

Development and Implementation of Education Policy on TVET Curriculum for Students' Relevance in Industries

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Abstract

The study investigated education policy for developing and implementing TVET curriculum for students' relevance in industries. The study answered three research questions and tested one hypothesis. Descriptive survey design was adopted to carry out the research in Owerri Education Zone of Imo State. The population of study was comprised of 28 Technical Educators and 21 Engineering Technology Lecturers from two polytechnics in the zone. There was no sampling due to the smallness of the population. An intact population was used. An 18-item questionnaire tagged, "TVET Curriculum Development and Implementation policy for Continuous Students' Relevance in Industries", questionnaire titled (TVET-CDP) was used for data collection; data which was validated by three experts and also trial tested outside the area of the study. The reliability, coefficient of the instrument was 0.85 established using Cronbach Alpha. The questionnaire items were generated from the review of the related literature. The questionnaire were administered individually and collected by the research assistant. Out of 49 copies of the questionnaire administered, 48 of them were completed and returned. Mean and standard deviation were used to answer the three research questions while the null hypothesis was tested at 0.05 level of significance using z-test. Mean of 3.50 or above was considered needed. Result of the study revealed the 6 items consideration were needed in the development and implementation of education policy of TVET curriculum, 5 items were the stages involved in the development-revision of education policy of TVET curriculum; 7 items were the practices identified as needed in the implementation of education policy; and there was also no significant difference between Technical Educator and Engineering Technology lecturers. Consequently, it was recommended that competency based Training (CBT) should be employed as the mode of TVET delivery in technical colleges to achieve direct link with under pinning knowledge. At the college of education, polytechnics and university, competency based Education should be instituted that will cater for academics and practical skills among others.

Keywords: Industries, TVET, Policy, Education policy and curriculum

Introduction

An industry is a place or establishment where production, research, maintenance repair, services and assembling of parts are carried out. Comanor (2004) explained that an industry is a place for production of goods and services especially in factories. African is endowed with various mineral resources that are utilized for the production of goods and services especially in Nigeria; which leads to economic growth

through the effective use of workforce possessing different aspects of technical skills that match industrial qualification standards. The workforce needed for industries are the product of Technical and Vocational Education and Training (TVET) programme. TVET is an aspect of educational processes that comprises of general education, technologies and related science and acquisition of practical skills, attitudes, understanding and knowledge relating to occupation and various sectors of economy and social life (Federal Republic of Nigeria, 2013). TVET refers to deliberate intervention to

bring about learning with production in designated areas of economic sectors, occupation and specific work task (Lauglo, 2006). Basically, the purpose of TVET is to equip people with the technical and professional skills needed for socio-economic and industrial development of the country. It is well known that TVET was introduced in Nigeria with the aim of providing the technical knowledge, skills, and attitude, necessary for agricultural, industrial, commercial and economic development of the nation. Ghana recognizes TVET as a means of developing technical and skilled human resources base, needed by the nation to achieve its industrial growth (Ansah, 2013). It is reasonable to understand that TVET can only achieve all these objectives if it concentrates on the actual need of the labour market and focus on the output, design flexible programme that serve the needs of production and service sectors and design practices and learning experiences that best serve job requirements (Johanson & Adams, 2004). The realization of outcome in this direction can be possible through Education Policy framework in the design of curriculum and its implementation.

Policy is a written document that states the course of plan of action within a period of time. It refers to set of relatively stable goals and choice of a strategy to reach these goals over a considerable period of time (Lauglo, 2006). In addition, the stage of policy is diagnosing, preparation, formulation of policy and follow-up needed to do necessary adjustments. Educational policy, therefore, refers to defined goal clusters written to be achieved over stipulated time of learning. These set of goals are embedded in the contents of the curriculum of the programme.

Curriculum is the totality of instruction given in school which consists of a written statement of aims and objectives of courses coupled with teaching contents and evaluation of the teaching contents that are of theoretical knowledge, practical to be acquired, attitudes and necessary support materials to be used (Okoroafor, 2009). Therefore, it serves as a pivot on which challenges such as economic, political, social and educational development of a nation is hinged. It is the collective representation of regular or particular course of study.

