of the riverine communities shall conduct Edu-Tour to TVET institutions across the globe to identify TVET best practices and to identify the major contributions of TVET to a national economy. Next, a similar TVET institution shall be established in a selected Riverine community as a experimental model to form the basis of establishing other TVET institutions which will be based on the results achieved from the experimental model. Below are steps in establishing TVET institution.

- Edu-Tour to TVET Institutions across the globe
- Establishing a location for the proposed TVET institution
- Establishing the TVET Institution
- Development of Curriculum
- Recruitment of Staff
- Training and Retraining of Recruited Staff
- Admission of Students
- Curriculum implementation
- Accreditation by National Board for Technical Education
- Examination
- Evaluation of the entire program of the institution

Conclusion and Recommendations

TVET is a proven instrument for national and economic development. TVET institutions should be established by government (including public and private partnerships) at all levels. Additionally, multinational companies, oil and gas exploration companies, and stakeholders from riverine communities of the Niger Delta Region will have a stake in addressing the skill needs of the industries operating in the rural and riverine communities of the Niger Delta Region of Nigeria. In support, the following recommendations are suggested to make TVET work in the riverine communities of Niger Delta Region of Nigeria:

- A TVET Committee should be set up by every riverine community to handle every issues related to acquisition of vocational skills.
- A TVET Institution Establishment Fund should be introduced to government, multinational companies, and stakeholders of riverine communities for the purpose of promoting TVET in the riverine communities through public and private partnerships.
- TVET scholarships should be offered to residents of riverine communities for training and retraining in TVET courses.
- TVET Development Board for Riverine Communities should be established by government at all levels to improve participation in TVET in riverine communities.

As part of the Sustainable Development Goals (SDGs), government at all levels should direct the SDGs projects towards improving TVET in riverine communities.

References

- Aina, O. (2009). *Three decades of technical and vocational education and training in Nigeria*. Ile-Ife: Obafemi University Press Ltd.
- Dike, V. E. (2009). Technical and vocational education: Key to Nigeria's development. Retrieved from <http://www.nigeriavillagesquare.com/articles/victor-dike/technical-and-vocational-educationkey-to-nigerias-development.html> (accessed 27th July, 2017)
- Federal Republic of Nigeria (2004). *National policy on education*. 4th Edition, Abuja, National Education Research Development Cooperation Press.
- Igberadja, S. (2015). *Assessment of human and material resources for teaching and learning of woodwork in Delta State technical colleges*. M.Sc Industrial Technology Dissertation Submitted to Postgraduate School, Delta State University Abraka.
- Miuni, M.M., Yee, M.H, Tee, T.K., & Muhammad, R.B.R. (2012). Vocational pedagogy: a dimension of vocational learning with workplace requirement. *Journal of Technical Education and Training*, 4(1).
- National Board for Technical Education (2017). List of institutions with contact addresses under the purview of NBTE. Retrieved 27th July, 2017 from <http://www.nbte.gov.ng/institutions.html>
- Oranu, R.N (2003). *Vocational and technical education in Nigeria*. In R.P.S. Pillai (Ed) *Strategies for producing new curriculum in West African*. Geneva: UNESCO International Bureau of Education. Retrieved 27th July, 2017 from <http://www.ibe.unesco.org/curriculum/Africa.pdf>.

Contemporary Issues in Diversification of Nigerian Economy Through Entrepreneurship

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Abstract

This study examined the challenges and improvement strategies in the diversification of the Nigerian economy through entrepreneurship. Two research questions and hypotheses guided the study. The population of the study was 183 registered Small and Medium Scale Enterprises (SMEs) in Warri Delta State. Simple random sampling was used to select 91 SMEs owners. The instrument for data collection was a questionnaire which was validated by 3 lecturers. The reliability of the instrument was .75 which was obtained using Pearson's correlation technique. Data were collected through the aid of 15 research assistants. Data collected were analysed using mean for research questions and t-test for hypotheses. The study revealed that various challenges affect the diversification of Nigeria's economy through entrepreneurship. These challenges include: low capital, poor access to loans, over taxation, inadequate infrastructural facilities, and poor transportation systems.

Keywords: Issues, Diversification, Economy, Entrepreneurship, & Nigeria

Introduction

Nigeria is one of the most populated countries in West Africa. It is blessed with natural resources such as groundnuts, cassava, coal, and crude oil. The present comatose state of the Nigerian economy is a sad reminder that the country's tremendous potential for growth and poverty reduction are far from being fully achieved (World Bank, 1996). With little or no new non-oil local and foreign investment taking place in the last couple of years, the outlook for Gross Domestic Product (GDP) growth remains bleak. Much of the socio-economic infrastructure built up during the oil boom years has deteriorated. Public delivery of essential services including electricity and telecommunication is grossly deteriorating (Ogunleye & Simon-Oke, 2004). According to Onodugo, Amujiri, and Nwuba (2015), the Nigerian economy has precariously leaned on the fragile leg of crude oil for decades. Consequently, it has had a chequered growth trajectory driven by the vicissitudes of oil prices. An emerging trend suggests that in the last seven years the economy was growing without job creation and poverty reduction. Expectedly, attention of scholars had shifted towards non-oil export as a remediation for this quagmire. However, it is generally agreed that diversification is necessary for a country to attain growth and development. Onodugo, et al (2015) citing Samuelson (1968) described economic diversification as an act of investing in a variety of assets; and mentioned its benefit as that which reduces risk especially in the time of recession, inflation, deflation etc. Economic diversification strives to smooth out unsystematic risk events in a portfolio so that the positive performance of some investments will neutralize the negative performance of others.

Economic diversification is business-oriented. This implies that entrepreneurship can be one of the mechanisms for economic diversification in Nigeria. Worldwide, entrepreneurial activities have proven capable of making positive impacts on the economy of a nation and the quality of life of the people (Storey, 2004). Storey further noted that studies have established a positive relationship between entrepreneurship and stimulation of economic growth; and empowerment of disadvantaged segments of the population, including women and the poor. Entrepreneurship is the activity of venturing into new enterprises. Distinct from management, entrepreneurship is the creation of new enterprises to meet new challenges and opportunities presented by a given situation. Entrepreneurship is an activity that involves the discovery,

evaluation and exploitation of opportunities to introduce new goods and services; ways of organizing markets, processes, and raw materials through efforts that previously had not existed (Shane & Venkataraman, 2000). It is a process of bearing a non-insurable risk in order to achieve business objectives (Awe, 2006). Thus, entrepreneurs perceive the commercial potential of an idea. They mobilize the needed resources and provide the force to detonate the commercial exploitation of the business idea, turning the business idea into a commercial venture. This adds economic value to the idea, leads to feasibility studies, and has profit as its main objective.

Many scholars have written widely on entrepreneurship and its potential to promote development, thus underscoring the quintessence, significance and relevance of this sub-sector in the diversification of any given economy. The experiences of developed economies in relation to the roles played by entrepreneurship buttress the fact that the importance of entrepreneurship cannot be overemphasized, especially among developing countries. In order to highlight its significance in relation to the growth and development of a given economy, entrepreneurship has been variously referred to as a source of development. Entrepreneurial activities have been found capable of making positive impacts on the economy of a nation and the quality of life of the people (Adejumo, 2000). Nigeria has vast business and investment potential due to the abundant, vibrant and dynamic human and natural resources it possesses. Tapping these resources requires the ability to identify potentially useful and economically viable endeavors. Nigerians have made their marks in diverse fields such as science, technology, academics, business and entertainment. Entrepreneurship activities and innovative ingenuity in Nigeria have developed enterprises in areas such as agricultural/agro-allied activities, solid minerals, power, transport, information and telecommunication, hospitality and tourism, oil and gas, environmental and waste management, financial banking services, engineering and fabrication work, and building and construction (Agbeze, 2012). However, with these human and natural resources, Nigeria is still one of the poorest countries in the world and has one of the highest rates of youth unemployment in sub-Saharan Africa, despite its alleged strong economic growth. Many other countries have been able to energize and transform the entrepreneurship sub-sector to such vibrancy that they have been able to reduce to the barest minimum their unemployment and poverty level. Unfortunately, such cannot be said of Nigeria (Onugu, 2005).

The depth to which hunger and poverty have devastated lives and future ambitions of youth, especially graduates in Nigeria, has led to scholars prescribing entrepreneurship development as the permanent cure for extreme hunger and poverty necessitated by unemployment. Therefore, economic displacement is one of the external forces that influence the development of entrepreneurship. The great need for entrepreneurship development in Nigeria today, both in small and medium enterprises, is necessitated by the rate of unemployment and its effect on both the people and the nation. In spite of the fact that entrepreneurship development has been regarded as the bulwark for employment generation and technological development in Nigeria, this sector has been relatively neglected. Sustainable entrepreneurship development in Nigeria is still riddled with problems.

Entrepreneurship in Nigeria is faced with several constraints which limit its development. These constraints include financial or capital shortage, infrastructure problems, technology, organizational constraints, inadequate or nonexistent skilled manpower, competition from imported goods and poor administration of government assisted programmes. Problems also include inadequate information about business opportunities, inadequate capital, substandard goods, and an overzealous desire for profit (Makinde, 2013). According to Henry-Phillip (2011) cited in Makinde (2013), other problems or challenges faced by citizens' participation in entrepreneurial development in Nigeria include:

- Lack of proper planning

- Lack of finance
- Poor management
- Less obvious problems include:
 - Improper assessment of self and local operations
 - Political and religious crisis
 - Use of obsolete equipment
 - Misapplication of business finance to other areas
 - Too much family interference (cultural barriers)
 - Lack of infrastructural facilities such as good transportation links
 - Lack of incentives and protection
 - Multiple taxes levied at all tiers of government (federal, state, local level)
 - Inadequate collateral security, leading to difficulty in coordinating other factors of production, such as land, labor and capital.

Consequently, in 2005, the Nigerian government established the micro-finance policy. One of the key objectives of the policy is to “enhance service delivery [provision of financial support] by micro-finance institutions to micro, small and medium entrepreneurs” (Central Bank of Nigeria, 2005). It is intended that the micro-finance banks will “provide diversified, affordable and dependable financial services to those in need of financial support, in a timely and competitive manner that would enable them to undertake and deliver long-term, sustainable entrepreneurial activities” (Central Bank of Nigeria, 2005). The government should therefore ensure that these micro-finance banks have reasonable capital resources to provide the services they are set up to render. The government can also establish special bodies or work with the Small and Medium Enterprise Development Agency of Nigeria (SMEDAN) to provide special funds for start-ups. The government can ensure that organizations/individuals that receive these special funds are able to pay the money back by adopting the services of organizations such as the Enterprise Development Centre (EDC). The EDC has adopted psychometric testing to predict credit risk. EDC recognized that it is difficult for most start-ups to present all the securities and collateral required to obtain a loan from a bank. To counter this, the EDC adopted Harvard University’s Entrepreneurial Finance Lab initiative of using psychometric testing to predict credit risk (Wylie, 2011). Similarly, as posited by Makinde (2013), the Federal Government in collaboration with foreign bodies continues to make capital available to SMEs. For instance, since the mid-1980s, some international organizations have continued to play vital roles in providing foreign capital to some SMEs in Nigeria. Such organizations include World Bank, African Development Bank (ADB) and International Finance Corporation (IFC). In the same vein, in order to promote entrepreneurship in Nigeria, The Federal Government launched incentives and enacted policies to curb hindrance to the development of small-scale industries. One among these was the launching of the National Entrepreneurship Development Fund, with a huge sum of money being set aside for the development of small industries. Two of the incentives and policies established for the development of small scale industries are described below.

Small scale industries credit schemes:

The small scale industries credit scheme provided debt capital for medium and long term projects. This scheme is the main source of direct government financial assistance to small scale businesses. All the States of the federation operate this scheme, which is normally under the supervision of the various States Ministries of Commerce and Industries.

Small Scale Industries and Graduate Employment Programmes

The Small Scale Industries and Graduate Employment Programmes (SSIGEP) is designed to encourage and aid unemployed Nigerians in establishing and running their own businesses. The

directorate gives applicants a loan, the value of which ranges between N5,000.00 and N35,000.00. Before qualifying for this loan, an applicant is to submit to the NDE a comprehensive feasibility report of the intended business, the amount of loan needed, and names of all business partners involved.

Statement of the Problem

Nigeria, like most developing nations of the world, is faced with myriad problems and harsh realities which include poverty, unemployment, conflicts and disease. These situations pose great challenges to the very existence of individuals in most developing nations, therefore necessitating the training of educated men and women who can function effectively in the society in which they live. This problem is said to be traceable to the disequilibrium between labour market requirements and the lack of essential employment skills acquired by school graduates. Despite government incentives, it is generally thought that the most important problems confronting indigenous entrepreneurs in Nigeria include poor local incentive and inadequate capital. Balogun (2004) cited by Baba (2013) echoed the same concern when he wrote that the greatest concern of most potential and existing entrepreneurs is that of finance.

Another problem, noted by Orishede and Ezenwakwelu (2014) is the lack of a strong patent law. The researchers posited that local entrepreneurs are not protected, as the Nigerian patent law offers them little protection against piracy. Furthermore, due to collapsed infrastructural facilities and unbridled corruption, many entrepreneurs have to spend huge sums of money to provide some basic infrastructure for their endeavors. Additionally, they may have to bribe government officials which makes the cost of doing business in the country too high, causing adverse implications for profitability. Other barriers to entrepreneurship might include poor fiscal and macroeconomic policies, poor infrastructure, poor incentive, lack of political will, corruption and poor public service ethics. This study identifies the challenges to sustainable entrepreneurship in Nigeria, and determines if these challenges differ between male and female respondents. Additionally, it identifies top improvement strategies for sustainable entrepreneurship development, and determines if agreement on these strategies differs between male and female respondents.

