EVALUATION OF THE IMPLEMENTATION OF BASIC TECHNOLOGY CURRICULUM IN SECONDARY SCHOOLS IN PLATEAU STATE

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Abstract
The study assessed the factors for successful implementation of basic technology curriculum in secondary schools in Plateau State. Two (2) research questions and null hypotheses were formulated to guide the study. An analytical cross-sectional survey design was used for the study. The population of the study was 306 basic technology stakeholders (193 basic technology teachers and 113 educational administrators (which comprised 110 school principals and 3 principal officers of the Ministry of Education). The sample size of 170 respondents was obtained by Krejcie and Morgan Standard table for determining the sample size of a known population. A 16 item structured questionnaire titled: Questionnaire on Evaluation of the Implementation of Basic Technology Curriculum (QEIBTC) which was developed by the researcher and was validated by 3 experts from the Department of Vocational and Technical Education, Benue State University Makurdi was used for data collection. The reliability coefficient of the instrument was found to be 0.76, obtained through Cronbach's alpha technique. The descriptive statistics of mean and standard deviation were used to answer the research questions while the independent sample t-test was used to test the null hypotheses at 0.05 level of significance. The findings of the study revealed that inadequate manpower, facilities are som of the major challenges hindering successful implementation of basic technology curriculum in secondary schools in Plateau State. The study recommended among others that education stakeholders must ensure effective planned supervision of basic technology teachers and programmes to enhance efficiency.

Key Words: Assessment, Implementation Basic Technology Curriculum.

Introduction

All over the world, secondary education is undergoing rapid transformation. According to Wonacott (2003), the changes are the result of the incredible speed and sophistication of technological change and innovations; creating new industries demanding advanced skills, knowledge and competencies; and changing the economic profile and social values of societies. This trend is placing pressure on the school systems requiring continuous adjustments of schools curricula at all levels particularly, the secondary education level. According to the Opoku, Afriye, Boateng and Acheampong (2012), globalization and the increasing demand for a more sophisticated labour force, combined with the growth of knowledge-based economies gives a sense of urgency to the heightened demand for secondary education. Similarly, the United Republic of Tanzania (URT)(2014) posits that secondary education is recognized by both developed and emerging economies as a strategic instrument for poverty reduction, wealth creation, employment generation and productivity in today's economy.

Against this background many developed and developing countries (Nigeria inclusive) have restructured their secondary education curricula and many regions are setting agenda for curricula reforms with the aim of restructuring Basic Technology(TE). According to Jones (2009), basic technology for all students is a relatively new phenomenon in national and international curricula. Wonnacott (2003) further explains that, basic technologyis a transition of over 100 years of modifications of the early traditional apprenticeship training system to the Industrial Arts Education (IAE), and through many other names associated with the profession. Furthermore, Brewer (2010) declared that the different names by which the profession is called, the content and the practices characterize the major changes that took place in the field that led to the adoption of the present technology education.

Basic technology can be seen as the planned programme(s) of learning in the different technology areas to develop students' talents and the capacity to design and create new or improved technologies to solve societal problems. This is the major reason for the shift from the previous

vocational and technical education systems that focused mainly on the development of job-specific skills, knowledge and attitudes for productivity and self-reliance. The Nigerian education stakeholders and curriculum experts foresaw a new direction to launch a scientific and technological culture aimed at the industrialization of the nation (Dike, 2009). The indigenous secondary education curriculum provided fertile ground for valuable foundation for the Technical, Vocational Education and Training (TVET). The author further stated that Technical, Vocational Education and Training programmes was introduced into the secondary education curriculum and enjoyed parity with other traditionally valued subjects like science and mathematics as a major components.

As a result, Nigeria adjusted her secondary education curriculum in 1982 to encompass diversified curriculum that integrated academic with technical and vocational subjects (vocationalization). The aim was to empower learners with the skills, knowledge and attitudes to be productive and be self-reliant (Ofoha, 2011). The JSS curriculum was both pre-vocational and academic and was to be free, universal and compulsory. Introductory technology was the component of TVET subject in the six core subjects in "Group A" of the JSS curriculum. Every student is to selection one subject each from group B and C in addition to the six core subjects in group A to meet the minimum of 10 or maximum of 13 subject requirements. However, students' in the SSS are to select in addition to the six (6) core subjects in group A, a minimum of one (1) or maximum of two (2) subjects from the electives in group B and C to make up a minimum of seven (7) and maximum of eight (8) as total subjects offered (FRN, 1981, revised 2004). This curriculum was targeted to achieve the objectives of secondary technical education and to introduce scientific and technological culture in the pursuit of industrialization of the nation.