Curriculum development is a process of planning learning opportunity intended to bring about positive changes in the extent of the achievement of the set goals (Okoroafor & Eze, 2013). But according to Igberadja (2014), the Nigerian labour market reports that Nigerian graduates do not possess the requisite skills due to poor implementation of curriculum. In addition, Okwelle and Owon (2017) declared that majority of technical colleges study their courses theoretically because of lack of practical facilities showing that they have no competency. Also in Ghana, the study of labour market about the performance of tertiary graduates displayed the lack of basic skills to complete simple assignment as observed by employers (Boateng & OforiSarpong, 2002). As a result, employers are sent on long orientations and probation to select the best performing one. In addition, Japanese International Cooperation Agency (JICA, 2000) revealed that polytechnic HND curricula are theory oriented and assessed theoretically. The evaluation of the existing policy and assessing the impact indicated a negative outcome in Africa continent.

This has shown that skill shortage and mismatching with industrial standard have hindered economic growth of Africa countries and Nigeria in particular. It is certain that the key goal for TVET educational policy is to improve productivity of the workforce which will be reflected in the curriculum. This is confirmed by Garnevale, Gainer and Villet, (1990) who asserted that employers depend on educators to provide job ready and training ready entering level employees. This is an indication that mode of lesson delivery, evaluation and assessment are core criteria in the policy statement of TVET curriculum, which is the actual mode of curriculum implementation.

Curriculum implementation is the task that emerges once the curriculum document is picked up for execution; which is the act of translating curriculum document into operating curriculum by the combined efforts of the learners, teachers and other concerned body (Abud, 2014). It is an important stage of curriculum process; where by the learners interact with the curriculum through the learning activities. The level of interaction at this stage can announce curriculum planner or denounce a good plan. The classroom

teachers/lecturers are the major implementers of curriculum enabling the learners to acquire the desired knowledge, skills, values and attitude (Ayomike, 2014). The implementations of TVET curricular are carried out by engineering technology lecturers in Polytechnics and Technical Education institutions. Engineering Technology lecturers in polytechnics are engineers that teach technical courses, and are able to impart skills in learners, turning out technologist that are competent while technical educators are teachers/lecturers who teach student in technical colleges, or secondary schools or colleges of Education/ Polytechnics or Universities. They are products of TVET programme and are conversant with the mode of teaching and training to produce a competent work force.

The only alternative left for Nigeria is to overhaul the TVET programme through reformation of existing education policy for developing and implementing TVET curriculum. TVET policy for skill training in developing countries can be effective if the strategies of implementing the reforms are appropriate to the degree and pace of economic change occurring in the country (Boahim & Boahim, 2018). This reform requires re-design, review and implementation of new curricula and academic programmes that will transform the teaching and learning process. Many countries in the world have re-designed their curriculum policy and its implication thereby achieving positive feedback. According to Breweer & Comyn (2013), Australia, Jamaica, Malawi and Philippines operate their TVET and skill system in a comparatively tightly regulated framework competency-based standard and qualification that define outcome. Boahim & Boahim (2018) asserted that competency based curriculum is a framework for bridging the gap in teaching and assessment and the world of work. Therefore, competency based training is important in skill development policy.

A key element in TVET development is to develop feedback to TVET from the labour market demands for skilled workers especially for publicly provided pre-employment training (Johanson & Adams, 2004). It is worthy of note that any country trying to develop a new institutional model should review research on an item of interest for the global agenda and support international network on TVET

(Lauglo, 2006). The scenario of technology change and diffusion should be considered; collate statistics on change in labour market and conduct their own special surveys to supplement such statistics with the aim of providing on-going feedback to TVET at national and local (Boahin & Boahin, 2018). Indicators of performance- assessment of strengths and weaknesses of institutional models; which exists in other countries of which, may be of interest in one's own country coupled with cost implications (Allais, 2016). After considering the country's background as regard, culture, local geography, economic contexts (macroeconomic situation in general and human resources structure in particular) next that follow is the developmental stage.

