

Enhancing School-Industry Collaboration for Effective Skill Development of Technical Education Students in South-East Nigeria by

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Abstract

The study focused on enhancing school-industry collaboration for effective skill development of technical education students in Enugu State. Descriptive survey research design was adopted. The study was guided by two research questions and two null hypotheses tested at .05 level of significance. The population for the study was 42 comprising 16 technical college teachers, 16 principals and 10 industrial based supervisors in South East Nigeria. Random sampling was used to select industrial based supervisors. Structured questionnaire containing a total of 18 items was the instrument for data collection. The instrument was face validated by three experts and reliability coefficient of 0.89 was obtained using Cronbach Alpha reliability method. Data collected were analyzed using SPSS version 23. Mean was used to answer the research questions while ANOVA was used to test the null hypotheses at .05 levels of significance. It was found that preparing skill training programmes that will suit the school academic calendar, industry personnel participating in special lectures, narrowing the gap through periodic meeting on technological innovations were among the strategies for improving school-industry collaboration in skill development of technical education students for effective skill development in South east Nigeria. Based on the findings, recommendations were made which included: industry should understand the collaboration with school on SIWES and industry exposure to achieve quality skill development and institutions should ensure that good communication exist with the industries.

Keywords: School-Industry collaboration, industry strategy, Institutional strategy, skill development and Technical education students.

Introduction

The high rate of unemployment and other economic hardship have become a matter of great concern. This is because unemployed youths have continued to increase as a result of lack of employable skills, competence based and demand-driven school system. Students enroll into education programme to graduate without relevant and basic skills to become employable or self-employed (Amadi, 2013). This has created a gap between the skills needed for employment and skill possessed by the job seekers. There is need to bridge the gap between the skills needed and skills possessed in the society through industry collaboration in skill development programmes of institutions. The rapid innovation in technology demands that Technical Education (TE) students need to visit industries in order to gain the skills and

experiences that match the contemporary skill needs in industry and related occupation after graduation (Act, 2017). One of the major obstacles to addressing the skill mismatch and closing the skill gap is that both the skill needs of the society and the skills possessed by workers are continually in flux due to the changing labour market demands and individual skill career choices.

Skill is manual dexterity to carry out a task with determined results often within a given amount of time, energy or both. Skill according to Mbah and Elobuikwe (2016), is the ability to make purposeful movements that are necessary to complete or master a particular task. Skill development is an investment in human capital, which enhances training, labour productivity and higher levels of output. The structure and pattern of skill training has to be purposefully re-oriented to join together with

the projected future pattern of employment requirements. Olabiyi, Aiyelabowo and Keshinro (2013) opined that skill development is a learned sequence of movements that are combined to produce a smooth and efficient action in order to master a particular task. The relevance of skill development in contemporary Nigerian society cannot be over-emphasized, as it creates a workforce empowered with necessary and continuously upgraded skill, knowledge and internationally recognized qualifications to gain access to decent employment and ensure competitiveness in dynamic global market. Achieving effective skill development in teaching-learning to match the skill demand requires the students to master learning task in Technical Education (United Nations Educational, Science and Cultural Organization (UNESCO, 2001).

Technical Education has a vital role to play in technological advancement of any country. It is designed at upper secondary and lower tertiary levels to prepare middle level personnel (technicians, middle management, etc) and at university level, to prepare engineers and technologists for higher management positions. Ekpenyong (2011), defined technical education as 'the education designed to prepare skilled personnel at technical levels of qualification for one or a group of occupations, trades or jobs. It is a known fact that the training, acquisition and utilization of relevant skills by the people are indispensable for economic growth and national development. Technical Education are those aspects of education which involves general education, the study of technologies and related science and the acquisition of practical knowledge, understanding, attitudes and skills relating to occupations in various sections of economic and social life. Therefore, it is essential for schools to collaborate with industries for optimal school-industry skill matching.

School-industry collaboration is between formal education and industry sector to create enabling training environment for students to acquire on the job experiences, Knowledge, skills and appropriate attitude to work. Rossi (2010) stressed that industry through collaboration with schools could be made to meaningfully contribute to the training

of students in appropriate and contemporary skills that relate to their interest. This is particularly important in the development of capabilities needed for good occupational adjustment. This study therefore review the industry and institutional strategies required for improving school-Industry collaboration for effective skill development of technical education students.

