

Partnership between Polytechnics and Oil and Gas Industries for Addressing Skilled Manpower Shortage in Rivers State

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Abstract

The study examined partnership between polytechnics and oil and gas industries for addressing skilled manpower shortage in Rivers State. Two research questions were answered with two corresponding null hypotheses that were formulated and tested at 0.05 significance level. The population of the study was 171 respondents comprising 38 polytechnic teaching staff and 133 managers from oil and gas industries in Rivers State. There was no sampling due to small population size. The instrument for the data collection was a self-structured questionnaire designed after the pattern of Likert-5 point rating scale. The instrument was validated two experts in the Department of Electrical/Electronic Engineering Ken Saro-Wiwa Polytechnic, Bori, Rivers State and Captain Elechi Amadi Polytechnic, Port Harcourt, Rivers State. The reliability of the instrument was established through test-retest method for different sections of the instrument. A reliability coefficient of 0.86 was established for the instrument using Pearson Product Moment Correlation method. Research questions were answered with Mean and Standard Deviation while hypotheses were tested using z-test. The study found that the respondents agree that partnership between polytechnic and oil and gas industries in formulation of administrative policies and provision of infrastructural facilities will address shortage of electrical skills in Rivers State. Based on the findings of the study, it was recommended among others that Polytechnic education curriculum planners should identify the skills needs of oil and gas industries and review polytechnic curriculum to address the skills needs through policy formulation. The federal government, oil and gas industries, international organizations and various state governments should adequately provide oil and gas training facilities for polytechnic training institutions through partnership.

Keywords: Partnership, Oil and Gas, Industries, Manpower and Skilled Shortage.

INTRODUCTION

The society cannot exist on its own without a contribution from one sector or institutions or the other. This means that no institution or sector of the economy and society can operate as a single entity. For every economy to develop and move forward the society, there is the need for interdependence between one sector and the other. These interdependences are formed with the aim of partnership or collaboration which involves two or more persons (individuals), institutions or even one sector of the economy with another. The purpose of this collaboration

is to play a supplementary and complementary role together. Hence, due to certain factors that may hinder polytechnic education or oil and gas industries in achieving their aims and objectives especially in areas of addressing electrical skill shortages in Rivers State, there is the need to form collaboration and interdependence. This interdependence is referred to as partnership between polytechnic and oil and gas industries.

Partnership is a contractual arrangement which is formed between companies involving the private sector in the development, financing, ownership, and or operation of a public facility or service. According to Deich as cited in Okoye and Okwelle (2013), a partnership exists when the private sector joins with the public sector in pursuit of a common goal. In this study, partnerships are those between polytechnic institution and oil and gas companies. In such partnerships, public and private resources are pooled and responsibilities divided so that the partners' efforts are complementary (Egbewole, 2011). School-Industry partnership (Polytechnics and Oil and Gas Industries) is a mutually accepted training partnership in which school learning experience (knowledge and practical skills) are complemented through on-the-job training in an industry. It is an instructional method whereby practical skills and knowledge acquired in the classroom, school laboratories and workshops are updated, beefed up and strengthened through real hands-on experience on real industrial tools, machines and equipment. Aina and Akintunde (2013) stressed that school –industry partnership is the arrangement between two source groups, namely an educational institution and industry, to assist learners develop functional skills for the world of work. It is a training outfit which integrates training into productive and relevant work to give the learner the opportunity of matching theoretical learning experience with practical skills that lead to school-to work transition. According to Ogundu, Enyiche and Obed (2019) opined that school – industry partnership is also called school – to – work transition which involves both school and industry in skill training of students has been recognized as a sure way to achieve meaningful, adequate and transferable skills.

Skill is the ability to do something well while acquisition is the act of getting something such as knowledge and skill. Osinem and Nwoji (2010) stated that skills refer to the ability to perform an act expertly. It is that expertise ability or proficiency displayed in the performance of a task. Obanya (2003) define skill as versatility in knowledge, ability to adapt to novel innovations, creativity, team spirit, literacy in its comprehensive dimension, fluency in a particular task and the capacity to embraced learning as a way of life. Also, Deebom and Taylor (2020) aver that skill is the ability of individual to be able to carry out a specialized trade expertly for self-reliance. Electrical skill involves those practical skills that are directly related to electrical

engineering. Electrical skill areas include instrumentation, communication systems, signal processing, circuits design and interpretation, control systems, power and energy systems, acoustics, magnetic, resonance and bioengineering among others. These areas of skill specialization are offered in polytechnics. These areas are needed by oil and gas industries and are offered in polytechnic training.