The developmental stages involved in education policy of TVET curriculum does not apply to new policy development but a kind of policy revision because the existing one is incapable of addressing the mismatched between the acquired skill and the skill standard practised in industries. In the word of Haddah & Demsky (1999), stages of new education policy developments are: (1) Analysis of the existing situation. (2) Generation of policy options. (3) Evaluation of policy options (4) Making the policy decision (5) Planning of policy implementation (6) Policy impact assessment (7) Subsequent policy cycles. Education policy revision particular TVET curriculum must be based on evaluation performed to make the policy decision; which are based on solid understanding of the existing issues on ground, followed by active memory and evaluation of the present policy; consults stakeholders for feedback on the issue. Then compile feedback into a report to the college education committee (CEC) coupled with the analysis of the significance of feedback to determine if a revision is required. Lastly is to recommend the revision of the education policy where necessary. (RACP, www.racp.edu, Elbom, 1970) when an existing TVET curriculum policy is reviewed, a new education policy will be evolved to be implemented.

The implementation of a new TVET curriculum is important in order to close up the gap, and link up to the actual skill requirements of employers. This can be achieved through teaching, training, assessment, and evaluation; others are quality assurance monitoring; enough

budget allocation among others. Equally, the implementation can be based on adaption of the successful practice in the other countries of the world. It is of interest to note that many countries (Malaysia, Austria, Jamaica, Philippine) have succeeded in bridging the gap, due to the fact that the implementation of their curricular is based on competence based training (CBT) mode of delivery of TVET (Brewer & Comyn, 2015). There is also positive experience based on TVET curricula in Lebanon that has been utilised in bridging the gap between the skills that learners acquire in education and training and their labour market needs. Throughout European funded project, which took place 2007-2011, the Lebanese syndicate of food industries adapted occupational standard to the Lebanese context; equipped school in the Bakaa to become a workshop to learn competencies. This workshop transforms to small-scale industries; student practiced food processing technique in workshop at school and internship to further the developed their skill. (ILO, no date). It is only indicated that a National Qualification System (NOS) centered on a competency-based curriculum approach and implementation approach to training and testing allows for better signalling skills to employers (UNESCO). Curriculum implementation discloses specified books, teaching aids, methods of teaching and also develops model questions to official examination as in the National Strategic Frameworks for Labour Organisation (ILO, no date). To achieve positive result in the implementation of TVET curriculum, the contents are organised in modules, performance based practically-oriented, and theory is taught mainly as underpinning knowledge usually at a workshop and workplace or simulated environment and assessment is geared towards clearly defined criteria or standards on industry and the outcome of the training is measured against a single performance criterion (criterion-referenced) which can either be demonstrated as competent (pass or not yet competent) (fail) (Boahin & Boahin, 2018, Allais, 2016, ILO, ETF, 1999). In addition, implementation of policy is in contrasts with traditional curriculum that limits transfer of skills and labour mobility.

Presently, employers are in need of TEVT graduates, who are technically

competent, analytical thinkers, communicators in addition to processing entrepreneurial skills, and job specific skill in line with the world of work, labour market and industrial standard thereby linking industries with classroom (Law-Obi & Iwuanyanwu, 2019). The acquisitions of these competences are essential for the performance of professional tasks. Therefore it is crucial for developing national(Nigeria) to adopt a more innovative view of learning that emphasizes active intellectual engagement, and not passive absorption and regurgitation of facts. This reform requires re-design, review and implementation of a new curricula and academic programmes that will translate teaching and learning process. Against this backdrop, this paper seeks to determine new education policy for developing and implementing TVET curriculum for students' continuous relevance in industries.

Purpose of the Study

The major purpose of the study was to investigate education policy for developing and implementing TVET curriculum for students' continuous relevance in industries. Specifically the study sought to:

1. Identify the needed considerations in the development and implementation of education policy of TVET curriculum.
2. Determine, the stages involved in the development-revision of education policy for TVET curriculum.
3. Determine the practice needed in the implementation of education policy for TVET curriculum.