Industry is a sector of the economy consisting of a tendency to work persistency with material to make or produce goods. The industry is changing and new design methodologies and organizational models are emerging, as design shifts from a focus on physical products or digital interfaces to more-holistic experiences, there is a continued need for revitalization (Evans and Spruce, 2005). Industry strategies entail preparing skill training programmes that will suit the school-industry skill acquisition within the academic calendar. Mbah, Obi, and Ehimen, (2018) asserted that industry strategies are adequate preparations required for training of (TVET) students to complement classroom experience in order to acquaint them with skills for practical teaching and employment in industries after graduation. Granting industry visit to various schools for relevant exposure in practical work and Granting TVET students SIWES opportunity are a few among industry strategies required for employment in the industry upon graduation from school (Amadi, 2013).

Institutional strategies demands school to make adequate preparation for psychomotor, affective and cognitive skills that will match the school-industry. For instance, encouraging joint development projects initiative between school and industry and encouraging entrepreneurship development among the students through industry oriented experiences among the student are very important (Mbah, Obi, & Ehimen, 2018). In Nigeria there are industries that have highly skilled human agents in production, functional facilities in cutting edge technologies and raw materials that are useful for the development of employable skills. It is imperative for industries to become actively involved in training students to complement classroom experience in order to acquaint them

with skills for practical teaching and employment in industries after graduation.

Technical education lecturers and administrators need to improve synergies in their collaboration with industries in order to achieve the objective of the training. Okorie (2001) stated that as the industries participate in the training of the students, certain deficiencies that existed in the training of the students will be reduced if not completely eliminated. This collaboration could be done through granting excursion visit to the students, picking adjunct lecturing jobs in institution and active participation during industry training and giving out equipment and human resource for skill development. Determining the industry and school strategies for improving the collaboration would enhance quality skill development and also bridge the gap in skill demand. This is because the school cannot provide all facilities and equipment needed to facilitate effective, qualitative and affordable skill development that is required for sustainable self-employment. Hence, school-industry collaboration in technical education programme is needed.

Statement of the Problem

An effective technical education programme needs a functional and favorable collaboration with relevant industries which the students will work after graduation to develop the needed skills. Skill development is a critical tool for entrepreneurship and sustainable development. The researchers are worried on the quality of skills imparted into the students that do not meet the standard of skill demand in the industry. This mismatch has contributed to unemployment, poverty and low economic growth in the nation. With the school industry collaboration, students will be provided with the opportunity of receiving the appropriate training with relevant and related equipment, material and environment. This will reduce or even eliminate the gap between the classroom experience and industry skill demand for training newly employed graduates in industries. Hence, it becomes pertinent to determine the strategies for improving school-industry collaboration in skill development of technical education students in Nigeria.

Research Questions

The following research questions guided the study:

1. What are the industrial strategies for improving school-Industry collaboration for effective skill development of technical education students?
2. What are the institutional strategies for improving school-Industry collaboration for effective skill development of technical education students?

Hypotheses

The following hypotheses were tested at 0.05 level of significance.

Ho₁. There is no significant difference between the mean scores of industrial supervisors, lecturers and technologists on industry strategies for improving school-industry collaboration for effective skill development of technical education students.

Ho₂. There is no significant difference between the mean scores of industrial supervisors, lecturers and technologists on the institution strategies for effective skill development of technical education students.

Method

The study adopted a descriptive survey research design. According to Gall, Gall and Borg (2007), a survey research design is meant to describe a single snapshot of data collected from a sample to represent the population to which the findings of the data analysis can be generalized. The study was conducted in the 16 Technical Colleges in South-East of Nigeria. The participants were 46 respondents. It comprised of 16 Technical College Teachers, 16 Principals and 10 Industrial based Supervisors in South east Nigeria. The entire population was used because of its manageable size and was considered appropriate for this study. The instrument was face validated by three experts, two experts from the University of Nigeria Nsukka and one industrial based supervisor from scientific Equipment Development Institute (SEDI) Enugu State. The experts were requested to determine the suitability of the instrument in the areas of content coverage and grammatical expression.

