

# BEST PRACTICES IN TECHNICAL EDUCATION PROGRAMME FOR STUDENTS' CAPACITY BUILDING AND SUSTAINABLE DEVELOPMENT IN THE 21<sup>ST</sup> CENTURY

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## ***ABSTRACT***

*The purpose of this study is to determine the best practices in technical education programme for students' capacity building and sustainable development in the 21<sup>st</sup> century using survey research design. The entire population of 50 technical teacher educators in the Departments of Vocational and Technical Education in the three public universities in Edo and Delta States of Nigeria was used for this study. The instrument used for data collection is a 57-item questionnaire, with a five point Likert scale. The data collected were analysed using mean statistics. The findings revealed that there were almost no joint programme in technical education between school and industries except for the Students' Industrial Work Experience Scheme (SIWES). There is also no involvement of industries in the running of technical education programme in Nigeria. Some challenges to effective school-industry collaboration and some ways that schools and industries could jointly engage to enhance students' capacity building in technical education were identified. It was recommended among others that educational institutions offering technical education programmes should tap the dynamisms and synergies of the 21<sup>st</sup> century workplace to the full to produce technical education graduates who can fit in and succeed in the 21<sup>st</sup> century world of work.*

***Keywords:*** *Best practices, technical education, partnership, capacity building, 21<sup>st</sup> century*

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## 1. INTRODUCTION

One of the major factors that can bring about capacity building and sustainable development of any nation is a functional human capacity. Building a functional human capacity involves education and training designed to provide the individuals with knowledge, skills and attitudes related to occupations in various sectors of economic and social life for sustainable development. Sustainable development is concerned with the exploitation of human and material resources, the direction of involvement, the orientation of technological development and institutional change that are in harmony with, and enhance, both current and future potentials to meet human needs and aspirations (Eze, 2011) in the 21<sup>st</sup> century world.

The 21<sup>st</sup> century world, according to Friedman (2005) is a world that will be very different from the one in which we were educated. It is a world that is dynamic with technological development and advancement. The rapid advancement in technological development has placed new demands for the 21<sup>st</sup> century workforce whose products of technical education are prepared to serve. The 21<sup>st</sup> century workforce is unique and only people with adequate skills can serve. The unique characteristics of the 21<sup>st</sup> century according to Aguba (2010) in Iroriteraye-Adjekpovu (2013) includes: (i) a scientific and computer world; (ii) a technological or jet age demanding efficient use of computer in all spheres of life; (iii) an age requiring sound scientific and technological skills for children to cope with its complexity; (iv) a world where emphasis will be more on accuracy, competence, efficiency and effectiveness which are derived from educational foundation; and (v) an era of highly skilled practitioners and generalists.

These unique characteristics have led employers of labour to seek for graduates who can function in such world of work. Equipping Nigerian youths and school leavers with technical and vocational skills for personal fulfilment and production of physical goods and services is no longer enough but linked with skills to be literate and knowing how to use discipline specific applications may help people secure suitable employment and foster employment. To survive in a new, globally competitive world, today's children will need creativity, problem-solving abilities, a passion for learning, a dedicated work ethic and lifelong learning opportunities. Students can develop these abilities through instruction based on Best Practices.

The expression “best practices” was first used in the field of medicine, law, and architecture to describe contemporary, reputable, standard, and state-of-the-heart service delivery. It connotes the awareness and promotion of research-based standard of instruction, up-to-date technology, modern procedures, latest knowledge, and up-to-the-minute activities in a field. Best practices can be new or refined programmes relevant to (but are not limited) to academic affairs, students’ affairs, workforce education, economic development, educational technology, innovation, entrepreneurship and administration (Florida Department of Education, 2015).