Research questions

1. What are considered in the development and implementation of education policy for TVET curriculum?
2. What are the stages involved in the development-revision of education policy for TVET curriculum?
3. What are the practices needed in the implementation of education policy for TVET curriculum?

Hypothesis

One null hypothesis was tested at 0.05 significant levels as follows:

1. There is no significant difference between the mean ratings of technical educators and engineering technology lecturers from polytechnics on the practice needed in the implementation of education policy for TVET curriculum.

Method

The study investigated development and implementation of education policy for TVET curriculum for students' relevance in industries. Three research questions and one hypothesis guided the study. The study made use of survey research designed to determine how to achieve TVET curriculum development and implementation policy for students' relevance in industries in Owerri Education Zone of Imo State. The population for study comprised 28 technical educators and 21 engineering technology lecturers from two polytechnics in the zone. There was no sampling due to manageable size of the population. An 18-item questionnaire titled, "TVET Curriculum Development and Implementation policy for Students' Relevance in Industries" (TVET-CDP) questionnaire was used for data collection; validated by three experts and also trial tested outside the area of the study. The reliability of the instrument was 0.85 established using Cronbach Alpha

technique. The questionnaire items were generated from the review of the related literature. The questionnaire consisted of four sections. A to D; 'A' solicited for information on the personal data of the respondents, 'B' concentrated on the consideration in the development and implementation of education policy of TVET curriculum; while 'C' is based on the stages involved in the development of education policy for TVET curriculum. Section 'D' is concerned with the practice needed in the implementation of education policy of TVET curriculum.

The instrument was structured on a five-point likert scale of Very Highly Needed (VHN), Highly Needed (HN), Somewhat Needed (SN), Slightly Needed (SN), Not Needed (NN). The response categories values were 5, 4, 3, 2 and 1 respectively. Out of 49 questionnaires administered, 48 of them were correctly completed and returned given 99% return rate. Mean and standard deviation were used to answer the three research questions while z-test was used to test the null hypothesis. Any item with mean of 3.50 or above was considered needed but otherwise not needed. The hypothesis was tested at 0.05 level of significance. The decision rule is that the null hypothesis should be rejected if the z-cal exceeds the table value (Z-crit) but otherwise should not be rejected.

Table 1: Respondents Mean Rating on the Considerations Needed in the Development and Implementation of Education Policy for TVET Curriculum

S/N	Items: ability to consider:		SD	Remark
1	Feedback from labour market demands for skilled worker	4.67	0.81	N
2.	Research findings conducted on the existing issues	3.99	0.79	N
3.	The trends of rapid pace of technological change	4.28	0.78	N
4.	Indicators of performance success available in other countries for adaptation.	4.41	0.86	N
5.	Country's background (cultures, economy human resource structure etc)	4.01	0.78	N
6.	Cost implication	3.97	0.91	N

The data presented in table 1 revealed that the 6 items had mean range of 3.97 to 4.67 above the cut off points of 3.50. These items are

the needed considerations in the development and implementation of TVET curriculum.

Table 2: Respondents Mean Ratings of the Stages involved in the Development/Revision of Education Policy for TVET Curriculum

S/N	Items: ability to consider:	X	SD	Remark
1.	Analysis of existing issues	4.38	0.62	N
2.	Evaluation of the present policy	3.96	0.82	N
3.	Consultation of the stakeholders for feedback on the issues	4.76	0.77	N
4.	Compilation of feedback into a report to Education council	3.95	0.82	N
5.	Recommend the development revision	3.82	0.97	N

The data presented in the table 2 showed that the 5 items had mean ranging from

3.82 to 4.76. These items are the needed stages in the development of education policy for TVET curriculum.