Purpose of the Study

The major purpose of the study is to examine the challenges and improvement strategies for building sustainable entrepreneurship development in Nigeria by gender of business owners. Specifically, the study seeks to examine the following:

- The level of agreement among small and medium business owners concerning the challenges of diversifying Nigerian economy through entrepreneurship.
- The level of agreement among small and medium business owners concerning the improvement strategies needed to overcome challenges of diversifying Nigerian economy through entrepreneurship.
- The differences in perception of challenges between male and female respondents.

Research Questions

The following research questions guided this study:

1. What is the level of agreement concerning the challenges of diversifying Nigerian economy through entrepreneurship?
2. What is the level of agreement concerning improvement strategies needed to address the challenges of diversifying Nigerian economy through entrepreneurship?
3. Do these levels of agreement about challenges and improvements differ between male and female respondents?

Research Hypotheses

At the .05 level, there is no significant difference in the mean responses of male and female small and medium business owners on the challenges of diversifying Nigerian economy through entrepreneurship.

At the .05 level, there is no significant difference in the mean responses of male and female small and medium business owners on the improvement strategies necessary to address the challenges of diversifying Nigerian economy through entrepreneurship.

Scope/Limitation of the Study

This study was conducted on a sample of small and medium business owners in Warri Delta State, Nigeria. Caution should be applied in assuming these results apply to all states, as resources, regulations and conditions may differ.

Methods and Procedure

This is a cross-sectional study in which data were collected from a population through sampling. The population of this study was all the registered small and medium scale business owners in Warri Delta State, Nigeria. The population of the registered small and medium scale business owners in Warri according to the Corporate Affairs Commission, Asaba is 183. Simple random sampling was used to select 91 respondents representing 50% of the total number of registered small and medium scale business owners in Warri Delta State. The instrument for data collection was a questionnaire titled *Challenges and Improvement Strategies of Diversifying the Nigerian Economy through Entrepreneurship Questionnaire* (CISDNEEQ).

The CISDNEEQ is divided into two parts. Part A focuses on demographic information about the respondents, while Part B covers 19 variables chosen to address the research questions and hypotheses. CISDNEEQ is a 4-point Likert-type scale with corresponding values of: Strongly Agreed (SA) = 4, Agreed (A) = 3, Disagreed (D) = 2, and Strongly Disagreed (SD) = 1. However, collected data were categorized into only two categories, Agree and Disagree. Any Mean value of 2.50 and above was regarded as Agree and any mean value below 2.50 was regarded as Disagree.

Three lecturers from Delta State University validated the questionnaire. To ascertain the reliability of the questionnaire, copies of the instrument were administered to 20 entrepreneurs from Sapele on two different occasions. Pearson's correlation technique was used on the data collected to calculate the reliability coefficient, which yielded a coefficient value of 0.65.

Using the questionnaire, data was collected from owners of small and medium scale enterprises (SME) through the aid of 15 research assistants who were final year Business Education students of the College of Education, Warri. Collected data were analysed by calculating the Mean for research questions, then using t-tests to test the hypotheses at .05 level of significance. If t-calculated is less than t-critical, the hypothesis will be accepted and when t-calculated is greater than t-critical, the hypothesis will be rejected.

Results and Discussion of Findings

Out of the 91 questionnaires administered (N=91), a total of ninety 90 were duly completed and returned (n=90). This represented 98.9% of the total questionnaires administered by the researchers. One questionnaire, constituting (1.1%) was not properly completed, and therefore eliminated from the study. The following table shows the responses to the questions asked in section A of the questionnaire.

Table 1
Responses Based on Gender of SME Owners

Sex	Number	Percentages
Male SME Owners	53	58.9%
Female SME Owners	37	41.1%
Total	90	100

Tables 2 and 3 show the level of agreement to both challenges and improvement strategies identified on the questionnaire in Part B. Results are shown according to each research question.

Research Question 1

What is the level of agreement concerning the challenges of diversifying Nigerian economy through entrepreneurship?

Table 2
Agreement on Challenges of Diversifying Nigeria Economy through Entrepreneurship

Item Statement Challenges	Male SME Owners		Female SME Owners	
	Mean	Remark	Mean	Remark
Poor government policy and institutional environment	3.00	Agree	3.12	Agree
Poor financial system	3.21	Agree	3.04	Agree
Decay in infrastructure	3.32	Agree	3.17	Agree
Poor support from relevant agencies	2.76	Agree	3.00	Agree
Multiple taxation	3.03	Agree	2.95	Agree
Inadequate human resources	2.75	Agree	2.68	Agree
Unhealthy competition	3.14	Agree	3.02	Agree
High cost of renting business space	3.02	Agree	2.94	Agree
Poor access to loans	2.98	Agree	3.05	Agree
Insecurity of lives and properties	3.07	Agree	2.89	Agree
Grand Mean	3.03		2.99	

Table 2 revealed that decay in infrastructure, a poor financial system, unhealthy competition, and poor government policies and institutional environments were the top four challenges to entrepreneurship in Nigeria. Poor support from relevant agencies, inadequate human resources, and poor access to loans were ranked as the three least important challenges to diversification through entrepreneurship. However, all variables were ranked closely with a mean range of 2.75-3.32. This indicates close agreement that all variables mentioned were challenges to the process of diversifying the Nigerian economy through entrepreneurship.

These findings agree with previous studies. According to Makinde (2013), Nigeria entrepreneurship is faced with several constraints which limit its development. These include financial or capital shortage, infrastructure problems, technology, organizational constraints, inadequate or lack of skilled manpower, competition from imported goods, poor administration of government assisted programmes, inadequate information as to business opportunities, inadequate capital, substandard goods, and anxiousness for profit. Additionally, Henry-Phillip (2011), as cited in Makinde, posited that other problems or challenges faced by citizens' participation in

entrepreneurial development in Nigeria include: lack of proper planning, lack of finance, poor management, lack of infrastructural facilities such as good road links, lack of incentives and protection, and multiple taxation and other economic levies, at all tiers of government (Federal, State, local level).

Research Question 2: What is the level of agreement concerning improvement strategies needed to address the challenges of diversifying Nigerian economy through entrepreneurship?

Table 3

Agreement on Improvement Strategies for Diversifying Nigeria Economy through Entrepreneurship

Item Statement Improvement Strategies	Male SME Owners		Female SME Owners	
	Mean	Remark	Mean	Remark
Providing policies that will encourage SME	2.78	Agree	3.12	Agree
Establishment of more microfinance banks	3.00	Agree	3.08	Agree
Improved infrastructure	3.12	Agree	3.31	Agree
Creating a proper valuing system	2.56	Agree	2.78	Agree
Tax break and reduction in the cost of borrowing	3.23	Agree	3.43	Agree
Improved educational system	3.43	Agree	3.09	Agree
Government should build more business places	3.25	Agree	3.32	Agree
Government should provide special funding alternatives for SME	3.13	Agree	3.00	Agree
Improvement of security of live and properties	3.51	Agree	3.25	Agree
Grand Mean	3.11		3.15	

Table 3 revealed the following as the most agreed upon improvement strategies for diversifying Nigerian economy through entrepreneurship: providing policies that will encourage SME; establishing microfinance banks; improving infrastructure; creating a proper valuing system; reducing taxes and the cost of borrowing; Improving the educational system; building more business spaces; providing special government funding alternatives for SME; and improving the of security of life and properties. In promoting entrepreneurship in Nigeria, The Federal Government has promulgated schemes and policies to curb hindrance to the development of small-scale industries since independence. One among these was the launching of the National Entrepreneurship Development Fund, whereby a huge sum of money was set aside for the development of small industries and the establishment of more microfinance banks.

Research Question 3

Do these levels of agreement about challenges and improvements differ between male and female respondents?

Table 4

T-test Analysis of Differences Between Male and Female Responses on Challenges

Group	N	Mean	S.D	t-cal	Decision
Male SME Owners	53	3.03	0.18	0.952	Accept
Female SME Owners	37	2.99	0.14		

$$Df=18, t\text{-cri}=1.734$$

Table 4 revealed that t-cal (0.952) is less than t-cri (1.734) at df(18). This indicates that there no significant difference in the mean responses of male and female SME Owners on the challenges of diversifying Nigerian economy through entrepreneurship. Therefore, the first hypothesis was not rejected.

Table 5

T-test Analysis of Differences Between Male and Female Responses on Strategies

Group	N	Mean	S.D	t-cal	Decision
Male SME Owners	53	3.11	0.30	0.5281	Accept
Female SME Owners	37	3.15	0.20		

$$Df=16, t\text{-cri}=1.746$$

Table 5 revealed that t-cal (0.5281) is less than t-cri (1.746) at df(16), indicating that there is no significant difference in the mean responses of male and female SME owners on the improvement strategies to address the challenges of diversifying Nigerian economy through entrepreneurship. Hence, hypothesis two was also not rejected.

Significance of the Study

The myriad of sociopolitical and economic problems facing Nigeria today are exerting untold pressure on the economic development of the country. The situation is further accentuated by the dwindling earnings from oil. This study could be significant in the following ways:

- The findings of the study may be useful to the government in driving an economic diversification plan.
- The international development partners and donors may also find the study useful in the policy formulation process.
- The state and local government could find the study useful, especially against the backdrop of dwindling revenue.
- The study will contribute to the existing knowledge base and could be a reference for future studies.

Conclusion and Recommendations

Based on the findings of this study it was concluded that there is a high level of agreement among both male and female small and medium scale business owners on the various challenges facing the issue of diversifying Nigeria's economy through entrepreneurship. Top among these challenges are poor government policy and institutional environment; a poor financial system; decay in infrastructure; and poor support from relevant agencies. Other problems include inadequate human resources; unhealthy competition; high cost of renting business space; poor access to loans; and general insecurity of lives and property. Since many of these problems fall under the government's jurisdiction, it was concluded that government has a greater role to play

in addressing these challenges by creating the desired atmosphere for entrepreneurship to rapidly drive the Nigerian economy. Therefore, the following recommendations were made:

- Government should improve basic infrastructural such as roads, power, transportation system, and telecommunication system.
- Government and stakeholders should improve her educational system at all levels to produce the human resources for entrepreneurship development.
- Government and stakeholders should provide policies that will encourage SME.
- Government and stakeholders should establish more microfinance banks
- Government and stakeholders should build more business places
- Government and stakeholders should provide special funding alternatives for SME
- Government and stakeholders should improve security of lives and properties

References

- Adejumo, G. (2000). Indigenous entrepreneurship development in Nigeria: *African Journal of Business Management*, 4(6), 831-835.
- Agbeze, C (2012). Entrepreneurship: The need to create wealth...why not now. *Ohafia Today*, 2(32), 7-12.
- Awe, O.W (2006). *Feasibility report writing: A practical approach in entrepreneurship development in Nigeria*. Ado-Ekiti, The University of Ado-Ekiti Press.
- Baba G.K. (2013), The challenges of entrepreneurship development in Nigeria and way forward, *Journal of Business and Organizational Development*, 5(1), 54 – 64.
- Central Bank of Nigeria. (2005). Micro-Finance Policy, regulatory and supervisory framework for Nigeria. Retrieved from <http://www.cenbank.org/out/Publications/guidelines/dfd/2006/microfinance%20policy.pdf>
- Makinde, H. O. (2013). Curbing the unemployment problem in Nigeria through entrepreneurial development. *African Journal of Business Management*, 7(44), 4429-4444.
- Ogunleye, E.O & Simon-Oke, O.O. (2004). The impact of public sector growth on socio-economic welfare in Nigeria. *The Nigerian Journal of the Social Sciences*, 81-90.
- Onodugo, I.C. Amujiri, B. A. & Nwuba, N. (2015). Diversification of the economy: A panacea for Nigerian economic development. *International Journal of Multidisciplinary Research and Development*, 2(5), 477-483.
- Onugu, B. (2005). *Entrepreneurship in theory and practice*. Ado-Ekiti, UMAC Press.
- Orishede, F. & Ezenwakwelu, C. A. (2014). Empirical analysis of entrepreneurial development and implication for Nigerian economic growth. *European Journal of Business and Management*, 6(30), 108-118.
- Shane, S. and Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217-26.
- Storey, D. J. (2004) *Entrepreneurship, small and medium sized enterprises and public policies*, In Z. J. Acs & D. B. Audretsch (eds). *Handbook of Entrepreneurship Research*, 473 – 511. Heidelberg, Germany: Springer Science + Business Media.
- World Bank (1996). Nigeria Federal Public Expenditure Review Report. No 14447-Uni
- Wylie, I. (2011). Enterprising lessons for entrepreneurs. *Financial Times*. Retrieved from <http://www.ft.com/intl/cms/s/2/3556783a-7263-11e0-96bf-00144feabdc0.html#axzz1YHd2RMaK>

An Investigation into the Impact of CVQ Certification on the Performance of Early Childhood Practitioners in Grenada

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Abstract

In recent years there has been an increase in the need for quality Early Child Care services in Grenada. Since this is a fundamental step in the all-round development of a child, the Government of Grenada has invested significantly in developing both the human and physical capacity of that sector. Critical to developing the quality of provided child care services is the issue of training for these care givers. Training in this sector is sometimes received formally by early childhood practitioners prior to employment, while others have received training periodically in a variety of pertinent topics during employment. The purpose of this study was to evaluate the appropriateness of the Caribbean Vocational Qualification (CVQ) training programme for preparing Early Childcare Practitioners for work. Using the purposive sampling technique, the data was collected via questionnaires administered to fifty participants who had completed the CVQ level 1 or 2 programmes within the last two years. The results indicated that Early Childhood Practitioners valued the CVQ programme since it provided training in relevant areas such as child development, physical needs of children, social environment responsibility, customer service and personal professional development. The implications of this research are that the CVQ programme should be used to train persons prior to their entry into the early childhood work setting, and should be used as professional development training for persons already employed in the sector.