The experts made sound judgments, corrections and suggestions which made the questionnaire items reliable and appropriate for the study. To ascertain the internal consistency of the instrument, copies of the questionnaire were administered to the Department of Industrial Technical Education, University of Nigeria Nsukka and industrial based supervisors through research assistants. Reliability of .89 was established using Cronbach alpha coefficient.

Questionnaire titled School-Industry collaboration questionnaire (SICQ) was used for data collection. It was made up of items of blended teaching competency. The items were rated by the respondents on a four rating point scales with responses as follows; Highly

required (HR) 4.00, Moderately required (MR) 3.00, Slightly required (SR) 2.00, Not required (NR) 1. The data collected from the respondents were analyzed using Statistical Package for Social Sciences (SPSS) version 23. Mean and standard deviation were the analytical tools used to answer the research question while ANOVA was used to test the hypotheses at .05 level of significance. The responses were required or not required based on 2.50 decision rule for the research questions. The hypothesis of no significant difference was rejected for any value whose probability value $p \leq .05$. The hypothesis of no significant difference was accepted for any item whose probability value $p \geq .05$.

Findings

Table 1: Mean and Standard Deviation of Respondents on Industry Strategies for improving School-Industry Collaboration for Effective Skill Development of Technical Education Students

S/N	Item statements	$\bar{x}$	SD	RM
1	Granting work study permits to TVET students	2.93	1.36	R
2	Granting TVET students SIWES opportunity	3.07	.95	R
3	Partnering with school in research/development activities	3.89	.86	R
4	Provision of scholarship to TVET students	2.71	1.45	R
5	Preparing skill training programmes that will suit the school academic calendar	3.00	.91	R
6	Industry personnel participating in given special lectures	3.23	.67	R
7	Establishing skill acquisition programme for students	3.62	.45	R
8	Organizing workshops/seminars by industries on contemporary issues in industry operation	3.88	.34	R
9	Granting industry visit to various schools for relevant exposure in practical work	2.67	1.4	R

Data in Table 1 reveal that all the items on industry strategies for improving school-Industry collaboration for effective skill development of technical education students had their mean above the real limit of 2.50. It

depicts that all the items were required as industry strategies for improving school-Industry collaboration for effective skill development of technical education students in technical colleges in Enugu State.

Mean and Standard Deviation of Respondents on Institutional Strategies for improving School-Industry Collaboration for effective Skill Development of Technical Education Students

S/N	Item statements	$\bar{x}$	SD	RM
10	Attracting industry representatives in planning with management of school skill development activities	2.97	1.26	R
11	Encouraging joint development projects initiative between school and industry	2.74	1.22	R
12	Upgrading the curriculum to meet the labour market demand through industry participation	3.21	.79	R
13	Improving collaboration between school and industry through periodic meeting on technological innovation	3.81	.10	R
14	Narrowing the gap between theory/practical through field trips/excursions	3.17	1.17	R
15	Encouraging entrepreneurship development among the students through industry	2.57	1.56	R

	oriented experiences among the student			
16	Ensuring effective communication with industries	3.78	0.61	R
17	Employment of qualified industry staff in teaching/research activities	2.71	1.41	R
18	Organizing seminar that will unite school and industry worker	3.10	1.11	R

Data in Table 2 reveal that all the items on institutional strategies for improving school-Industry collaboration for effective skill development of technical education students had their mean above the real limit of 2.50. It

depicts that all the items were required as institutional strategies for improving school-Industry collaboration for effective skill development of technical education students in Technical Colleges in Enugu State.

Table 3

Summary of ANOVA on Industry Strategies for improving School-Industry Collaboration for Effective Skill Development of Technical Education Students

	Sum of squares	Df	Mean square	f	Sig
Between groups	1.451	2	.725	2.096	.135
Within	14.885	44	.346		
Total	16.336	46			

Table 3 shows the ANOVA test for industry strategies for improving school-Industry collaboration for effective skill development of technical education students. The result of table above shows a sig. value of .135, which is more than 0.05, indicating that

there is no statistically significant difference in the opinions of the respondents on the Industry strategies for improving school-Industry collaboration for effective skill development of Technical Education students. The hypothesis of no significant difference was therefore upheld.