Best practices in education are an inherent part of a curriculum that exemplifies the connection and relevance identified in educational research (Daniels & Bizar, 1998). They speak firmness into the curriculum by developing thinking and problem-solving skills through integration and active learning. Relationships are built through opportunities for communication

and teamwork. Best practices crusade for educational opportunities that provide open classroom, hands-on learning; research/evidence based, and instructional strategies that are aligned to industry skills (Zemelman, Daniels & Hyde, 2005). It gives room for excellence through high quality cost effective learning opportunities. Best education practices provide opportunities for students to find relevance and connections with what they are learning; develop the passion for learning and become lifelong students; demonstrate potentials that they come to school with, and develop relevant skills and capabilities to be useful to themselves and society. The requisite modality for achieving these objectives is the encouragement of best practices in education process that focus on students' needs in content taught, procedures employed, outcomes expected and the learning environment created. According to Zemelman, Daniels, & Hyde (1998), best practices motivate, engage and prompt students to learn and achieve, and possess the knowledge, skills and abilities to transfer and connect ideas and concepts across disciplines will be able to fit in and succeed the 21<sup>st</sup> century world of work.

Education has been recognised as an anvil for socio-economic development and technological advancement. Many nations of the world (developed and developing) have identified education as the instrument to be adopted to maintain national growth and usher in development. Hence, the Federal Republic of Nigeria (FRN) (2013) noted that education is an instrument 'par excellence' for effective national development. In view of the above, education is to serve as the pathway to equip the citizenry with knowledge, attitudes, values, skills and competencies to build a society that is stable, socially and economically strong to guarantee individual well-being. The type of education mostly involved in this is Technical Education and Training.

Technical education and training is a type of education which is designed specifically to accommodate both the trainer and the trainee to enable the trainee acquire the basic knowledge, skills, abilities, understanding and attitudes needed for one's efficient performance in his or her chosen occupational career for self-reliance and national development (Nwogu & Nwanorou, 2011). It is the education and training that equips individuals and learners with knowledge, ideas, principles, attitudes and attributes which will enable them to discover opportunities, plan and create ventures to exploit the opportunities available for economic development. UNESCO (2002) described technical education and training as a comprehensive term which encompasses the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge related to occupations in various sectors of economic and social life. Technical education and training are the education for the acquisition and development of skills, competencies and attitudes which are necessary for capacity building.

Capacity building refers to establishing resources required to fulfil a mission or achieve a goal. Capacity building is a process of developing and strengthening the skills, instincts, abilities, process and resources that one needs to survive, adapt and thrive in the fast changing world of technology (Olaitan, Asogwa & Eze, 2011). It is the process through which individuals, groups, organisations and societies enhance their ability and meet development challenges. Capacity building is the effort geared towards improving the level of knowledge, skills and attitude possessed by an individual for proficiency in a given task or job.

Considering the nature of technical education, one may be tempted to ask whether technical education programmes in Nigeria is actually achieving its mandate? The answer to this question may not be in the affirmative as the features of the educational system in Nigeria currently suggest that there are dysfunction either in the policy, implementation and outcome of the educational system. This has resulted in a sharp rise of complaint among parents and industries that graduates of Nigerian tertiary institutions are half-groomed, lack manipulative skills and unemployable, hence their retraining on being employed (Odu, 2010). To this end, Onyesom & Okolocha (2013) posited that the learning environment in Nigerian tertiary institutions is fast becoming deplorable, as there is a dearth of essential teaching and learning facilities and equipment.

With the state of education in Nigeria, it is obvious that government alone may not be able to promote functional education and skill-oriented education successfully. To make an inroad into the desired transformation, school-workplace collaboration in education needs to be encouraged to ensure a qualitative and affordable education that is founded on skills and competencies acquisition for capacity building and sustainable development. This will make education relevant to the needs of the people and the 21<sup>st</sup> century workplace. The issue of making skills training and acquisition meaningful and relevant to the need of the society and employers of labour will remain a fantasy without effective school-workplace collaboration.

The school-industry partnership is the collaboration between formal education and industrial sector to create an enabling environment for students to acquire hands-on experience, knowledge, skills and appropriate attitude to work. Within societies are industries that have a highly skilled workforce of production, functional facilities and raw materials that could be very useful in the practical training of Technical education students. These industries through a partnership with schools could be made to meaningfully contribute to the training of students in appropriate skills that relate to their areas of interests (Biose, 1998).