Introduction

The provision of quality care and education for children is an international priority. The World Bank, UNICEF and other agencies and organisations have been investing in projects for the development and enhancement of quality early childhood education policies. These policies are informed by the United Nations Convention on the Rights of the Child (1989). To implement these policies, Early Childhood Practitioners must have the requisite skills, knowledge and attitudes. The practices of Early Childhood Practitioners are critical to the preparation of young children for entrance to primary school.

Research has shown that quality care and education must be given to young children (0-8 years) so that they can become literate, well-adjusted adults. Most theories and perspectives on development agree that early childhood is a very critical period of life when children are very dependent on reliable and secure and protected relationships with others, especially adults.

Due to the increased need for early childhood care services in Grenada, it's important that the quality of these services be brought into sharp focus. In Grenada, most of Early Childhood Practitioners are not formally trained prior to entering the sector. Some training is acquired initially on the job, and later periodic training sessions are held to address job related skills. However, this training isn't sufficient to help the practitioners be adequately prepared to meet the needs of the young ones. Although a high percentage of pre-school teachers are trained through the Teacher Education Department of the T.A. Marryshow Community College, most of them are in the government schools where the training is done while they are already employed as teachers.

In June 2014, a national survey was conducted in Grenada of 111 preschool and 38 infant care centres in order to provide the Ministry of Education and Human Resource Development and the Ministry of Social Development with a national picture of the quality of learning environments available to children up to pre-school years. This national survey, published in October of 2014,

revealed the following about the opportunities for the professional growth of staff, expressed in percentages.

Table 1

Type of setting	Inadequate	Minimal	Good	Excellent
Pre-School				
Government (67 centres)	35.8	47.8	11.9	4.5
Private (44 centres)	55.0	3.0	9.0	5.0
Infant and Toddler settings				
Government (10 centres)	10	20	50	20
Private (28 centres)	50	14	4	32

The table above depicts clearly that in the pre-school settings good and excellent opportunities for professional growth are very limited. In the more critical setting of infant and toddler care, however, there are more opportunities. The opportunities for professional development for those teaching infants and toddlers in the government settings are greater than those in the private settings. In its entirety, it is evident that there is an urgent need to focus on the professional development of both infant/toddler and pre-school early childhood practitioners, since they are molding the minds of young children at a critical stage in their lives. In an effort to provide professional development, two groups of early childhood practitioners were trained using the occupational standard in Early Childhood Development. Training and assessment based on this standard leads to Caribbean Vocational Qualification (CVQ) certification.

Literature Review

The literature in this review will be reviewed in the following sections: definition of professional development, importance of professional development, early childhood learning and development, quality education and care, and professional development of practitioners.

Professional Development is defined by the National Association for the Education of Young Children (NAEYC) as initial preparation (pre-service) and the knowledge, skills, behaviours and attitudes of the Early Childhood workforce. Research has indicated that despite the level of training received initially, all early childhood practitioners need ongoing professional development. According to Sheridan, Edwards, Marvin and Knoche (2009) “the process of professional development refers to how professionals move from awareness (knowledge) to action (practice) and to adoption of particular dispositions in their professional repertoires.”

“Continuing Professional Development is a life-long process of learning,” according to the Ministry of Social and Family Division, Singapore (2011). The Ministry additionally indicated that “Early Childhood Professionals have a personal responsibility to develop and maintain their knowledge and skills to ensure professional competence throughout their careers.” In early childhood education, it's critical that practitioners continue their professional development. Despite one's level of education and amount of hands-on experience, early childhood educators and caregivers should participate in regular continuing education. “There's so much research going on uncovering the way children learn it's important for caregivers to stay on top of these developments,” (Nixon, 2001). In 1991, Candy stated that, “professional development in early childhood takes place to accomplish two primary objectives. First, it is anticipated that professional development will advance the knowledge, skills, dispositions and practices of early childhood providers in their efforts to educate children and support families. A second objective is to promote

a culture for ongoing professional growth in individuals and systems.” Exposure to the most current care-giving practices, strategies, trends and knowledge should help the early childhood practitioners create nurturing environments and enhance their skills, knowledge and practices.

One of the oldest debates in philosophy and psychology focuses on whether children’s learning and development are due to nature or nurture. French and Murphy (2005) concluded that it is clear both genetic and environmental factors play vital roles in a child’s chances for success. This theory has been postulated by many of the early theorists from various perspectives including the psycho-social, behaviorists, cognitive, socio-cultural and ecological systems theory.

Erikson, a psycho-social theorist, identified five stages in the development of a child from birth to age six. He postulated “a basic psychosocial conflict which is resolved along a continuum from positive to negative, determines whether healthy or maladaptive outcomes occur at each stage,” (Berk, 2006). Behaviourists like Skinner and Watson agreed with Locke that a child is born ‘tabula rosa’ hence its mind is like a blank slate. As a result, the child is shaped by its environment. Berk further posits that “This theory suggests that adults critically shape a child’s learning through positive reinforcement,” (2006).

Cognitive theorist, Piaget, cited in Berk (2006) believed that all children go through four different stages of cognitive development. Three of these stages: Sensori-motor (0-2years), pre-operational stage (2-7 years), concrete operational (7-11years), are part of the early childhood stages. “According to [Piaget’s] cognitive-developmental theory, children actively construct knowledge as they manipulate and explore their world,” (Berk, 2006).

Research beginning from the 1970s focused on the Information Processing model, Socio-cultural and Ecological Systems Theory. Like Piaget, the Information Processing approach views children as actively making sense of their experiences and as modifying their own thinking in response to environmental demands (Halford, 2002; Klahr & Mac Whinney, 1998), cited in Berk (2006). However, there are no stages in this model, just continuous changes.

Socio-cultural theorists like Vygotsky, highlighted the importance of social interaction, in particular cooperative dialogues between children and more knowledgeable members of the society, as necessary for children to acquire the ways of thinking and behaving that make up a community’s culture. Scaffolding is required by the parents and caregivers to assist the child’s development (Rowe & Wertsch 2002), cited in Berk (2006).

Bronfenbrenner (1979) developed the Ecological Systems Theory to explain how everything in a child and the child’s environment affects how a child grows and develops. He labeled different aspects or levels of the environment that influence children’s development, including the microsystem, which he sees as the smallest and most immediate environment in which the child lives. The microsystem comprises the daily home, school or daycare, peer group or community environment of the child. More nurturing and supportive interactions and relationships in those environments will understandably foster the child’s improved development.

The importance of having a stimulating environment to foster child development is emphasized by many researchers. According to the National Council for Curriculum and Assessment (NCCA) in 2007 “children’s holistic approach involves them intricately interweaving domains of social, emotional, personal, cognitive, linguistic, creative, aesthetic, moral and spiritual development and the whole systems of learning processes all of which influence each other in highly complex and sophisticated ways.” Hence the quality of interaction children have with adults and the environment play an important part in the quality of their learning at all ages since these are critical periods during which the sensory and motor systems of the brain need experiences to help them develop.

All care and education, regardless of the setting should be of high quality; and we need to strive to provide settings which nurture and prepare children for school. It is widely assumed that a child’s readiness for school depends on meeting his or her comprehensive needs: physical,

cognitive, social and emotional and approaches to learning. Hence, if a child enters school with a deficit in these areas, it will be difficult for him or her to catch up.

One thing required to accomplish this is a high quality early childhood programme. The NAEYC describes a high quality programme as “one which provides a safe, nurturing environment that promotes the physical, social, emotional and cognitive development of young children while responding to the needs of families” (2012). Any good quality early childhood programme must be based on the underlying principles which promote the child as an active participant in the ongoing process of learning.

According to Edwards, Flear and Nuttall (2008), research has revealed that there's a strong correlation between children's home experiences and training obtained in Early Childhood Care and Education centres. This suggests that the early childhood Funds of Knowledge curriculum should use a child's prior knowledge as a base for conceptual learning. Funds of Knowledge covers knowledge children acquired from different sectors (agriculture, fishing, culture, religion). As a result, practitioners are taught to be aware of and understand the child's prior knowledge and use it to guide formal learning.

“Highly qualified practitioners often provide better quality early childhood education and care. This can yield better child outcomes, both socially and academically, not only in the short term but also in the long term. It's not necessary that all staff working in the early childhood settings have high levels of education, which may also be impossible to realise and not desirable. However, those with lower levels of general education should work alongside those who are highly qualified,” (OECD: Research Brief: Qualification, Education and Professional Development Matter, 2006).

Elliott (2006) cited research which indicated that pedagogy is central to quality, and that specialized training contributes to quality interactions and rich child-centered contexts. Central to these pedagogies is the practitioners' ability to transfer the skills and knowledge they have acquired to the practice of creating quality nurturing environments which stimulate children's engagement. This point is further reiterated by Elliott (2006), who cited the research done on Effective Provision of Pre-school Education (EPPE). This research pinpoints the importance of early childhood teaching qualifications in the creation of quality environments and the positive impact of early childhood centre manager's qualifications on a centre's quality profile. This must not be underestimated, since parents usually seek out early childhood centres which are of good quality to enroll their children. Poorly qualified staff in early childhood settings is an international concern since well qualified practitioners are critical to good quality outcomes for children.

Adults are central to early childhood care and education. Therefore, it's critical that they are well-educated to perform their roles. Although the early childhood practitioners have various tasks to perform, these can be grouped into two categories of roles: management and educational. Hays writing in NCCA (2007) expounded on each of these roles by stating “the management role encompasses planning for children's learning, resourcing and organising opportunities for learning, recording and documenting children's learning, evaluating practices and adapting to the interests and needs of the children. The educational role involves reflective observation to inform practice, supporting and extending learning in groups and with individual children, understanding what is happening as children learn and responding to this understanding, and working in partnerships with other adults and children themselves in the process that is early education”.

In the 1980s and 1990s, the Australian Vocational and Education training sector expanded its training in child care to meet the training needs of child care staff. This training which was based on the Australian Qualification Framework provided training up to an Associate Diploma. Although this was not equivalent to a university degree, it was sufficient to provide the early

childhood practitioners with a level of education to work effectively in the sector. It was also used as a base for further training at a higher level.

The early childhood stage of learning is of major importance since it forms the foundation of life-long development. In early childhood, positive or negative dispositions towards society and learning are absorbed and the basic skills acquired. These include co-operation with peers and adults, autonomy, meaning making, creativity, problem solving and persistence (OECD 2006). What someone learns in one stage of life has implications for, and sets the platform for, learning in the next stage. Home Start International (2006) reiterated this point by saying, “Children's experiences in their early years have a profound impact on their later social, emotional and cognitive development.” Bearing this in mind, it is very critical that all provisions be made for ensuring that these young ones are placed in good quality environments where they will have nurturing experiences managed by properly trained personnel.

Purpose of the Study

The purpose of this research is to determine the appropriateness of the Early Childhood Development occupational standard for preparing early childhood practitioners for work in the child care services sector. This study is guided by the following research questions:

1. What is the effect of CVQ certification on the interaction between Early Childhood Practitioners and their customers?
2. To what extent has the CVQ certification influenced Early Childhood Practitioners in facilitating the child's all-around development?
3. How has the CVQ certification helped the Early Childhood Practitioners in caring for the physical needs of the child?
4. To what extent has the CVQ certification influenced the relationship between Early Childhood Practitioners and parents?

The intent of this research is to provide information relating to the effects of the training leading to the CVQ certification on the performance of the Early Childhood Practitioners. Specifically, it will focus on whether or not the early childhood practitioners who completed this training felt they benefitted from the training; and to what extent they found it useful and applicable to their daily operations at the centres.

Definition of concepts

- **Development** - process by which a person changes and grows over time influenced by both experiences and physiological changes.
- **Early childhood development**- physical, cognitive, linguistic, social and emotional development of a child from pre-natal stage to age eight.
- **Early childhood**- the period from birth to age eight.
- **Learning** - the complex, dynamic and interactive process whereby knowledge is created through the transformation of experience.
- **Knowledge** - abilities, talents, ideas, vocabulary, concepts and related aspects of educational culture and best practices.
- **Skills**- abilities, talents, capabilities which result from training or practice

Research Methodology

A quantitative approach was used to conduct this research. Quantitative research is a method that is used to generate numerical data, by employing statistical, logical and mathematical technique. It is used to quantify attitudes, opinions, behaviors, and other defined variables – and generalize results from a larger sample population. This study focuses on the appropriateness of the Early Childhood Development occupational standard which leads to CVQ certification for

preparation of the Early Childhood Practitioners for working in the early childhood care settings, hence the use of the quantitative approach.