According to Nwokolo-Ojo and Sen (2015), curriculum as a deliberate, systematic and planned attempt undertaken by the school to modify or change the behaviour of citizens of a particular society. Similarly, Pillai (2017) sees curriculum as a comprehensive plan for an educational training programme/course to offer new/improved manpower to fulfill the rising needs of a dynamic society. Curriculum can also be seen as the total selected, planned and systematically organized experiences to be learned by the students' through instruction and guidance of the teacher in a school to effect desired changes in behaviour. The definition of curriculum by Pillai offers a strong agreement with this study as basic technology model targets to meet the changing needs of a modern society. The secondary school basic technology curriculum is currently a global concern and greater efforts are being strengthened towards effective implementation.

Curriculum implementation according to Maduewesi, Aboho and Okwuedei (2010)is "the task of translating the curriculum document into action by the combined efforts of the school authority, teachers and students". Similarly, Alabi (2014) sees curriculum implementation as the actual hatching of the planned curriculum. Curriculum implementation can also be seen as an interactive and cooperative process in the timely supply of adequate and appropriate learning resources under the teacher's skilful and systematic management of learning processes to achieve desired learning outcomes. Effective Curriculum implementation is an imperative educational tool for national development. The foreseen relevant skills, knowledge and attitudes to prepare the secondary school graduates in to attain self-reliance and better socio-economic fortunes and to contribute to national development could not be realized (Ofoha, Uchegbu, Anyikwa & Nkemdirim, 2009). This condition is responsible for the rising youth unemployment and poverty (Gabriel, 2014). As a result, the increasing youth poverty, idleness and restiveness is making the socio-economic and political environment hostile, insecure, unstable and capable of down turning developments (Emeh, 2012). This failure is the bane of the nation's socio-economic and political woes today.

The educational scholars and researchers remarked that the 6.3.3.4 system of education failed because of poor implementation practices. According to Ofoha (2011), the major problem encountered during the implementation of the Basic Technology programme was the acute shortage of qualified technical teachers, inadequate standard workshops/ laboratories and facilities, inadequate instructional and training materials; as a result, students graduate without any hands-on- experience. Similarly Okolocha (2012) and Owuomanam (2015) submit that, inadequate funding and lack of motivation of teachers hindered success of the 6.3.3.4 education system. Gusau (2008) notes that, there was no sufficient preparation and strategic plans put in place by the government for the

successful implementation of the system. In line with these submissions, the Commonwealth of Learning (CL) (2000) emphasized that, implementation will only be successful if there are sustained and sufficient quality resource materials and appropriate facilities and other relevant needs are provided. There is the suspicion that this could lead to greater danger in the future if the situation is not salvaged.

The new curriculum combinations were introduced to strengthen the achievement of the objectives of secondary schools basic technology programmes. The nine (9) core technology subjects include: Technical drawing, general metal work, basic electricity, electronics, auto mechanics, building construction, woodwork, home management and food and nutrition. The implementation of the policy took effect from September 2014 (FRN, 2013). The fate of the new basic technology programmes is a necessary question to ponder upon. This was the reason for the concern and interest of the researcher to assess the state of the current factors for the successful implementation of technology curriculum in secondary schools in Plateau State.

Statement of the Problem

The implementation of the technical and vocational education curricula began in 1982. However, about thirty years of the implementation, the targeted objectives/goals of secondary technical education could not be achieved. Consequently, youth unemployment, idleness, poverty and restiveness are on the rapid increase resulting in serious levels of socio-economic and political vices. There is the fear that this could lead to great danger in the future if the situation is not resolved. This worrisome situation is noticed by the government and all the education stakeholders that led to the new curricula review and the adoption of the current basic technology among other changes. According to Ofoha (2011), the lack of adequate basic technology teachers, standard technical workshops/facilities is standing against the implementation of vocational and technical education in Nigeria. It is worth asking whether the implementation factors that characterized failure of the previous system are rectified to permit success of the basic technology. This is the motivation for the evaluation of the implementation of basic technology curriculum in secondary schools in Plateau State.

Purpose of the Study

The main purpose of this study is to evaluate the factors affecting the implementation of basic technology curriculum in secondary schools in Plateau State. Specifically, the study seeks to determine the:

1. The teacher factors affecting the implementation of basic technology curriculum.
2. Facility factors for affecting implementation of basic technology curriculum.

Research Questions

The following research questions were put-up for the study:

1. What is the teacher factors affecting the implementation of basic technology curriculum?
2. What is the facility factors affecting the implementation of basic technology curriculum?