Education blooms in bio-network in which multiple stakeholders play vital roles, but academic institutions are fundamental to provide education and are in a position to stimulate and fortify partnership with the industries to enhance the exposure of students to practical and real life situations of the workplace. This partnership needs an extensive formal and flexible commitment on both the academic institutions and industries. The partnership will make both sectors to share the felt needs, challenges, issues, strengths and weaknesses of training technical education students. The industrial sector can provide expertise and collaborate with educators and educational institutions to develop the desired atmosphere and locally relevant pool of resources for students' training. This when appropriately controlled, would work well to produce the most wanted technical education products with enhanced capacity.

Thus, it has become necessary that industries should be keenly involved in the skills training of technical education students to complement classroom experience to accustom them with skills required for employment in the industries upon graduation. Technical education programmes should tap the energies and synergies as well as the resources of the industries to the full. An effective relationship between the schools and the industries will compel the industries to make their expertise, equipment and expendable materials available for learning of the students. To this end, Okorie (2001) posited that as the industries contribute in the training

of the students, certain deficiencies that beforehand existed in the training of students will be abridged if not entirely eliminated. The relevance of effective school-industry partnership to students' training according to Ibik (2014) are to:

- (i) Make training of the students more meaningful and relevant to the available jobs in the industries;
- (ii) Expose students to the training environment which is a replica of the actual work environment of where they will work upon graduation so as to eliminate the phobia associated with new work environment;
- (iii) Give students first-hand information regarding technologies, processes and latest development;
- (iv) Reduce the burden of career choice on the students, since proper career guidance and exposure to the different industries help them to identify careers that are in line with their interest and abilities;
- (v) Reate and maintain avenue for the flow of information between the schools and industries about various careers and their entry level skill requirement; and
- (vi) Help on the planning and development of the relevant curriculum, that is, a curriculum that will take cognizance of the students' needs, the needs of the industries and those of the society.

Consequently, when effective school-industry partnership is established, technical education students will have the opportunity to receive the appropriate training from the real work environment and bridge the gap between classroom experience and the yearnings of employers of labour will be reduced to the barest minimum. Hence, this study focused on Best practices in Technical Education programme for students' capacity building and sustainable development in the 21<sup>st</sup> century through effective school-industry partnership with a particular interest in the Universities.

## **1.1 Statement of the problem**

A functional technical education programme needs effective collaboration with the relevant industries that the students will find themselves upon graduation. Although, technical education students are exposed to Students Industrial Works Experience Scheme (SIWES) but Odugbasan (1999) opined that the experiences students acquire from these schemes are not adequate to their training needs. Educational institutions need to collaborate with the industries for research assistance and partnership, curriculum planning, infrastructural provision, scholarships, seminars and work visits. According to Gbenedio (2012), many academic programmes tend to exist in isolation with few connections between the school and industries – even between those in the same locality. The problem of this study is that it seems that there are little or no effective partnerships between the school and the 21<sup>st</sup> century workplace despite the inherent mutual benefits derivable from such collaborations. Therefore, it becomes crucial to determine ways of enhancing technical education students' capacity building through effective school-industry partnership.

## 1.2 Purpose of study

The purpose of this study was to determine the best practices in Technical Education programme for students' capacity building and sustainable development in the 21<sup>st</sup> century through effective school-industry partnership. Specifically, this study sought to investigate:

- (i) Existing programmes in technical education jointly engaged in by educational institutions and industries for students' capacity building and sustainable development in the 21<sup>st</sup> century;
- (ii) Challenges militating against the effective school-industry partnership in technical education programme for students' capacity building and sustainable development in the 21<sup>st</sup> century; and
- (iii) Ways that the schools and industries could be jointly engaged to enhance students' capacity building and sustainable development in the 21<sup>st</sup> century.