A questionnaire comprised of 24 questions was developed, the first five of which focused on the provision of demographic information of the participants in the sample. The questionnaire was piloted among early childhood practitioners exclusive to the sample, after which minor adjustments were made based on the recommendations suggested. Using the purposive sampling method, fifty female participants who had completed the CVQ level 1 or 2 programmes within the last two years were selected. All fifty completed the questionnaires, resulting in a one hundred percent response rate.

Demographic information about Participants

The charts presented below highlights the demographic information of the sample.

Figure 1

Age range of survey participants

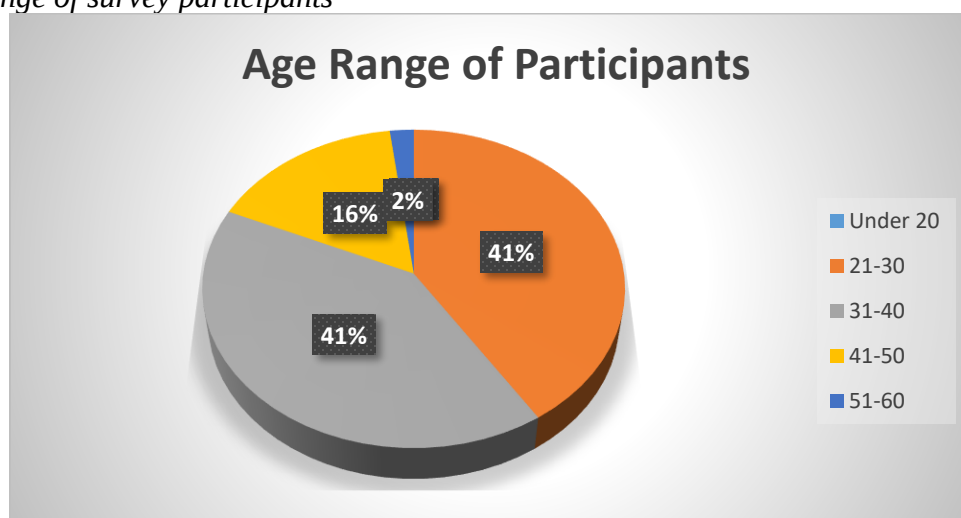


Figure 2

Educational level of survey participants

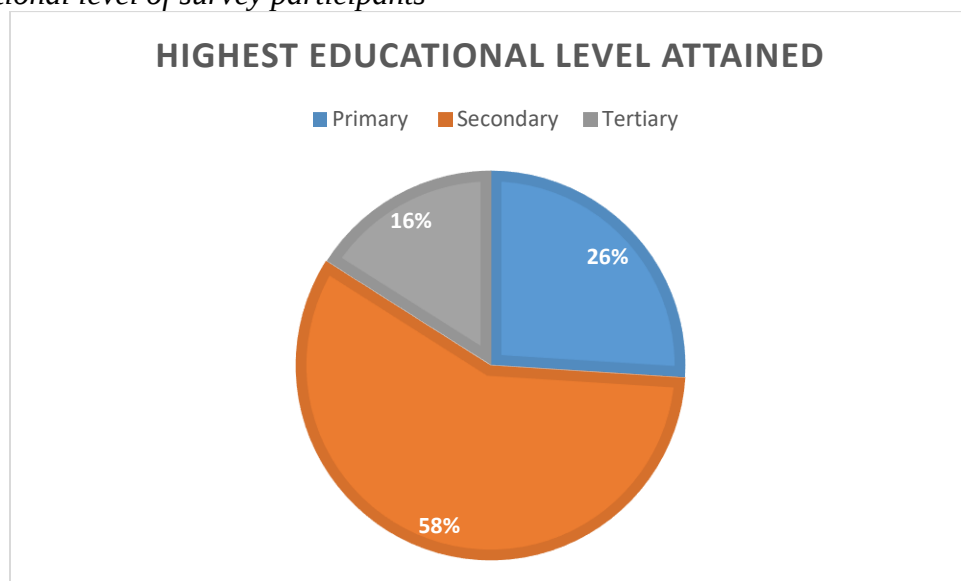


Figure 3
Years of employment of survey participants in the early years sector

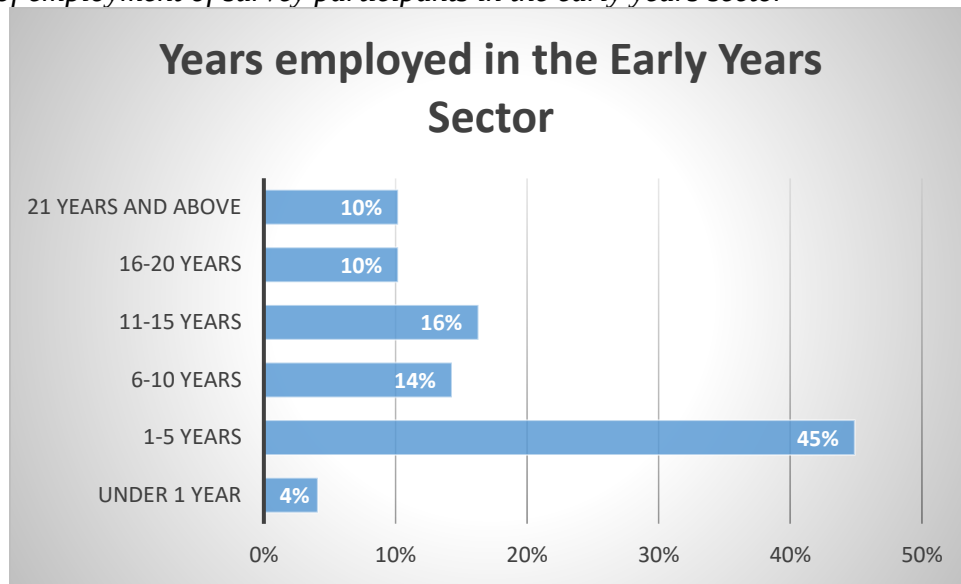
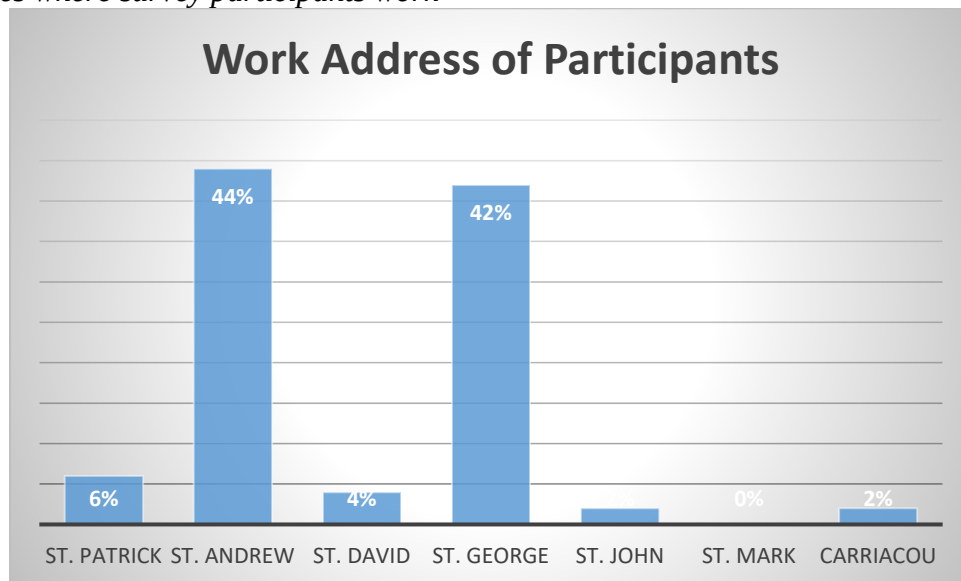


Figure 4
Parishes where survey participants work



Limitations of the Study

The main limitation of this research is the issue related to the completion of the questionnaires. Although all 50 questionnaires which were distributed, all participants did not answer all the questions. Hence some participants' views on the topic were not obtained.

The research was limited to Early Childhood Practitioners working in government pre-school and daycare centers. No conclusion can be drawn, or parallel applied, to practitioners in private school settings.

Presentation of Findings

Table 2

Ratings of the CVQ programme preparation for working in the areas related Child Development

Areas of Child Development	Very well	Well	Not very well	Not at all	Not relevant to my program
Knowledge of the theories underlying child development	19	25	2	0	0
Ability to provide for children's holistic development	28	15	4	0	0
Ability to plan a child-centred learning environment	31	14	3	0	0
Ability to communicate and demonstrate the links between ECCE theory and practice	12	27	7	0	0
Understanding of the role of adults in the holistic development of the child	15	27	4	0	0
Ability to carry out and record in-depth observations of children's learning and development	24	21	2	0	0
Ability to interpret and evaluate observations and plan for children's learning	26	15	4	0	0
Knowledge of underlying theories on importance of play	24	20	3	0	0
Knowledge of children's different styles of learning	21	19	5	0	0
Ability to develop, implement and evaluate a curriculum	20	19	8	0	0
Ability to use a range of interaction strategies and methods to enhance learning and development	20	24	4	0	0
Ability to devise, set up and introduce a wide variety of suitable educational/play activities that engage and involve children	24	17	5	0	0
Ability to maintain an appropriate stimulating and challenging environment (indoors and outdoors)	26	15	5	0	0
Supporting children's language and literacy development	28	19	0	0	0
Supporting the development of early mathematical skills and numeracy	18	21	7	0	0
Catering for the educational needs of children with special needs or disabilities	13	10	19	3	0
Catering for the educational needs of children from disadvantaged backgrounds	15	21	10	0	0
Supporting children to be active participants in their own learning	24	24	0	0	0
Awareness of the role of the arts in supporting children's educational development, participation and expression	27	16	0	0	0
Awareness of the use of ICT as a learning support	9	18	13	0	0
Awareness of the value of research in early childhood care and education	19	20	5	0	0

Table 3

Ratings of the CVQ programme preparation for working in the areas related to Physical Needs

Areas of Physical Needs	Very well	Well	Not very well	Not at all	Not relevant to my program
Knowledge of pre-school regulations	17	20	5	2	0
Knowledge of relevant hygiene procedures	20	16	0	0	0
Knowledge of health and safety regulations	33	13	0	0	0
Knowledge of principal health needs of children	30	15	0	0	0
Knowledge of the nutritional needs of children	33	12	0	0	0
Ability to perform basic first-aid procedures in an emergency with a child	12	20	14	2	0
Knowledge of child protection policy, procedures and good practice	18	25	0	0	0
Promoting children's physical activity	26	19	0	0	0
Ability to prepare nutritionally balanced meals for children	27	19	0	0	0

Table 4

Ratings of the CVQ programme preparation for working in Social Environment/Responsibility areas

Areas of Social Environment/Responsibility	Very well	Well	Not very well	Not at all	Not relevant to my program
Knowledge of the importance of social and environmental factors and their impact on children's holistic development	18	24	0	0	0
Ability to establish and maintain appropriate relationships with parents, guardians and families	30	16	0	0	0
Ability to support parents, guardians and families' understanding of and involvement in children's learning and development	27	19	0	0	0
Ability to liaise and maintain relationships in the wider environment including other professionals, management committees, local community and voluntary organisations and statutory bodies	12	25	10	0	0
Knowledge and understanding of equality issues and different customs, cultures and family structures in society today; and the ability to take account of these when working with children	17	23	8	0	0
Promoting environmental awareness and sustainability	17	22	6	1	0

Table 5

Ratings of the CVQ programme preparation for working in Customer Service areas

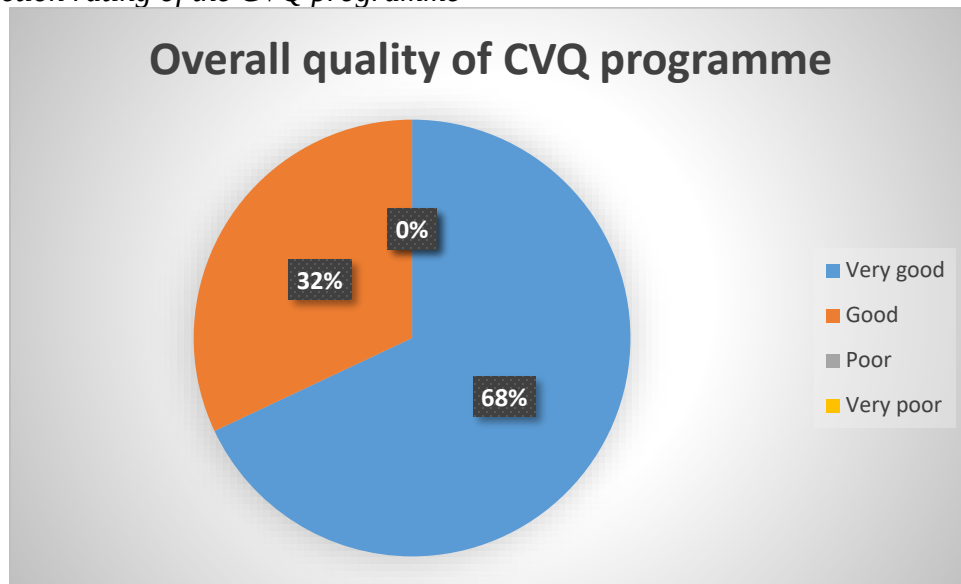
Areas of Customer Service	Very well	Well	Not very well	Not at all	Not relevant to my program
Ability to work as a team with other early years professionals within a service	33	12	1	0	0
Ability to communicate effectively with children and other adults (other early years professionals, parents, outside agencies) including awareness of barriers to communication and how these might be overcome	24	18	0	0	0
Ability to communicate information to parents about children's learning and development	30	13	0	0	0
Ability to maintain records and documentation required for an efficient early years setting	24	18	0	0	0

Table 6

Ratings of the CVQ programme preparation for working in Personal Professional Development areas

Areas of Personal Professional Development	Very well	Well	Not very well	Not at all	Not relevant to my program
Developing the values, attitudes and dispositions appropriate for your role	26	17	3	0	0
Self-awareness (being a reflective practitioner) and a sensitivity as to how this affects interaction with children	22	21	3	0	0
Ability to identify your own learning needs	30	15	0	0	0
Ability to manage yourself and take responsibility for specific tasks	33	12	0	0	0

Figure 5
Satisfaction rating of the CVQ programme



Data Analysis

The research sought to obtain data on the following five aspects which are relevant for working in early childhood environment/ settings. These are: child development, physical needs, social responsibility, customer service and personal professional development.