Table 3: Respondents Mean Ratings of the Practices Needed in the Implementation of Education Policy for TVET Curriculum

S/N	Items: ability to consider:	X	SD	Remark
1.	Adapting to successful practice in other countries	3.98	0.91	N
2.	Competency based mode of delivery only	3.50	0.71	N
3.	Competency based mode of delivery coupled with general education and soft skills.	4.56	0.78	N
4.	Qualification/occupational standard obtainable in industries	4.42	0.73	N
5.	Practically modular content delivery	4.36	0.78	N
6.	Teachers serve as coach of facilitators	3.82	0.67	N
7.	Certification based on competency	3.92	0.73	N

The data presented in table 3 revealed that the 7 items had their mean ranging from 3.35 to 4.56 above the minimum cut off point of 3.50. These items are the required practice for

the implementation of education policy for TVET curriculum.

Table 4: Z-test of the Difference Between the Mean Responses of Technical Educators in Colleges and Engineering Technology Lecturers from Polytechnics on the Practices Needed in the Implementation of Education Policy for TVET Curriculum

S/n	Technical staff	Mean	Standard deviation	N	Df	Standard Error	Level	Z cal	Z crit
	Technical Educators	4.06	0.935	28	128	0.69	0.05	0.512	196
	Engineering Technology Lecturers	4.11	0.893	41					

The z-test analysis summarized in table 4 reveals that there is no significant difference between the mean rating of technical education and engineering technology lecturer on the needed practice involved in the implementation of education policy of TVET curriculum. It

tested at 0.05 z-level and degree of freedom, 128. The calculated z-value (0.512) is less than the critical z-value (196). This led to the decision that the null hypothesis should not be rejected.

Discussion

It was found from the first research question that 6 items were the needed considerations, for policy development and implementation. The findings affirmed that feedback from the labour market demand for skilled workers; the trends of rapid pace of technological change (Johnson & Adams, 2004, Igberadja, 2014, Boahin & Boahin, 2018) were accepted. The accepted indicators of performance skills and cost implication also confirmed (Allais, 2016).

The findings of research question 2 indicated 5 items as the stages of development-revision of existing policies in TVET curriculum. The item was accepted both in the revision and new development of policies (Haddal & Demky, 1999, RACP, Elboim, 1970). After revision, there is an open access to implementation. The findings of research question 3, indicates that the respondents are aware of the implementation process and practice that will bring innovation in the teaching and learning process, satisfying the needed link between industries and classroom. Though, competency based mode of delivery of TVET only was accepted but it has the lowest mean as compared with competency mode of delivery coupled with general education and soft skills. This has shown that it enables mobility of labour and transfer of skills in a situation of technology change and existence of new skill (Boahin and Boahin, 2018, Allan, 2018, ILO and ETF). In addition to accepted qualification/occupational standard obtainable in industries. The issue is whether all these implementation criteria are practised in Nigeria.

There is no significant difference established which indicates that technical educators and engineering technology lecturers possess the criteria needed for the development and implementation of education policy of TVET curriculum.

Conclusion

Curriculum education policy design starts with captured set of objectives/outcomes to be prepared in order to function in existing professions and emerging challenges in the work place. The instructional design; teaching

and learning strategies and assessment must be practiced in such a way that the outcome will yield the expectation of labour market thereby achieving the direct link to industrial qualification standard with the skills taught in the classroom. If teaching and learning moves away from theoretical knowledge that promote regurgitation of facts to performance of tasks, Nigeria will compete favourable in the globe. If the findings of the study are applied in the development and implementation of the education policy for TVET curriculum; it will be result oriented and our graduates will be continuously relevance in industries.

Recommendations

1. Competency based Training (CBT) should be employed as the mode of TVET delivery in technical colleges to achieve direct link with under pinning knowledge and performance task in link with occupational qualifications of industrial standard.
2. At the college of education, polytechnics and university levels, competency based education should be instituted sothat it will cater for academics and practical skills.
3. At the high level of academics, where practical skills are less needed, technological knowledge of design of process and production of machines, mechatronics, and knowledge economy should be a part of curriculum contents.
4. Policy statements in TVET curriculum must take care of technology change and its diffusion. Since Nigeria does not originate their own technology; they should be eager to capture the new technology, acquire the heart bit and train their indigenes.
5. TVET education policy statement for TVET curriculum should be revised in line with skill changes and technology.
6. The era of passive approach to learning has gone, this is the era of creative and flexible learning and TVET policy curriculum must key in.

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