## 2. METHODOLOGY

The population for this study consisted of 50 technical teachers in the departments of vocational and technical education in the three public universities in Edo and Delta States of Nigeria. Since the population was small, the whole population were recruited for the study.

The instrument used for data collection was a 57-item structured questionnaire developed by the researchers from literature reviewed. The instrument is based on five-point Likert scale response options as follows: Strongly Agree (SA) – 5; Agree (A) – 4; Undecided (UD) – 3; Disagree (D) – 2, and Strongly Disagree (SD) – 1. The instrument was validated by three academic staff from the Department of Vocational and Technical Education, Ambrose Alli University, Ekpoma and Delta state University, Abraka. Their suggestions and corrections resulted in the final draft used for this study.

Cronbach's Alpha reliability index was used to derive the reliability coefficient of 0.83. The questionnaires were administered personally on the respondents with the help of two research assistants, who were trained by the researchers. The entire 50 questionnaires were completed and collected representing 100 percent return rate, all these were used for data analysis. The data collected for this study were analysed using mean ( $\bar{X}$ ) statistics. The mean of 3.00 was taken as the cut off point for a decision such that a mean response that falls below 3.00 was regarded as Disagree, while a mean response equal to or over 3.00 was regarded as Agree.

## 3. DATA ANALYSIS

**Research Question 1:** What are the existing programmes in technical education jointly engaged by educational institutions and industries for students' capacity building and sustainable development in the 21<sup>st</sup> century?

**Table 1: Mean and standard deviation of respondents on technical education programmes jointly engaged by educational institutions and industries**

S/No.	Items	X	SD	Remark
1.	SIWES.	3.63	0.75	Agreed
2.	Curriculum planning and review.	2.31	1.16	Disagree
3.	Research collaboration and grants.	2.24	1.16	Disagree
4.	Scholarship to technical education students.	1.04	0.40	Disagree
5.	Planning of work-visits/excursions/field-trips.	1.07	0.46	Disagree
6.	Organisation of seminars/workshops by the industries.	1.19	0.58	Disagree
	for technical education students.	1.23	0.73	Disagree
7.	Invitation industrial workers for special lectures.	1.25	0.42	Disagree
8.	Organisation of school-industry liaison offices.	1.34	0.83	Disagree
9.	Skill acquisition programmes for students.	1.38	0.89	Disagree
10.	Special skills training/retraining for lecturers.	1.47	1.07	Disagree
11.	Supply/maintenance of school equipment.	1.06	0.41	Disagree
12.	School visits to industries for relevance information.	1.03	0.40	Disagree
13.	Organisation of joint cooperative programme of research between the school-industry.	1.05	1.24	Disagree
14.	Organisation of cooperative work study programme.	1.31	1.06	Disagree
15.	Sharing training facilities between school-industry.	1.94	0.92	Disagree
16.	Professionals from industry to engage in part time teaching in technical educational programmes.	1.22	0.72	Disagree
17.	Donation of equipment/devices from industries to technical education institutions.	1.28	0.82	Disagree

In response to research question 1, Table 1 reveals that all the respondents rated item 1 as the existing programme in technical education jointly engaged in by the school and industries with mean scores of 3.63 while they rated 16 items as disagreed with mean scores ranging from 1.03 to 2.31. This implies that the respondents agreed that only one programme was currently being jointly engaged in by the school and industries.

**Research Question 2:** What are the challenges militating against the effective school-industry partnership in technical education programme for students' capacity building and sustainable development in the 21<sup>st</sup> century?

In response to research question 2, Table 2 reveals that all the respondents rated all the items as the challenges militating against the effective school-industry partnerships in technical education with mean scores ranging from 3.12 to 4.60. This implies that the respondents agreed that all the items are challenges to effective school-industry partnership in technical education.