In response to the question related to what extent has the CVQ certification influenced Early Childhood Practitioners in facilitating the child's all round development, the findings revealed that overall 83.3% of the practitioners who were exposed to training were satisfied that it prepared them adequately for working in early childhood settings. However, there were two areas under this aspect which were not covered adequately. These areas were : (1) Using Information and Communication Technologies (ICT) to support learning which 59% of the participants identified as lacking and (2) catering for educational needs of children with special needs identified by 51% of the participants. The areas relating to theories underlying child development, supporting children's language and literacy development and supporting children to be active participants in their own learning were most useful to the participants. This information is reiterated by the NCCA (2004) which indicated "Children's holistic approach involves them intricately interweaving domains of social, emotional, personal, cognitive, linguistic, creative , aesthetic, moral and spiritual development and the whole systems of learning processes all of which influence each other in highly complex and sophisticated ways." Bronfenbrenner's Ecological Systems Theory also emphasized the importance of the child's environment for nurturing and supporting interactions and relationships to the child's development.

As it relates to how the training prepared the participants to cater for the physical needs of the children in their care, the research revealed that overall, 92.3 % of the participants found that the training prepared them adequately. This means that they were better able to cater to the children's physical needs using the newly acquired skills. The NAEYC, as cited by the Schuyler Center for Analysis and Advocacy (2012), described a high quality programme as "one which provides a safe, nurturing environment that promotes the physical, social, emotional and cognitive development of young children while responding to the needs of families. Any good quality early childhood programme must be based on the underlying principles which promote the child as an active participant in the ongoing process of learning."

The one area which was not adequately covered was performing basic first aid procedures in an emergency with children. This was identified by 67% of the participants as lacking. This is

an important observation since this is the stage during which children are very tender and great care must be taken to protect them from injuries and viruses.

The response for research question three, which looked at how well the training and CVQ certification prepared the participants in customer service areas, revealed that 93% indicated that it covered this area well. The highest rating of 96% was given to the area 'ability to work as a team with other early years professionals within the service. Since the practitioners have to work as a team with other professionals and communicate with parents and other adults, good customer service practices are critical. The results also showed that the training equipped them with the skills to communicate with adults and children and help them to be able to identify and overcome barriers to communication. It also prepared them well to communicate to parents about children's learning and development.

Research question four focused on how the training prepared the early childhood practitioners for performing their social responsibility. Overall, 89.3% of the participants indicated that the training prepared them well hence they were better able to work in, and create, a social environment suitable for the nurturing the children in their care.

This aspect provided information for answering research question 4 which focused on how the training and certification influenced the relationship between the Early Childhood Practitioners and parents. The areas with the highest ratings (100%) were: the ability to: (a) establish and maintain appropriate relationships with parents, guardians and families (b) support parents, guardians and families understanding of and involvement in children's learning and development. This is important since research has shown that socio-cultural theorists like Vygotsky highlighted the importance of social interaction in particular, cooperative dialogues between children and knowledgeable adults is necessary for children to acquire the ways of thinking and behaving that make up a community's culture. This theory postulates the idea of scaffolding which is required by the parents and caregivers to assist the child's development (Rowe and Wertsch 2002) cited in Berk, 2006. The importance of this is also highlighted by the NCCA (2007) which categorized the tasks of the early childhood practitioners into two roles, management and educational. It stated clearly that 'The educational role involves reflective observation to inform practice, supporting and extending learning in groups and with individual children, understanding what is happening as children learn and responding to this understanding and working in partnerships with other adults and children themselves in the process that is early education'.

After analysing the data from the research, it is safe to conclude that the participants who were trained using the Early Childhood Development standards, and certified with the Caribbean Vocational Qualification, were generally satisfied that this training was suitable for helping them to work in the early childhood sector. This is particularly noteworthy since they received no initial training prior to commencing work in the early years' sector. However, in order to help them to perform their tasks in the sector, approximately two-thirds of them did receive some formal induction training after stating employment.

Conclusion

The purpose of this research was to determine the appropriateness of the Early Childhood Development CVQ levels 1& 2 occupational standard for preparing participants for working in the early years setting. The data obtained from the research revealed that the training which focused on five main aspects when the units were clustered were very useful and appropriate for preparing the early childhood practitioners to work in the early years sector. The training assisted them in setting up and maintaining nurturing and supportive environments for children, interacting effectively with parents and other adults to cater for the all-round development of the children. It

also helped them as professionals to identify their own learning needs and showed them how to manage themselves and take responsibility for specific tasks and their learning. This highlights the importance of having continued professional development for early childhood practitioners. When early childhood practitioners are properly trained and keep up with current practices they will be better able to cater for the holistic development of children, hence getting them better equipped for entry into school.

Recommendations

The following are recommended after analyzing the findings of this research:

- Persons interested in becoming early childhood practitioners should receive initial professional training prior to entry into working in the early years' sector. This will prepare them to operate more efficiently and effectively in the sector. This training should be done using the Early Childhood Development CVQ standards.
- A period of internship should be done after the completion of the training at early childhood settings which met the recommended standards. This will allow the trainees to gain work experience and be guided by good mentors before they are placed in permanent work settings.
- All early childhood practitioners who are already working in the early childhood sector who have not received formal training in that field should be trained using the Early Childhood Development CVQ occupational standard.
- A unit on Basic First Aid should be added to the standard since health and safety is a critical aspect of all training.
- Trainers should adequately provide training in the use of Information and ICT to support learning and catering to the development of students with special needs
- The findings of this research represents the current situation in the government operated centers, additional research is needed to understand the situation in the privately owned centers.

References

- Berk, L.E. (2006). *Child Development*. (7th Ed.). Boston, MA: Allyn & Bacon.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Candy, P.C. (1991). *Self-direction for lifelong learning: A comprehensive guide to theory and practice*. Jossey-Boss, San Francisco.
- Edwards, S., Fler.M & Nuttall, J. (June, 2008). A Research paper to inform the development of an Early Years Learning Framework for Australia. Office for Children and Early Childhood Development, Dept. of Education and Early Childhood Development, Melbourne, Australia.
- Elliott, A. (2006). *Early Childhood Education Pathways to quality and equity for all children*. Australian Council for Educational Research.
- French, G. & Murphy, P. (2005). *Once in a lifetime: Early Childhood care and education for children from birth to three*. Dublin: Barnardos.
- Grenada Ministry of Social Development and Ministry of Education and Human Resources. (October, 2014). *Quality of the Environment in Early Childhood settings in Grenada*.
- Home-Start International. (2006). *Tracking social exclusion in young children: Final report to the European Commission*. London: Home Start International.
- Ministry of Social and Family Development (2011). *Achieving Excellence through Continuing Professional Development: A CPD Framework for Early Childhood Educators*. Ministry of Social and Family Development, Singapore.
- National Association for the Education of young children (NAEYC). *Promoting excellence in early childhood education*.
- National Council for Curriculum and Assessment (2007). *Perspectives on the relationship between education and care in early childhood. A research paper*. Dublin: NCCA
- Nixon, B. (2001). *Parenting power in the Early Years: Raising your child with confidence- birth to age five*. Wine Press Publishing.
- OECD (2006). *Encouraging quality in Early Childhood Education and Care (ECEC)*. Research Brief: Qualifications, Education and Professional Development matter, OECD, Paris.
- Schuyler Centre for Analysis and Advocacy (SCAA). (September 2012). *Quality: What it is and why it matters in Early Childhood Education*. Albany, New York.
- Sheridan, S. M., Edwards C. P., Marvin, C. A. & Knoche, L. L. (2009). Professional Development in Early Childhood Programs: Process Issues and Research Needs. *Early Childhood and Development Journal* 20(3), 377-401.

Management of Electrical/Electronics Workshop Accidents in Technical Colleges in the States of Oyo and Ogun, Nigeria

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Abstract

The purpose of this study was to assess the management of Electrical/Electronics workshop accidents in technical colleges in Oyo and Ogun states in Nigeria. Three research questions guided the study, which used a descriptive survey design. The population for the study was 66 Nigerian technical college Electrical/Electronics teachers, 42 from the state of Ogun, and 24 from the state of Oyo. No sampling was done because the population was of manageable size. Structured questionnaires containing 58 items were designed and used for data collection. The internal consistency of the instrument was ascertained using the Cronbach Alpha method and the reliability coefficient obtained for the instrument was 0.95. Mean and standard deviation were used to analyze research questions. The findings of the study revealed that 11 accidents occur at least once a month in Electrical/Electronics workshops; and that these accidents in school workshops can result in the reduction of students' school attendance. The findings of the study revealed that Electrical/Electronic workshop accidents can be managed by providing well stocked first aid boxes to the workshop and giving adequate training to teachers and workshop attendants on methods of administering first aid. First aid training should be updated on a regular basis.

Introduction

Technical Colleges are educational institutions who aim to produce the human capital for a country's economic growth and development. Ayomike in Abdulrauf (2012) viewed technical colleges as institutions where specific knowledge and practical skills required for specific trade, employment or professional, craftsmen, technicians, technologist, scientists or similar levels in business, are acquired or taught. Technical colleges provide functional vocational, technological and scientific skills, knowledge and attitudes needed to gain entry to, and progress in, a selected occupation. The United Nations Educational, Scientific and Cultural Organization (UNESCO) and National Board for Technical Education (NBTE) reported in 2010 that the aim of technical colleges' curriculum is to give training and impart the necessary skills leading to the production of craftsmen, technicians and other personnel who will be enterprising and self-reliant. Technical colleges enroll students who are no less than 14 years of age and should have successfully completed three years of junior secondary education or its equivalent. The students are admitted and trained for different occupational areas. Technical college students are introduced to different subjects and courses including electrical/electronics trades. The Federal Republic of Nigeria, FRN, in the National Policy on Education (2004), opined that the range of courses in the technical colleges shall be as wide as possible to include, but not be limited to: Mechanical Trade, Computer Craft Practice, Building Trades, Wood Trades, Hospitality, Textile Trades, Printing Trade, Beauty Culture Trade and Electrical Engineering Trades among others.

The Electrical Engineering trades cover electricity/electronics subjects. In 2004, the FRN highlighted three subjects that are embedded in the electrical engineering trade: Electrical installation and maintenance work; radio, television and electronics work; and appliance repair. Electricity, according to Grob cited in James (2009), is an invisible force that can produce heat,

light and motion, and many other physical effects. Electricity implies a form of energy generated, transmitted, and converted into heat, light, motion, and other forms of energy through natural processes such as lightning; as well as by devices built by people such as generators and alternators. Anaemena (2000) asserted that electronics is a physical science that deals with the study of the properties and behavior of electrons under all conditions, especially with reference to technical and industrial application. In electricity, high alternating currents and voltages are involved, whereas electronics function with minimal direct current and voltage. UNESCO- NBTE, (2010) stated that the curriculum of each programme including Electrical/Electronics is broadly divided into three components: general education, which accounts for 30% of the total hours required for the programme; trade theory, trade practice and related studies which account for 65%; and supervised Industrial training/work experience which accounts for about 5% of the total hours required for the programme.

The trade practice and supervised industrial training/work experience in the curriculum require laboratory or workshop exercises and practices for the practical part of the training to be acquired by the students. Mammam (2008) submitted that the electrical/electronic workshop is a place where electrical and electronics equipment and materials for practical lessons are kept and utilized for training in skill acquisition. The workshops and laboratories are essential and highly needed in ethnical colleges for imparting the practical skills needed by students to develop in their career choice, and also the teachers to improve the skills they have acquired. For practice to be done properly in laboratories and workshops, training equipment, instruments, tools and consumables, as listed by UNESCO-NBTE (2010), are needed for use by both teachers and students. Students interact with these instructional resources for proper habit formation under the guidance of teachers. Most of the equipment, tools, instruments and consumables are expensive, fragile, delicate, risky and dangerous. They require special skills, competencies, and care when handling them. During use mistakes caused by lack of knowledge and carelessness can be made, resulting in accidents.

Accidents are a sudden and unexpected event or situation that can result in loss of materials, injury and death. Accidents, according to Jorgensen in Tuuli (2010), are a result of a chain of events in which something has gone wrong, resulting in an undesired conclusion. Jorgensen in Tuuli defined electrical accidents as events resulting from either personal action or equipment failure involving electrical installations, which have the potential to result in an injury due to electrical flash and/or burn and electric shock from a source greater than 50V. Accidents in Electrical/Electronics workshops and laboratories can occur in many forms. According to the National Institute for Occupational Safety and Health (NIOSH), electrical accidents can include fire outbreak, electrical shock, explosions, and burns (2009).