Table 4: Summary of ANOVA on Institutional Strategies for improving School-Industry Collaboration for Effective Skill Development of Technical Education Students

	Sum of squares	Df	Mean square	F	Sig
Between groups	5.559	2	2.780	16.484	.000
Within	7.251	44	.169		
Total	12.811	46			

Table 4 shows the ANOVA test for institutional strategies for improving school-Industry collaboration for effective skill development of technical education students. The result of table above shows a Sig. value of .000, which is less than .05, indicating a statistically significant result somewhere among the group. The hypothesis of no significant difference was therefore rejected. By implication, their opinions varied as regards the strategies for improving school-industry collaboration for effective skill development of Technical Education students.

Discussion of Findings

Findings of the study showed that all the items on table one are required as industry strategies for improving school-Industry

collaboration for effective skill development of technical education students. This finding agreed with the findings of Mbah, Obi, & Ehimen, (2018) who found that granting work study permits to TVET students, Granting TVET students SIWES opportunity and preparing skill training programmes that will suit the school academic calendar among others were all industry strategies required for improving school-industry collaboration. The study conducted by Okorie (2001) also affirmed that certain psychomotor deficiencies that existed in students will be reduced if not completely eliminated especially when industries participate in the training of students. The findings of hypothesis one depicted that there is no statistical significant difference in the opinions of the respondents on the industry strategies for improving school-industry

collaboration for effective skill development of technical education students. It was an indication that industry based supervisors, lecturers and teachers did not vary in their opinion concerning the industry strategies for improving school-Industry collaboration for effective skill development of technical education students.

This finding is similar to the findings in the study of (Scott 2014; Oviawe, Uwameiye, & Uddin, 2017) who found out that the aforementioned institutional strategies are elements of smooth transition of school classroom theories to work practice in an occupation of work. Such institutional strategies include provision of integrated curriculum, attracting industry representatives in planning with management of school skill development activities and narrowing the gap between theory/practical through field trips/excursions among others. Roberts, and Design, (2007; Guimon, 2013) affirmed that Collaboration between academia and industry is increasingly a critical component of efficient national innovation systems.

The outcome of hypothesis two showed that statistical significant difference exists among the group. By implication, their opinions varied as regards the strategies for improving school-industry collaboration for effective skill development of technical education students. This finding contradicts the findings of Mbah, Obi, & Ehimen, (2018) who found out that the respondents' opinion did not vary as regards the institutional strategies. It is possible because what an industrial supervisor perceived about school-industry may not be what a teacher perceived. Industrial based supervisors were not among their respondents which could also be the possible reason for the difference in our result. Industries in this changing world of work need extensive research to improve on their activities and services to maximize profit. Therefore, it is not out of place according to Jimoh, Maigida, and Adebayo, (2014) to organize joint programme of research as pointed out by the findings of this study which is paramount to both the institutions and industries.

Conclusion

The basis of this study was to ascertain the strategies for improving school-Industry collaboration for effective skill development of technical education students. Among the industry strategies identified are granting work study permits to TVET students and preparing skill training programmes that will suit the school academic calendar. Similarly, encouraging joint development projects initiative between school and industry as well as upgrading the curriculum to meet the labour market demand through industry participation were among the identified institutional strategies for improving school-Industry collaboration for effective skill development of technical education students. It was evident from the findings of the study that certain deficiencies that existed in students will be reduced if not completely eliminated especially when industries participate in the training of students.

Recommendations

1. There should be an improved collaboration between school and industry through periodic meetings on technological innovation
2. Industry should establish skill development programmes for the students especially during SIWES
3. Industry should understand the relevance of partnership with school on SIWES and industry exposure to achieve quality skill development
4. Industry personnel should partner with school in lecture delivery especially in practical areas
5. Industries should offer more of the work opportunities that students and professors seek.
6. Educators and students should be encouraged to engage with corporations, internships, apprenticeships, industry sabbaticals and research grants with limited commitment

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