**Table 2: Mean and standard deviation of respondents on the challenges militating against the effective school-industry partnership in technical education programme**

S/No.	Items	X	SD	Remark
1.	Poor attitude of students during SIWES	3.12	0.53	Agree
2.	Students' apathy to SIWES	3.43	0.30	Agree
3.	Industries' apathy to SIWES	4.18	0.90	Agree
4.	Disruption of academic calendar by recurrent strike	4.56	0.71	Agree
5.	Poor supportive attitude of the industries	4.20	0.84	Agree
6.	Poor economic state of the industries	4.60	0.70	Agree
7.	Lack of school-industry liaison offices	4.37	1.00	Agree
8.	Mismanagement of industries' donations	4.50	0.83	Agree

S/No.	Items	X	SD	Remark
9.	Poor maintenance culture of industries' supplies	4.34	1.02	Agree
10.	Gap in communication between the schools and industries	4.60	0.70	Agree
11.	Insensitivity of educational institutions to the yearnings of the industries	4.50	0.83	Agree
12.	Insensitivity of educational institutions to the benefits of effective school-industry collaboration	4.40	0.92	Agree
13.	Inadequate Staff development	4.47	0.67	Agree
14.	Non consultation of industries during the accreditation process of a course curriculum in TVET institutions	3.98	0.86	Agree
15.	Inappropriate methods of assessment	4.33	0.72	Agree
16.	Training needs are not always identified and prioritised according to industry skills and workforce development	4.56	0.61	Agree
17.	Lack of public awareness about school-industry collaboration	4.13	0.58	Agree
18.	Donation of equipment/devices from industries to technical education institutions.	4.39	0.67	Agree
19.	Lack of information on the benefits of collaboration	4.13	0.58	Agree
20.	There are no coherent and articulated policies governing operations	4.51	0.72	Agree
21.	Mismatch between the labour market and TVET programme	4.47	0.84	Agree
22.	Inadequate investment in training infrastructure and facilities	4.53	4.43	Agree
23.	Political consideration in making collaboration with the Industry can make the initiative fail	4.58	0.84	Agree
				Agree

**Research Question 3:** What are the ways that the schools and industries could be jointly engaged to enhance technical education students' capacity building in the 21<sup>st</sup> century.

In response to research question 3, Table 3 reveals that all of the respondents rated all items as possible ways or programmes that can be jointly engaged by schools and industries to enhance the capacity building of technical education students with mean scores ranging from 4.14 to 4.83. This implies that the respondents agreed that all items are the possible ways or programmes that can be jointly engaged by schools and industries to enhance the capacity building of technical education students.

**Table 3: Mean and standard deviation of respondents on the ways schools and industries could jointly engage to enhance technical education students' capacity building**

S/No.	Items	X	SD	Remark
1.	SIWES.	4.68	0.67	Agree
2.	Continuous curriculum planning and review to meet the needs of the industry	4.56	0.71	Agree
3.	Research collaboration and grants	4.60	0.70	Agree
4.	Scholarship to technical education students.	4.73	0.64	Agree
5.	Planning of work-visits/excursions/field-trips.	4.50	0.83	Agree
6.	Organisation of seminars/workshops by the industries for technical education students.	4.83	0.63	Agree
7.	Invitation industrial workers for special lectures.	4.51	0.78	Agree
8.	Organisation of school-industry liaison offices.	4.34	1.00	Agree



S/No.	Items	X	SD	Remark
9.	Skill acquisition programmes for students.	4.71	0.65	Agree
10.	Special skills training/retraining for lecturers.	4.59	0.70	Agree
11.	Supply/maintenance of school equipment.	4.80	0.61	Agree
12.	School visits to industries for relevance information.	4.65	0.66	Agree
13.	Organisation of joint cooperative programme of research between the school-industry.	4.41	0.95	Agree
14.	Organisation of cooperative work study programme.	4.14	0.87	Agree
15.	Sharing training facilities between school-industry.	4.26	0.65	Agree
16.	Professionals from industry to engage in part time teaching in technical educational programmes.	4.19	0.64	Agree
17.	Donation of equipment/devices from industries to technical education institutions.	4.27	0.91	Agree

### 3.1 Summary of findings

- (i) There is almost no programme in technical education jointly engaged in by the school and industries except for SIWES.
- (ii) There is non-involvement of industries in running of technical education programme in Nigeria.
- (iii) The challenges itemised in Table 2 were identified as those militating against the effective school-industry partnership in technical education programme for students' capacity building and sustainable development in the 21<sup>st</sup> century
- (iv) The strategies as itemised in Table 3 can enhance students' capacity in technical educational programmes if pursued forcefully by both the school and industries.