Accidents can be caused by many factors. Washington State Department of Labor and Industries (2009) reported that accidents are the logical outcome of hazards caused by things people do or fail to do. This shows that before accidents can occur, there should be initiating factors which Ward (2009) described in question form: what must be present to provide opportunity for an accident to occur? Ward stated that this necessary factor is hazard, which can most often equate to danger. Hazard is an inherent property of a substance, agent, and source of energy or situation having the potential of causing undesirable consequences of effects (Work Cover Corporation, 2004). The Occupational Safety and Health Organization (OSHA), stated in 2003 that hazards exist in every workshop in many different forms, including sharp edges, falling objects, flying sparks, chemicals, noise and myriad other potentially dangerous situations. Hazards in Electrical/Electronics workshops include: faulty equipment or machines, improper organization of the workshops and laboratories, unjust and unsafe abandonment of naked live wires or cables, working with live wires and high current without putting on necessary protective equipment.

Hazards also include using defective tools or equipment, and misplacement of very hot soldering irons on objects with low melting points. In 2002, The United States Department of Labor published that most electrical accidents result from the following three factors: unsafe equipment or installation, unsafe environment and unsafe work practice. These, along with other actions, can lead to unsafe situations in electrical/electronic school workshops and laboratories.

Thus, due to the occurrence of accidents in school workshops and laboratories, a series of preventive measures were prescribed by expert scientists, engineers and researchers to be implemented. The measures included taking necessary precautions while working in the workshops, keeping laboratories/workshops free from slipping or tripping hazards, working with well-functioning machines, and using appropriate safety equipment while working with machines. Mbaba in Ofonmbuk and Ekereobong (2012) warned that any Technical school that ignores safety practices or pays lip service to its implementation does so at its own risk because the losses it will encounter will be enormous. To prevent accidents in school Kigin (1987) postulated that teachers should practice the following:

- Be present in the classroom at all times when a class is in session.
- Maintain a neat, orderly, and safe classroom environment.
- Create a comprehensive and continuing safety program.
- Correct all known hazards and defective conditions.
- Review safety policies and procedures on a regular schedule.
- Provide a good personal example, particularly when demonstrating power equipment.
- Equip and maintain all machines with guards that meet or exceed industrial standards.
- Insist that guards be in position and used whenever machine is in operation.
- Be particularly alert and in close proximity to power machines when students use them.
- Require 100% eye and face protection of all students and classroom visitors
- Establish safety zones around all power equipment.
- Use visual safety aids (posters, films, and printed material) as an integral part of classroom instruction.
- Don't assume that students will perform in a safe manner without adequate supervision.
- Predetermine a plan of action in the event of an emergency.

Despite these practices, unfortunate accidents sometimes happen in the workshops. This could be because preventive measures for accidents may be inadequate or may not be implemented as expected. This can have a great effect on students, teachers, workshop users, workshop tools, equipment and the entire school community.

Thus, accidents in the school workshop have traumatic effects on students, teachers and material properties in the school system. Lar (2013) stated that the consequence of accidents is related both to what is damaged and the magnitude of the damage. Accidents maim, kill and cause loss of valuable resources in workshops in general, but especially in Electrical/Electronics laboratories and workshops. Effect may be death, injury or loss of valuable properties. In Nigeria, workshop safety is a topic of special concern. Olagbegi, Kwasi and Ughi (2013) reported that at the University of Beam a technician was almost electrocuted to death. Also, Osang, Ohi and Ewona (2013) reported that in 2008 a first-year student in Cross River University of technology was rushed to the hospital during practical experiment in chemistry laboratory due to chemicals which were wrongly mixed by the student. Thus, the visible effect of an accident in school workshops and laboratories demands urgent and immediate action.

Management is a process by which resources, human and material, are channeled toward the achievement of organizational goals and objectives. Akpan in Ademola (2002) also claimed that management is a process of planning, organizing, directing and controlling the activities of any human being in an organization so to forge an integrated system which can achieve the stated objectives. In 2005, the International Atomic Energy Agency (IAEA) stated that accident management is a set of protocols implemented and designed to prevent the escalation of an event into a severe accident, mitigate the consequences of a severe accident, and to achieve a long term safe and stable state. Accident management technique in school workshops implies the process of planning, organizing, directing, commanding, coordinating, and controlling the available resources to respond to and to mitigate an accident situation as quick as possible with the aim of achieving a stable workshop environment, and total normal recovery. Accident management involves emergency actions to arrest and to recover from hazardous situations. In workshops and laboratories, the emergency equipment such as a fire extinguisher blanket in case of fire outbreak and a first aid kit should be provided. The school must also train their teachers and, through them, the students on complete application of the first aid kit and equipment in the case of injury or accident. The Department of Education, Training and Employment (2013) asserted that, in compliance with the work health and safety act of 2011, all schools must ensure the health and safety of staff students and others. The Department stated further that this statutory obligation requires all school management, administrators and principals to provide and maintain adequate first aid facilities in schools for the effective emergency management of accident and injuries based on an evaluation of risks and needs.

Statement of the Problem

A healthy school environment is one which supports the health and safety of students, teachers and other members of the school system. Technical colleges, being a type of secondary schools, are established to prepare students for gainful employment. To achieve this objective, teachers and students interact specifically in Electrical/Electronics workshops for effective teaching and learning. Teachers and students interact with tools, equipment, machines and consumables to inculcate and acquire practical skills respectively. The Electrical/Electronics trade is an integral part of the course of studies offered at technical colleges. This trade is an especially accident prone one because teachers and students interact with high voltage, dangerous equipment, tools, chemicals and other hazardous consumable items during teaching and learning activities. These factors make Electrical/Electronics workshops a dangerous area where students, teachers and other workshop users can be exposed to accidents which can lead to injuries, death and loss of properties.

One consequence of accidents in technical colleges in Oyo and Ogun States in Nigeria is the reduction in student enrollment in the colleges because many parents will not risk their children losing their lives. Reduced enrollment in these college programs is reducing the technological and economic growth in Nigeria because the production of technical college trained technicians and craftsmen is drastically diminishing. The problem seems to be partially due to teachers of technical colleges' inadequate knowledge of the types of accident and accident management which leads to students' inability to recognize and identify elements which can cause accidents in electrical/electronic workshops and laboratories; and their inability to apply necessary measures in case an accident occurs. The problem might also be caused by a nonchalant attitude of school management and government officials toward accident management in workshops and laboratories in technical colleges.

If the students, through the teachers, are knowledgeable of types and possible consequences of accidents that are occurring in Electrical/Electronics workshops and laboratories, as well as the

necessary knowledge of actions to be taken in case of such accidents, perhaps the incidence and effects of such incidences will diminish. It is hoped that this will help regain moderate student enrollment, which will also provide immense help to the technological and economic growth and development of Nigeria as a whole. This study was conducted to help with the management of Electrical/Electronics workshop accidents in technical colleges in Oyo and Ogun states in Nigeria.

Purpose of the Study

The major purpose of the study was to assess the incidents of Electrical/Electronics workshop accidents in technical colleges in Oyo and Ogun states in Nigeria. Specifically, the study sought to:

1. Ascertain the types of accidents that frequently occur in Electrical/Electronics workshops in technical colleges in Oyo and Ogun states in Nigeria.
2. Determine the consequence of accidents that frequently occur in Electrical/Electronics workshops in technical colleges in Oyo and Ogun states in Nigeria.
3. Determine the accident management techniques used in Electrical/Electronics workshops in technical colleges in Oyo and Ogun states in Nigeria.

Methodology

This study used a descriptive survey research design. The study was conducted in Oyo and Ogun states, Nigeria. The population for the study was 66 technical college teachers comprised of 42 Electrical/Electronics teachers in technical colleges in Ogun State and 24 Electrical/Electronics teachers in technical colleges in Oyo State. The entire population of 66 teachers was used for the study (N=66).

The instrument used for data collection from respondents was a structured questionnaire, consisting of 58 items. The questionnaire was divided into four sections labelled A, B, C and D. Section A was used to gather demographic information about the respondents. Sections B, C and D consisted of items relevant to the research questions posed for the study. Sections B, C and D of the questionnaire were structured using a four-point rating scale with 4 being the highest rating, and 1 being the lowest rating. The response options for section B of the questionnaire were: Highly Occur, HO, (occur at least once in week) = 4, Moderately Occur, MO, (occur at least once in a month) = 3, Slightly Occur, SO, (occur at least once in a term or section) = 2 and No Occurrences NO, (no accident occurrence) = 1. Whereas, the response options for section C and D of the questionnaire were: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D)= 2 and Strongly Disagree (SD) = 1.

The questionnaire was validated by three experts. Cronbach Alpha method was used to determine the internal consistency of the questionnaire items. It was determined that a reliability coefficient of 0.95 was obtained, which means that the instrument was reliable for the study. Sixty-six copies of the questionnaire were distributed by the researcher with the help of two research assistants through personal contact in each technical college in Oyo and Ogun States. Twenty-five completed surveys (38%) were returned (n=25).

The data collected for this study were analyzed using mean and standard deviation. The decision rule for sections B, C and D of the questionnaire were based on the mean cut off point of 2.50. The decision rule for interpreting section B of the questionnaire was based on class boundary of values of the response options: Highly Occur (3.50-4.49), Moderately Occur (2.50-3.49), Slightly Occur (1.50-2.49) and No Occurrence (0.50- 1.49). For sections C and D, any item with a mean of 2.50 or above was considered agree; whereas any item with a mean below 2.50 was considered disagree.

Results

Research Question One: What are the types of accidents that frequently occur in Electrical/Electronics workshops in technical colleges in Oyo and Ogun States?

A list of possible accidents was given to the respondents, and they were asked to rate the frequency of each type of accident in their programs. The data collected from respondents are presented in Table I below, using the mean and standard deviation for responses to each type of accident.

Table 1

Mean and Standard Deviation of Responses on Types of Accidents That Frequently Occur in Electrical/Electronics Workshops in Technical Colleges in Oyo and Ogun (n=15).

Types of accidents	Mean	SD	Occurrence
Falling below working level	2.71	0.74	Moderately
Striking of legs forcefully against an object in the workshop	2.89	0.91	Moderately
Exposure to harmful chemicals or substances in the workshop	2.71	1.13	Moderately
Falling of objects in the workshop	2.14	0.88	Slightly
Inhaling of poisonous gases in the workshop	2.41	0.84	Slightly
Exposure to electric arc or electric flash while interacting with electrical equipment in workshop	2.65	0.94	Moderately
Crushing by machine and tools in the workshops	2.35	1.03	Slightly
Slipping tripping or falling to surface in the workshop	2.64	1.06	Moderately
Over-extending or straining body while performing a task in workshop	2.65	0.69	Moderately
Exposure to electric shock inside workshop	2.77	0.60	Moderately
Explosion in workshop	2.53	0.61	Moderately
Thermal/electric burns in the workshop	2.71	0.80	Moderately
Fire outbreak within workshop environment	2.59	0.82	Moderately
Stepping on sharp object in the workshop	2.58	0.72	Moderately
Exposure to high temperature in the workshop	2.24	0.68	Slightly
Overall	2.39	0.82	

The data presented in Table 1 above indicated that none of the accidents were indicated to have highly occur. This implied that none of the accidents occur as frequently as on weekly. The table also indicates that 11 of the listed accident types had mean values ranging from 2.53-2.89. This indicates that many of the listed accidents occurred moderately, meaning they occur once a month in Electrical/Electronics workshops in technical colleges in Oyo and Ogun. States. However, items 4, 5, 7, and 15 had their mean values range from 2.14-2.45, which means that those accidents in the items occur slightly. This implies that those accidents occur at least once in a term or section in Electrical/Electronics workshops in technical colleges in the states. The standard deviation of all the items, as well as the overall standard deviation, ranged from 0.60 to 1.13 indicating that the respondents' opinions were not far from the mean and from one another. This implies that all the respondents have similar opinions on the frequency of occurrence of accidents in Electrical/ Electronics workshops in technical colleges in Oyo and Ogun States.

Research Question Two: What are the consequences of accidents in Electrical/Electronics workshops in technical colleges in Oyo and Ogun?

The data used to answer this research question are presented in Table 2 below:

Table 2

Mean and Standard Deviation of Teacher Responses on Consequences of Accidents in Electrical/Electronics Workshops in Technical Colleges in Oyo and Ogun (n=18).

Types of accidents	Mean	SD	Decision
Loss of any part of the student/teacher's body	2.09	0.72	Disagree
Loss of life of teacher/student	1.38	0.63	Disagree
Loss of job on part of teachers due to their fault which to accident	2.55	0.81	Agree
Loss of workshop tools, equipment and other consumables items	2.86	0.88	Agree
Student untimely dropout from school due to injuries	2.53	0.77	Agree
Damaging of workshop valuable item table items and workshop environment	3.06	0.80	Agree
Loss of school reputation and integrity	2.56	0.68	Agree
Closing down of school for some days or weeks	1.91	0.74	Agree
Time and money wastage on investigations	3.11	0.59	Agree
Increase in insurance liabilities	2.21	0.60	Disagree
Cost of repairs of workshop tools machines and equipment	2.74	0.81	Agree
Payment of fine	2.15	0.47	Disagree
Suspension of students from school for some days due to their contributions to the occurrence of an accidents	2.56	0.68	Agree
Loss of at least one or half day of school	2.97	0.72	Agree
Reduction in student enrollment	2.59	0.86	Agree
Illness to teacher or students	2.53	0.90	Agree
Poor performance and noticeable behaviour changes in students	2.50	0.73	Agree
Gradual deterioration in the overall functioning of the school	2.08	0.75	Disagree
Overall	2.47	0.73	

The data presented in Table 2 revealed that twelve items had mean values ranging from 2.50-3.11. This indicates agreement that there are 12 common consequences of accidents in Electrical/Electronics workshops of technical colleges in the state of Oyo and Ogun. Six items had mean values ranging from 1.19-2.21, indicating that those six items are not common consequences of accidents in Electrical/Electronics workshops in technical colleges in Oyo and Ogun states. Furthermore, the standard deviation for all the items, as well as overall standard deviation, ranged from 0.47-0.90. This shows that the responses of teachers were commonly aligned.