Hypotheses

The following hypotheses (Ho) were formulated to guide the study:

Ho_1. There is no significant difference between the mean responses of educational administrators and technical/ vocational teachers on the teacher factors affecting the successful implementation of basic technology curriculum.

Ho_2. There is no significant difference between the mean responses of educational administrators and technical/ vocational teachers on the facility factors affecting the successful implementation of basic technology curriculum.

Methodology

A descriptive survey research design was used for the study. The population for the study was 306 respondents which comprised 193 vocational and technical teachers and 113 educational administrators. The sample size of 170 was used for the study and obtained from Krejcie and Morgan standard table for determining the sample size (n) of a given population (N).A 16 item structured questionnaire titled: Evaluation of the Implementation of Basic Technology Curriculum (EIBTC) developed by the researcher was used as instrument for data collection. The questionnaire was

indexed on a four point- rating scale of Strongly Agree, Agree, Disagree and Strongly Disagree. The instrument for data collection was validated by three experts. A Cronbach alpha reliability technique was used to ascertain areliability coefficient of 0.76. Data was collected through direct contact and analysed using the descriptive statistics of mean and standard deviation while independent samples t-test was used to test the Null hypotheses at 0.05 level of significance.

Research Question One

What is the teacher factors affecting the implementation of secondary schools basic technologycurriculum?

Table 1: Mean and Standard Deviation of Technical Teachers and Administrators on the Teacher Factors affecting the Implementation of Secondary School Basic Technology Curriculum

S/N	Statement	$\bar{x}_1$	$\bar{x}_2$	SD_1	SD_2	$\bar{x}_t$	SD_t	Remarks
1	Experienced basic technologyteachers' are adequately available for teaching technology subjects in secondary schools	2.93	2.00	0.62	0.67	2.45	0.63	Disagree
2	Technical teachers are not properly motivated in secondary schools	3.17	33.25	00.79	00.68	3.19	00.76	Agree
3	Technical teachers are not committed in teaching technical subjects	2.46	2.43	0.87	0.85	2.45	0.86	Disagree
4	Technical teachers are not well informed on basic technologycurriculum policy	2.34	2.23	0.79	0.85	2.31	0.81	Disagree
5	There is adequate supervision of technology teachers in secondary schools	2.10	2.45	0.74	0.81	2.27	0.76	Disagree
6	Technical teachers do not have experience in selecting suitable teaching strategies	3.43	3.40	0.64	0.58	3.42	0.62	Agree
7	Technical teachers often motivate students' interest in their subjects	3.18	3.27	0.49	0.49	3.21	0.49	Agree
8	Technical teachers often received re-training in basic technologycurriculum	2.19	2.70	0.84	0.79	2.44	0.83	Disagree
	Subscale Mean & Standard Deviation	**2.73**	**2.72**	**0.72**	**0.72**	**2.72**	**0.82**	**Agree**

Key: $\mathbf{n_1}$= Number of technical teachers, $\mathbf{n_2}$ = Number of administrators, $\bar{x}_1$ = Mean of technical teachers, $\bar{x}_2$ = Mean of administrators, $\mathbf{SD_1}$ = Standard Deviation of technical teachers, $\mathbf{SD_2}$ = Standard Deviation of administrators, $\bar{x}_t$ = Mean total, $\mathbf{SD_t}$= Standard Deviation total

Table 1 shows that the respondents (technical teachers and administrators) agreed that basic technology teachers are not properly motivated ($\bar{x}_t$ = *3.19,* SD_t= *0.76*), basic technology teachers do not have the experience in selecting suitable teaching strategies ($\bar{x}_t$ = *3.42,* SD_t= *0.62***)** and basic technology teachers often motivate students interest in their subjects ($\bar{x}_t$ = *3.21,* SD_t= *0.49*). The respondents however disagreed that experienced basic technology teachers are not adequately available ($\bar{x}_t$ = *2.45,* SD_t= *0.63*), basic technology teachers are not committed to the teaching of technology subjects ($\bar{x}_t$ = *2.45,* SD_t= *0.86*), basic technology teachers are not well informed about technology curriculum policy ($\bar{x}_t$= *2.31,* SD_t= *0.81*), there is adequate supervision of basic technology teachers in secondary schools ($\bar{x}_t$= *2.27,* SD_t= *0.76*), and basic technology teachers do not received frequent re-training in basic technology curriculum ($\bar{x}_t$= *2.44,* SD_t= *0.83*).Therefore, both

respondents agree that the lack of proper motivation of basic technology teachers', basic technology teachers' inexperience in the selection of suitable instructional strategies, the inadequate availability of experienced basic technology teachers', the inadequate supervision of basic technology teachers' and the lack of re-training of basic technology teachers' for basic technology curriculum (Grand$\bar{x}_t$= *2.72, SD_t= 0.82*), are the teacher factors challenging the implementation of basic technology curriculum in secondary schools in plateau state.