### 3.2 Discussion of findings

In response to research question 1, Table 1 reveals that all the respondents rated item 1 as the existing programme in technical education jointly engaged in by the school and industries with a mean score of 3.63 while they rated 16 items as disagreed with mean scores ranging from 1.03 to 2.31. This implies that there is almost no programme in technical education jointly engaged in by the school and industries except for SIWES. This finding is in line with the assertion of Oladipo (2011) that collaboration between schools and industries that foster quality training of students has not received adequate attention in Nigeria. Similarly, Gbenedio (2012) stated that there is little connection between educational institutions and the workplace where the graduates from these schools are expected to be employed. This implies that there are no serious linkages between the educational institutions and the workplaces. In spite of the benefits of school-industry collaboration, neither the schools nor the industries have indicated interest in collaboration or any strong move for partnership.

In response to research question 2, Table 2 reveals that all the respondents rated all the items as the challenges militating against the effective school-industry partnerships in technical education. This implies that the respondents agreed that these statements are the challenges to effective school-industry partnership in technical education. The finding of this study is in line with the assertion of Osinem & Nwoji (2010) that a lot of challenges tend to slow down the partnership between industries and educational institutions. However, these challenges are not overwhelming especially if both parties are ready. Similarly, the findings of this study is in line with the assertion of Maigida (2014) that non-involvement of the private sector (industries) in

the development and endorsement of national quality standard in many nations of the world; mismatch between the labour market and TVET programme; and training needs are not always identified and prioritized according to industry skills and workforce development are among the constraints to effective collaboration.

In response to research question 3, Table 3 reveals that respondents rated that all items as possible ways or programmes that can be jointly engaged by schools and industries to enhance the capacity building of technical education students. This implies that the respondents agreed that all the items are possible ways or programmes that can be jointly engaged by schools and industries to enhance the capacity building of technical education students. The finding of this study is supported by Nwosu & Ojo (2013) who asserted that school-industry partnership could be improved through the identified strategies. The strategies as itemised in Table 3 can enhance students' capacity in technical education programmes if pursued forcefully by both parties. The findings of this study is in line with Odugbesan (1999) assertion that activities such as organising research and consultancy service by institutions for industries for payment of service and offering of further training for industries employees will be of immense benefit to the schools and industries and thus, the school-industry collaboration will be enhanced. The findings of this study also agree with Popoola (1999) who posited that seminars, conferences, and workshops involving trainers in the industries and educational institutions should be held for both parties so that they appreciate the mutual benefit that are derivable from partnership endeavour.

#### **4. CONCLUSION AND RECOMMENDATIONS**

There exist little connection between the educational institutions and the workplace. Educational institutions are constantly faced with the challenges to produce virile graduates that the 21<sup>st</sup> century workplace would find fit and proper to assume functions in the industries. However, if there is an effective collaboration between the school and 21<sup>st</sup> century workplace, these challenges would be addressed. Effective partnership between the school and 21<sup>st</sup> century workplace will salvage the deplorable learning environment of our technical education programmes and enhance students' capacity building for the 21<sup>st</sup> century world of work. Based on the finding of this study, the following recommendations are made:

- (i) Educational institutions offering technical education programmes should tap the dynamisms of the 21<sup>st</sup> century workplace to the full so as to produce technical education graduates who will be able to fit in and succeed in the 21<sup>st</sup> century world of work.
- (ii) Educational institutions offering technical education programmes should involve the 21<sup>st</sup> century workplace in the planning and review of her curriculum.
- (iii) The workplace should contribute meaningfully to technical education programmes through the provision of infrastructural needs of the school, giving grants and technical support for research and development of technical education.

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