Research Question Three: What are the accident management techniques in Electrical/Electronics workshops in technical colleges in Oyo and Ogun States?

The data for answering research question #3 are presented in Table 3 below.

Table 3

Mean and Standard Deviation of Teacher Responses About Accident Management Techniques in Electrical/Electronics Workshops in Technical Colleges in Oyo and Ogun (n=25)

Types of accidents	Mean	SD	Decision
Proper investigation of minor and major accident	2.73	0.71	Agree
Proper report of minor and major accidents	2.62	0.86	Agree
Proper documentation of every accident	2.58	0.70	Agree
Proper accident analysis to guard against future occurrences	3.11	0.68	Agree
Assure personnel involved that Investigation is not to fire or prosecute anybody.	3.15	0.61	Agree
Providing well stocked first aid boxes	2.82	0.61	Agree
Rescue kits are to be checked and placed at the isolated area or in close Proximity to the working area.	2.58	0.68	Agree
Training of teachers and workshop attendants on techniques or method administering first aids	2.73	0.69	Agree
Establishing format for reporting workshop accident	2.50	0.64	Agree
Establishing policies related to workshop safely	2.26	0.73	Disagree
Frequent visitation and evaluation of workshop conditions	2.73	0.83	Agree
Establishing committee to oversee workshop condition	2.14	0.88	Disagree
Conducting an accident preparedness exercise for teachers and students in the School workshops.	2.95	0.67	Agree
Establishing of rules and regulations that will govern workshop behaviour	2.56	0.66	Agree
Development of communication channels for matters related to workshop accidents in the school system.	2.56	0.84	Agree
Giving of advice to government on provision of safety tools and equipment to school workshops	2.61	0.65	Agree
Provision of adequate functional accident preventive and responsive equipment to the school workshops.	2.88	0.83	Agree
Provision of first aid service to those who need it at appropriate lime.	2.71	0.86	Agree
Provision of adequate fund for department to make available safety tools and equipment	3.00	0.86	Agree
Provision of smoke alert system to the workshop	2.65	0.69	Agree
Supporting teachers to update themselves on accident prevention and management skills	3.06	0.78	Agree
Advising government to sponsor teachers in professional development.	2.97	0.74	Agree
Quick repair and replacement of faulty and damage tools and equipment for the re-commencement of workshop activities alter the accident.	2.65	0.62	Agree
Providing alarming system to alert member of the school in case of emergency.	3.21	0.64	Agree
Providing emergency functional phone number to all members of the school.	3.11	0.66	Agree
Overall	2.75	0.80	

The data presented in Table 3 reveals that 23 items had mean values ranging between 2.50 and 3.21, indicating that those items are common approaches to accident management in Electrical/Electronics workshops in technical colleges in both Oyo and Ogun. However, items 43 and 45 had mean values of 2.26 and 2.14 respectively. This indicates that these two techniques are not often used for accident management in Electrical/Electronic workshops in technical colleges in Oyo and Ogun. The standard deviation of all items ranged from 0.61 to 0.88. This indicates that the responses of the respondents were uniform about accident management techniques in Electrical/Electronics workshops.

Conclusion

The findings of this study indicate that 11 types of accidents are frequent and occur in Electrical/Electronics workshops in technical colleges in Oyo and Ogun at least once a month. These accidents include such things as explosions, thermal/electric burns and electric shocks. Results also indicate that four other types of accidents occur at least once per term or section. This finding is in line with the work of Chiejile (2002). He reported the types of accidents and the rate of their occurrences within two years as follows: falling occurred most frequently in 88%; striking the body against tools and equipment occurred in 87%, hand tools accidents, like chisel cuts and saw cuts, occurred in 75%; slips occurred in 75%; and explosions occurred in 72%.

The findings of the study on consequences of accidents indicated that accidents in Electrical/Electronics workshops have a variety of consequences on workshop and workshop users. The consequences of accidents in Electrical/Electronics workshops include: teachers losing jobs due to negligence which caused the accident; students untimely dropout from school; damages to workshop valuable items and workshop environment; loss of school reputation and integrity; time and money wastage on investigation; cost of repairs of workshop tools machines and equipment; suspension of students from school for some days; loss of at least one half day of school; reduction in student enrollment; illness to teachers or students; and poor performances and noticeable behavior changes in students.

These findings agree with the report made by Kigin (1987) who found that in The United States of America, an estimated 24,000 accidents sustained by vocational/technical students in one year caused property damage or resulted in the loss of at least one-half day of school by the student. Notably, however, the findings of the study disagree with the findings of Osang, Obi and Ewona (2013, who opined that the workshop or laboratory claimed too many victims (lives) in the process of carrying out research by scientist, engineers, students or colleagues in the workshop or laboratory. Respondents in this study indicated a loss of life or limb was not a common consequence to a workshop accident.

The findings of the study further revealed 23 techniques for accident management in electrical/electronics 'workshops in technical colleges in Oyo and Ogun states. The techniques include giving advice to the government or providers of safety tools and equipment to school workshop; provision of adequate accident prevention and response equipment to the school workshops; provision of first aid service to those who need it at appropriate time; provision of a smoke alert system in the workshop; advice and support to teachers to update themselves on accident prevention and management skills; advice to sponsor teachers to partake in accident prevention and management workshops, seminars and conferences; quick repair and replacement of faulty and damaged tools and equipment for the recommencement of workshop activities after the accident; and provision of alarm system to the member of the school in case of emergency. These findings are in accordance with Azodo and Adejuyigbe (2013) who found that knowing the signs of possible emergencies, such as how to salt down your equipment, where to find and use the fire extinguisher, or worst of all, how to escape from the workshop in case of an overwhelming situation is very important. Most accidents can be managed by providing well stocked first aid boxes and providing smoke alert systems to the workshops.

References

- Abdulrauf, S. (2012). The state of physical facilities in Kwara state: Its implication for learning. *Lafag Journal of Education in Science and Technology*, 6(1), 95-104.
- Ademola, A. (2002). Educational Management Fundamental Elements. Oyo: Odurneti Press.
- Anaemena, E. I. (2000). Problems of instruction in electronic technology: The department of vocational teacher education university of Nigeria perspective. *Nigerian Vocational Journal* 10(1), 16-21
- Azodo, A. P. and Adejuyigbe, S. .B. (2013). Nigerian engineering students' compliance with workshop safety measures. *International Journal of Innovation and Applied Studies* 3 (2), 425-432.
- Chlejile, L.C (2002). *Type and causes of accidents in workshops in technical colleges in Delta state*. (Unpublished M.Ed thesis) University of Nigeria, Nsukka.
- Department of Education, Training and Employment. (2013). Industrial Technology Design Guideline: A practical handbook for ITD activities. Retrieved from <http://education.9ld.gov.au/health/pdfs/healthsafety/itd-staff-guidlines.pdf>.
- Federal Republic of Nigeria. (2004). National Policy on Education. Lagos: NERDC press.
- Health and Safety Executive. (2008). Health and Safety in Engineering workshops. Retrieved from www.hse.gov.uk/Ipbns/us70.pdf F.
- International Atomic Energy Agency, (2005). A view of training methodology for accident management at nuclear power plants. Austria: International Atomic Energy Agency.
- James E. O. (2009). Development of factorial validation of basic electricity interest inventory. *Nigeria Vocational Journal*, 14(1), 1-12.
- Kigin, D. J (1987). Protecting you and your school against charges of negligence. *School Shop*, 46, 24-26.
- Lar, H, R. (2013) Guide to safety analysis for accident prevention. Sweden: IRS Riskhantering
- Mammam, Y.A.,(2008). *Workshop practice management skill improvement needs of electricity and electronic teachers in technical colleges in Adamawa, Bauchi and Gombe States* (Unpublished M.Ed thesis). University of Nigeria, Nsukka.
- National Institute for Occupational Safety and Health, (2009). Electrical safety: Safety and health for electrical trade student manual. Retrieve from www.cdc.gov/nihsh
- Occupational Safety Health Administration, OSHA,. (2003). Personal Protective Equipment. Retrieved from. www.osha.gov/publication/osha315l.pdf.
- Ofonmbuk, I.M and Ekereobong, S.U. (2012). School workshop safety practice and student skill acquisition in electrical installation works in technical colleges in Akwa- Ibom state. *Mediterranean Journal of Social Science*, 3(13), 118-126.

- Olagbegi, P. O., Kwasi, C. C. and Ugbi, B. A. (2013). Assessment of Health and Safety practices in engineering workshop. *International Journal of Engineering Science*, 2(7), 297-301.
- Osang, J. E., Obi, E. O., and Ewona, I. O. (2013). Evaluation of the effect of workshop / laboratory accidents and precautionary steps towards safety practice. *Journal of Electronics and Communication Engineering*, 6(3), 16-22.
- Tuuli, T. (2010,). *Electrical accident risks in electrical work*. Online published PhD Thesis, Tampere University of Technology, Tampere. Tukes Publication Series.
- United Nations Educational Scientific and Cultural Organization, and National Board for Technical Education, UNESCO and NBTE, (2010). Electrical Engineering Technology National Diploma: Curriculum and Course Specifications, UNESCO-Nigeria Project. Retrieved from <http://unesdoc.unesco.org/images/0016/001613/161333e.pdf>
- US Department of Labor. (2002). Controlling Electrical Hazards. Retrieved from www.osha.gov/publications/osh307S.pdf.
- Ward, R. (2009). The management of accidents. *Journal of Achievement in Materials and Manufacturing Engineering*, 32 (1), 75-80.
- Washington State Department of Labor and Industries. (2009). Accident investigation basics: How to do a workplace accident investigation. Retrieved from http://www.lni.wa.gov/safety/trainingprevention/online/courseinfo.asp?P_ID
- Work Cover Corporation. (2004). Technical guidelines for workplace electrical safety. Retrieved from www.safework.sa.gov.au/contentpages/docs/resElectGuidelines.pdf.

Section Two – Current Issues in TVET

TVET Approach for Holistic Change

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By the end of 2016, there had been over thirteen hundred murders committed on the island of Jamaica. Domestic and gang related violence seems to be at uncontrollably levels. The major security forces in Jamaica are yet to sufficiently respond to the mayhem of the criminal underworld. The only real response to date is that Dr. Karl Williams resigned from his position as Police Commissioner of Jamaica on January 6, 2017.

Has the Jamaican government failed to observe that some of the main causes of crime and violence are deeply rooted in unemployment and underemployment, coupled with acts of immoralities compounded by some pastors, police officers, politicians and gang leaders? I do believe that interventions used as a means to reduce crime and violence ought to be holistic in policy; and there operations should identify not just hope, but a sustained set of opportunities directed mainly at the feet of vulnerable.

Frederick Harbison and Charles Meyers (1965) advised us: “Education is both the seed and the flower of economic development.” Hence, education has a dual role. It is both the vehicle to economic development and the beneficial outcome of economic development.

Education usually improves not just the quality of life, but more so the quality of labor. This also sheds light on the fundamental relationship between education and economic growth and development. If our government both maintains pathways for formal education and truly invests in polytechnic institutes across especially troubled communities, formally and informally, meaningful changes can occur.

At that period when College of Art, Science and Technology (C.A.S.T) was in its embryonic stages of development, at least one of their main objectives in policy, and as well as in operations, was to promote the use of technology as a vehicle to unearth greater levels of productivity through career and economic development. Today, University of Technology, Jamaica, formerly (C.A.S.T) has graduated as many commerce practitioners as other generic tertiary institutions; thus acknowledging the shift in its fundamental visions.

TVET systems need to be renewed from time to time. This is because TVET programmes need to be relevant to the changing demands of the workplace. Furthermore, TVET has to be responsive to the emerging needs, concerns, and issues of the global village. Without TVET being relevant and responsive to skill needs in the workplace, there is the danger of learners completing their education and training without relevant employable skills and knowledge. Hence, it is common practice in a number of countries to undertake periodic reviews of their TVET system.

Both previous and current governments have been endorsing, ‘vision 2030 Jamaica’, the National Development Plan ‘roadmap’ for making Jamaica the place of choice to live, work, raise families and do businesses. Fundamentally, workforce development focuses on the people rather than the business activity only, thus it becomes a human resource strategy responding to changes/challenges in the community. Education systems should respond to changing demands of the environment. The chief Education officer in the Ministry of Education, Dr. Grace McLean, and her team continues to lead the thrust with conceptualized vision and pace for greater synergies between TVET interventions and increased workforce development support from other private sectors.

Greater dialogue is also needed between industries and TVET practitioners to clarify how VET can be used as a driver for economic and social development within the communities. Certainly, in principle, TVET can be administered formally and informally; taking this unique but practical solution

to the communities throughout Jamaica with the aid of public and private partnership, especially in sections of Montego Bay and Kingston.