Research Question Two

What is the facility factors affecting the implementation of secondary schools basic technology curriculum?

Table 2: Mean and Standard Deviation of Technical Teachers and Administrators on the Facility Factors affecting the Implementation of Secondary School Basic Technology Curriculum

S/N	Statement	$\bar{x}_1$	$\bar{x}_2$	SD_1	SD_2	$\bar{x}_t$	SD_t	Remarks
9	Standard workshop buildings available for the learning of basic technology subject in secondary schools are inadequate	3.12	3.18	0.62	0.54	3.14	0.60	Agree
10	The tools available for the learning of basic technology subject in secondary schools are inadequate	3.50	3.62	0.66	0.56	3.56	0.64	Strongly Agree
11	Modern facilities are available for the learning of basic technology subject in secondary schools	1.80	1.67	0.69	0.51	1.73	0.64	Disagree
12	There is lack of equipment for the learning of basic technology subject in secondary schools	3.23	3.34	0.62	0.59	3.32	0.61	Agree
13	Personnel for the Maintenance of learning facility are readily available in secondary schools	2.32	1.62	0.78	0.72	1.97	0.77	Disagree
14	There is sustainable power supply for the learning of basic technology subject in secondary schools	2.00	2.89	0.64	0.69	2.44	0.65	Disagree
15	There are no health and safety facilities for the learning of basic technology subject in secondary schools	3.23	3.18	0.69	0.71	3.19	0.69	Agree
16	Machines for training in basic technology subject are not adequate in secondary schools	3.41	3.84	0.81	0.58	3.72	0.68	Strongly Agree
	Subscale Mean & Standard Deviation	**2.83**	**2.92**	**1.06**	**0.61**	**2.88**	**0.58**	**Agree**

Table 2 shows that the respondents agreed that there are inadequate standard workshop buildings available for basic technology subject in secondary schools($\bar{x}_t$ = *3.14, SD_t= 0.60*), there are inadequate tools available for the teaching-learning of basic technology subject in secondary schools ($\bar{x}_t$ = *3.56, SD_t= 0.64*), there is lack of equipment available for the teaching-learning of basic technology subject in secondary schools ($\bar{x}_t$ = *3.32, SD_t= 0.61*), there is lack of health and safety facility for the teaching-learning of basic technology subject in secondary schools ($\bar{x}_t$ = *3.19, SD_t= 0.69*), and there are inadequate machines for the teaching-learning of basic technology subject in secondary schools ($\bar{x}_t$ = *3.72, SD_t= 0.68*). The respondents however disagreed that modern facilities are available for the teaching-learning of basic technology subject in secondary schools ($\bar{x}_t$ = *1.73, SD_t= 0.64*), personnel for the maintenance of learning facility are readily available in secondary schools ($\bar{x}_t$ = *1.97, SD_t= 0.77*) and there is sustainable power supply for the learning of basic

technology subject in secondary schools ($\bar{x}_t$ = *2.44, SD$_t$= 0.65*). Therefore, the respondents agree that the inadequate standard workshop buildings/studios available, tools and machines; and the lack of equipment, health and safety facilities, modern facilities, maintenance personnel and sustainable power supply (Grand $\bar{x}_t$ = 2.88, SDt = 0.58) are the facility factors challenging the successful implementation of technology curriculum in secondary schools in Plateau State.

Test of Hypotheses

Hypothesis One
There is no significant difference between the mean responses of educational administrators and vocational and technical teachers on the teacher factors affecting the successful implementation of basic technology curriculum in secondary schools.

Table 3: Summary Table of t-test for Comparison of mean of Technical Teachers and Administrators on the state of Teacher Factors for Successful Implementation of basic technology Curriculum (n_1 = 121, n_2 = 49)

Group	*N*	$\bar{x}$	*SD*	*t*	*df*	*p.value*	Remarks
Teachers	121	25.39	1.88				
Administrators	49	25.43	1.48	0.124	168	0.91	NS

NS = *Not Significant,* $p > 0.05$, $df = 168$

Table 3shows that*p*-value is 0.91 and is greater than *a*-value of 0.05 at 168 degree of freedom, showing that the null hypothesis is not rejected. This implies thatthere is no significant difference between the mean responses of technical teachers and administrators on the teacher factors hindering the successful implementation of basic technology curriculum.