In fact, in developed countries and a few developing countries, it is common knowledge that TVET represents greater than eighty-five per cent of their economic returns; contributing significantly to GDP and quality of life. Hence, TVET is relevant, effective, flexible and sustainable.

The vision stated by former Prime Minister, the honorable Edward Seaga, should not be taken lightly. If most of Caribbean partners engage in the fundamental principles of using TVET as a driver for economic growth and social upliftment, we could be darting towards greater levels of progress and prosperity.

References

Harbison, F. & Myers, C. A.(1965). *Manpower and Education: Country Studies in Economic Development*. McGraw-Hill:NY.

Collecting Relevant Assessment Evidence: Don't Tick The Wrong Box

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Assessment systems continue to be the most challenging area for RTOs operations and yet the most critical to demonstrate quality outcomes. When dealing with assessments in Australian's VET environment, we need to consider both, the assessment system used by the training organization, and the outcomes produced by that system: the "assessment evidence"; collected, and used to make a competency judgement against the unit(s) of competency.

I would like to use this article to reflect about the "assessment evidence", and particularly to assessment evidence used to support decisions around completed tasks, and the demonstration of skills.

Quite often in my work as auditor, I see "Observation checklists" based on tick boxes next to a text copied/pasted from the unit of competency's performance criteria.

Assessment activities used to produce evidence of candidate's skills, will require always the **completion of a task**, under the **conditions and standards** (relevant the unit of competency element and performance criteria), and will provide candidates an opportunity to **demonstrate** the skills required to perform the mentioned task. Knowing is not the same as doing, and VET is about doing. That is a fundamental principle for the design of the assessment, but as I mentioned above, I will focus here on the evidence produced, and no so much on the task itself.

Do we have rules to accept assessment evidence in Australian's VET sector? Yes, the rules of evidence!

What are the rules of evidence and how these rules must guide assessors during the collection of evidence?

The rules of evidence are: Valid, Authentic, Sufficient, and Current.

Ok, let's start with Validity. What is considered as "Valid" evidence? According to the Standards for RTOs, evidence used to make a competency judgement must confirm "...that the learner has the skills, knowledge and attributes as described in the module or unit of competency and associated assessment requirements." In other words, the assessment evidence collected confirms the candidate's **ability** (performance evidence and knowledge evidence) to achieve each **outcome** (Element) described in the unit of competency, under each **condition/standard** (Performance Criteria).

How can we prove that an outcome has been achieved? The evidence must provide details about: what was achieved? when was achieved? in which context? A tick in a box will not provide that information.

Some assessors think that they can just tick candidates off as competent based on their "professional judgement". And in occasions they felt insulted when evidence used to make the judgement is requested. Quite often I hear, I used my criteria from 20 years of working experience. To be very clear here, I am not questioning assessor's industry experience. I celebrate that. But competency-based assessment is an evidence-based system. In other words, judgement is made based on evidence collected.

When someone perform a task either produce a **product** or deliver a **service**. If a product, or sub-product is produced, the product itself will constitute a valid evidence that the assessor can then assess against a benchmark (the unit). Assessing products require comparing the product's

characteristics, features, and use, to the outcomes described in the relevant Element/PC from the unit. Assessors can use records of the product's characteristics, for example if the product is an object you can have details of physical characteristics (length, size, weight, high, resistance, conductivity, etc), or if the product is something more intangible such as a plan, some characteristics that can be recorded and assess could include (content, relevance of information provided, usability, veracity of instructions, feasibility of projections/forecast).

If the task is a service (delivered to internal or external clients), records of the service provided will constitute a valid evidence. For example, if the service is to resolve a customer complaint, evidence could include records of the complaint resolution, feedback from the client, photos, videos, records of the observation of the candidate dealing with the client (details of the protocol/procedures followed, techniques used, skills demonstrated, etc).

The quality, quantity, and relevance of the evidence collected must support the assessor's judgement. In general terms, learning in the vocational education and training spectrum means a consistent change in the candidates' attitudes. In other words, the candidate is able to use the new skills and knowledge **consistently**, and apply them in **different contexts and situations**.

The above means that evidence must demonstrate that the candidate had performed the task(s) more than once. In some cases, the unit of competency indicates a specific minimum number of occasions for a task to be performed. RTOs should use industry engagement activities to determine a benchmark for sufficient evidence in line with industry standards. This is the requirement under the rule of **sufficiency**.

The assessment evidence constitutes a **legal document**, and as such, the authenticity of the evidence is a paramount. How can we prove that the evidence presented was either produced by the candidate, or talks about the candidate? What measures are we using to demonstrate authenticity? In VET, we can use basically three types of evidence: Direct, Indirect, or supplementary.

When collecting **direct evidence**, observed or witnessed by the assessor through an observation, or oral questioning, it is important that the identity of the candidate is confirmed, and details of the event registered (i.e. date, time, location, duration).

Tools used to produce **Indirect evidence**, such as finished products, written assignments, tests, or portfolio of evidence from a project, must include measures to confirm authenticity. This could include photographic or video evidence, further questioning from the assessor about the procedure(s) used to complete the task and how that procedure would be adapted if the situation/context was different. Many RTOs use a "declaration of own work" by the candidate as well.

Supplementary evidence produced by third parties such as supervisors, colleagues, or clients, can represent a challenge. This evidence is usually produced in the workplace. Measures to prove authenticity could include the use of referees to confirm the claims made in the third-party reports, or providing an opportunity for assessor to visit the workplace for further observations/interviews.

Finally, evidence collected must meet the rule of **currency**. This may be particularly challenging in an RPL assessment. Assessment evidence must prove that the candidate demonstrated the relevant skills and knowledge at the time that the competency judgement was made, or in the very recent past to the judgement. What constitutes a "very recent past"? In some cases, the unit of competency provides information about currency, if no information is provided in the unit, RTOs should use industry engagement activities to establish a criterion for currency in line with industry standards. In general terms, any evidence collected or about something that happened more than two years prior to the assessment judgement is potentially no current (in some industries evidence from more than 2 years may be accepted).

The bottom line here is that an assessment judgement must be made after the assessment evidence is collected and compared against the unit requirements.

The assessment evidence recorded (the facts of the case), demonstrates the learner has the skills, knowledge and attributes as described in the unit, and represent the legal proof of the competent/not yet competent judgement, that will be available for eventual procedures such as appeals, validations, audits, or reviews. This evidence must meet the rules of evidence, otherwise the RTO will be in breach of clause 1.8 of the Standards for RTOs.

VET -Why Content Is Not King Anymore

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Too many trainers still stand behind a podium, relying on content to drive learning. It's time for those trainers and instructional designers working in the Vocational Education sector to realise that content is not what drives learning in VET. We don't teach content, we teach people. We teach people to achieve outcomes, to perform a job under industry standards. Here are some factors to consider.

- **Information overload.** Students can watch speakers, read information sheets and research content at any time. Students need the interaction, the engagement and the experience. Internet provides access to info graphics, case studies, blogs, podcasts, videos, tweets, about almost anything. As VET practitioners, we can make good use of them, but these publicly available resources will not make a relevant learning experience for our learners. We live in the Information Age—and there's too much of it! For example, according to some estimates published by the Association for Talent Development (ATD), there are more than 120,000 books and texts on leadership development, with 3,000 more being published each year. We don't have a content problem; we have a filter problem. We must filter that content through the context of whom we're trying to connect with and teach. Content is what we're pouring into people. Context is everything that makes those people unique. It's why they're doing the training: the conditions where they will be applying their learning, the expectations of their clients and workplace. It's their age, interests, attention span, engagement level and beliefs.
- **People learn in the silence.** We learn in the pauses, reflection and meditation. Don't you have your best ideas when meditating, in the shower, while driving, or when falling asleep? We learn in the spaces in between life. We can't deliver lectures to learners anymore; that's not how people learn. Content is only one part of the equation. VET programs should always be based around the learn-say-do-reflect model. It's about providing an experience. We can't teach someone to ride a bike or drive or how to use new technology without putting them on the bike or in the car or the device in their hands.
- **Attention-span deficit.** We live in the digital era, where our mind switches on and off every 5 to 20 minutes. The average song you listen to is about three to four minutes. The average watching time of a YouTube video is three to five minutes. Any scene in a movie runs between a quick moment and no more than 15 minutes before switching to a new scene. It takes no more than 15 to 20 minutes to read any article in any paper. TED Talks are 18 minutes. Stories in the news last no more than a few minutes, unless they are documentaries. We can't lecture or speak to learners (of any age) for more than 15 to 20 minutes at a time. Their attention will be gone after that. People start wondering what's next. They check their smartphones. They look at the clock.
- **Students need more space.** Spaced learning is about engagement, conversations and one-to-one interaction. It's about exercises, simulations, demonstrations, and students teaching students. Spaced learning is about reflection, giving participants time during the session to turn their insights into actions. After a training course, people are going back to their lives, their desks, their email and texts, or the next most important thing on the list, but not back to reflect. VET programs must provide the framework to support student's learning, post

training. We need to provide action plans, explain exactly what they need to do immediately to get to the next level, and how to progress. In other words, follow-through on promises made with the learning objectives. VET is not about content because we don't teach content, we teach people. We facilitate learning experiences. That's what we do.

Publication Guidelines for the International Journal of Vocational Education and Training

The *International Journal of Vocational Education and Training* reflects regional contributions and is international in scope. Its purposes are to provide a forum for the discussion of vocational education and training issues and practices; to assist in the dissemination of information on research and practice; and to strengthen the lines of communication among individual researchers and practitioners, institutions, and organizations. In addition, it provides a platform for individual views on relevant issues.

The Editorial Board passed a resolution requiring membership in IVETA in order to publish in the Journal, with effect from Volume 14.2. The Journal publishes feature articles on research, theory, and practice broadly related to international vocational education and training. The largest section of the Journal is devoted to empirical research articles. General articles and research manuscripts submitted for publication should be between 1,200 and 5,000 words in length and should adhere to rules in the most recent edition of the Publication Manual of the American Psychological Association (APA) with the exception of placing table's in-column in the text where you prefer them to appear. Articles should deal with some relevant aspect of educational opportunity such as educational research, evaluation, instruction, teaching methods, policy making, or theoretical discourses related to education and training.

In addition, the Journal solicits book, test, and computer hard/software reviews (500-700 words) and research in brief manuscripts (800-1,200 words) with similar publication goals. Authors interested in submitting a manuscript are required to follow the APA format as noted above. Email manuscripts that conform to the required specifications to the co-editors at ivetajournal@gmail.com

Style and Submission Requirements

Submit electronic copies of manuscripts to Robert Clark or Elizabeth Richard at ivetajournal@gmail.com. Please adhere to the most recent APA edition to format your manuscript. Please remember the exception: Place any tables or figures in-column where they should appear. Make certain that documentation (reference) format rules are double-checked. In addition, avoid footnotes, and do not include your name or affiliation on any page after the title page. No more than 5% of a paper's text should be direct quotations. Insert only one space after punctuation at the end of sentences.

Tables and Figures: Tables and figures should relate directly to the content of the manuscript and should not repeat information given in the text. Please remember that the Journal publishes in black and white, not in color. When creating or saving a copy of your manuscript for Journal publication, please create tables and figures in black and white (you may need to return to your original manuscript and configure tables and figures for black and white reproduction). Figures should be provided on high-quality, glossy white paper and should fit on one page. Tables should not exceed one page, and there should be no more than three tables per article. Also, do not place table or figure titles inside the table or figure.

General Articles and Research Manuscripts. General articles and research manuscripts must be between 1,200 and 5,000 words long, or not more than 25 typed pages (double-spaced). Authors should keep tables and figures to a minimum and include them in-column at the

appropriate point(s) of insertion. Emphasis is placed particularly upon manuscripts that are research-oriented.

Cover Page and Title. Authors must include a removable cover page that is attached to each manuscript. This cover page should include the title of the manuscript and the name, address, phone number, email address, and institutional affiliation of each author. The title should be no more than 12 words.

Abstract. An abstract describing the manuscript should be included on a separate sheet. The abstract must be less than 120 words. Please follow APA guidelines when writing the abstract.

Book Reviews. Book reviews should be between 500 and 750 words in length and contain the following information: complete bibliographic entry, including cost (hard- and soft cover, if available); the thesis of the book; a brief description of the argument (main ideas); sample passages quoted and/or commentary on writing style; shortcomings and strengths; intended audience (whom the book will most benefit in the international education and training community); your opinion of the book; and what you think the book contributes to the international vocational education and training community.

Test Reviews. Test reviews should be between 500 and 750 words in length and contain the following information: complete bibliographic entry, including cost; the main purpose(s) of the test; a brief description of the administration and time; shortcomings and strengths; intended audience (whom will the test most benefit in the international education and training community); your opinion of the test (citing similar tests and the pros and cons relative to those tests); and what you think the test contributes to the international vocational education and training community.

Review Process. Once your manuscript has been received, it will be checked for conformity to style and Journal requirements, then forwarded to at least three peer review readers who will read your manuscript and make recommendations as to whether to accept or reject it for publication. Unless the manuscript is inappropriate for review due to length and/or topic, manuscripts submitted to the *International Journal of Vocational Education and Training* are anonymously reviewed by a peer review reader group as noted above. You will receive a publication decision within a reasonable amount of time (normally 3 to 5 months). Do not submit manuscripts concurrently under consideration by another publication or manuscripts that were previously published. Indicate a statement on the cover page is the manuscript is being reviewed or has been submitted for publication elsewhere.

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