Hypothesis Two
There is no significant difference between the mean responses of educational administrators and vocational and technical teachers on the facilities factors affecting the successful implementation of the basic technology curriculum in secondary schools.

Table 4: Summary Table of t-test for Comparison of mean of Technical Teachers and Administrators on the current status of Facility Factors for Successful Implementation of Basic technologyCurriculum (n_1 = 121, n_2 = 49)

Group	N	$\bar{x}$	*SD*	T	*df*	*p.value*	Remarks
Teachers	121	26.36	1.58				
Administrators	49	26.26	1.47	0.362	168	0.71	NS

NS = *Not Significant,* $p > 0.05$, $df = 168$

Table 4shows that*p*-value is 0.71 and is greater than *a*-value of 0.05 at 168 degree of freedom, showing that the null hypothesis is not rejected. This implies thatthere is no significant difference between the mean responses of technical teachers and administrators on the facility factors associated with the effective implementation of basic technology curriculum.

Discussion of Findings
Findings of the study revealed that the teacher factors hindering the effective implementation of basic technology curriculum in secondary schools include inadequate professional technology teachers, lack of teacher motivation and inadequate supervision of trade subject teachers in secondary schools. Findings of the study revealed that teachers' inability to select suitable instructional strategies and absence of re-training of trade subject teachers are also hindering effective implementation of basic technology curriculum. This Findings are in disagreement with that of Bandele and Faremi (2012) and Osam (2013) who posited that most trade subject teachers and instructors at the science and technical colleges are professionally qualified and moderately high for the teaching of trade subjects. However, the findings of the study is in line with that of Bandele and Faremi (2012) which revealed that in-service training and poor condition of service of teachers and instructors constitute some of

the challenges facing the implementation of science and technical college curriculum. Most of the teachers saddled with the responsibilities of teaching basic technology subject in secondary schools are those not specifically trained for the job as obtainable in science and technical colleges. Basic technology subject teachers ill-motivated and are lack of proper and adequate up-to-date training for the successful implementation of secondary school basic technology curriculum.

Findings of the study also revealed that lack of adequate workshop buildings, tools, and epileptic power supply are some of the facility factors hindering the effective implementation of basic technology curriculum in secondary schools. These findings is in consonance with that of Lilly and Efajemue (2011) and Osam (2013) who posited that the poor state of infrastructure and inadequate facilities such as workshops, tools, machines and equipment are some of the challenges hindering the effective implementation of science and technical college programmes in Nigeria. Basic technology curriculum can only thrive best when the necessary facilities are provided and always in good condition. The epileptic nature of power supply is seriously affecting the effective implementation of basic technology curriculum most especially; as it relates to trade areas where machines needs to be powered for practical demonstration and students practical production exercises. Bandele and Faremi (2012) also noted that out-dated equipment and lack of standard workshop for the conduct of practical demonstration to students constitute the challenges facing the implementation of science and technical college programmes.

Conclusion

Based on the findings of this study, it is concluded that there is no adequate preparation and strategic plans put in place on the side of the government and education stakeholders for the effective and successful implementation of the current basic technology curriculum in Plateau State. The implementation of the new Basic technology curriculum began in 2014, about five (5) years ago. Yet, relevant and appropriate resources such as trained and experienced manpower and standard modern workshop buildings/studios, tools, and machines are grossly inadequate; modern equipment/facilities are also lacking. The lack or inadequate meeting of these factors is hindering secondary schools students' in plateau state the opportunity and access to learn technology subjects. Consequently, the preparation for a 21st century job-ready candidates, useful and self-reliant and technically innovative and creative members of the society will be denied. If this condition persists, in the future Plateau State will suffer the dearth of qualified, experienced and innovative technicians and engineers to man her infrastructure for economic benefits. The State and subsequently the nation will continue to experience rapid turn-over of high level youth unemployment rate and poverty at all levels with terrible socio-economic and political consequences on the society due to lack or insufficient knowledge and skill gaps. If basic technology is to achieve its national goals and objectives in the state, relevant stake holders must rise to the challenge to effect a change of attitude and commitment towards effective implementation of basic technology curriculum for progress and prosperity of the state and the nation in general.

Recommendations

The following recommendations are made based on the findings of this study. They include:

1. The education stakeholders must ensure effective planned supervision of basic technology teachers and programmes to enhance efficiency.
2. The Government and relevant education stakeholders should make plans to provide adequate modern workshop buildings, laboratories and studios; modern machines and tools for effective and efficient practical demonstrations/students' training and learning.

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