The polytechnic training or education was established in Nigeria to provide final stage training, leading to the production of assistants in medical and engineering fields and some other vocations. The history of Nigeria Polytechnics could be traced back to the establishment of Yaba College of Technology in 1934. Yaba Higher College was established with the vision of leading higher technology education in Africa by providing first-rate academic, professional and entrepreneurial education to students, who are empowered to make a positive impact in the technological industrial and socio-economic development of the Country. It is along the objectives of Yaba Technical Institute (now Yaba College of Technology), that Nigeria polytechnic Education is established. The polytechnics are expected further to continue to expand and pursue the objectives of Technical and Vocational Education and Training in Nigeria (Omokungbe, 2018).

Specifically, polytechnic education in Nigeria is meant to provide technical learning that could assist the Nigerian society in meeting her industrial aspirations. One distinctive mark of polytechnic education is the strong emphasis it has on practical based learning, with work-attachment as part of the practical curriculum for sustainable manpower development (Tayo, 2014). Based on the following, the objectives of polytechnic education according to the National Policy on Education (FGN, 2013) include: provide full time or part-time courses of instruction and training in engineering, other technologies, applied sciences, business and management, leading to production of trained manpower, provide the technical knowledge and skill for commercial and economic development of Nigeria, give training and impart the necessary skills for the production of technicians, technologists and other skilled personnel who shall be enterprising and self-reliant, train people who can apply scientific knowledge to solve environmental problems for the convenience of man and also to provide exposure to professional studies in these technologies. Ojerinde (2015) opined that polytechnic education would be of immense help in providing local manpower to the nation's industries thereby cutting down on over-dependence on foreigners for the industrial development of Nigeria. This is achievable through partnership between the industries and the institutions that enhances qualitative training of the students.

Partnership between Polytechnic and oil and gas industries can help in addressing skill shortages in electrical trades. It has been observed by Okpor and Hassan (2012) that industries always allege that polytechnic teach skills which are too remote from those required. The complaint is that the products of polytechnic are theorists and cannot perform skills for which they are trained until after long period of exposure in the industries. This is since the students were not exposed to the work-based skills during their learning activities in schools. These lapses resulted in ill-equipped graduates who have remained unemployed. UNESCO (2012), in its study conducted on school-industry relation found that some countries have found an effective way of training their man-power in new technologies through cooperation between industries and technical institutions. This could equip the graduates with skills to be employed or become self-employed. School-industries based partnership are done to equipped polytechnic graduate through administrative and infrastructural strategies.

Administrative strategies involved those activities set by the government as a meeting point for training the students, and other strategies set by the government to improve school industry relationship, to equip students with necessary skills needed for world of work to tackle shortage of skills in relevant areas of the society. Adebayo (2014) noted that an encouraging step towards improving school industry relationship in Nigeria was the establishment of Industrial Training Fund (ITF) in 1970. The Industrial Training Fund (ITF) was charged with the responsibility of promoting and encouraging the acquisition of skills in industry and commerce to meet the need of the economy. In an attempt to achieve this aim, ITF initiated Student's Work Experience Scheme (SIWES) in 1973 to provide avenue for students to have industrial exposure in their own disciplines during the course of study.

The Student's Work Experience Scheme (SIWES) at the polytechnic level is a compulsory and mandatory exercise student are expected to participate at the end of their first two years of their study that leads to the award of National Diploma (ND). It is called long period of attachment (industrial attachment) of one year only; and without any supervision or score attached to it. For effective supervision of SIWES, Olabiyi, Okafor and Bamidele (2014) noted that institutions should set-up industrial/Institutional Advisory Committee like Academic Advisory Committee to approve courses as well as monitor the implementation of approved Courses. This is to ensure that the specific skills are learnt and acquired by the students to employ and to be self-employed. Industry- based or work-based learning is a planned work experience, workplace mentoring and instructions in industries. Industries in collaboration or cooperation with the schools should provide work-based learning activities such as internship, on-the-job training, mentoring and cooperation education (industrial attachment) to expose students to new technologies. Patrinos,

Barrera-Osorio and Guáqueta (2009) stated the function of industries to include: assessment of training resources of institution to find out if the institutions are capable of giving the students adequate training and background on those occupations required in the industries. Furthermore, industries examine the curriculum of the training programmes to ensure that the occupational interests are covered and provide funds to assist institutions. Industries also assist polytechnic lecturers, instructors and other personnel in research work by allowing them to use their high-tech laboratories and to work on industrial machinery to upgrade their knowledge and skills as well as to keep abreast with new technologies. Industries are also expected to make special provision of occupational placement for the graduates of polytechnics. In line with the above, would oil and gas industries in Rivers State partnering with polytechnics address electrical skills shortage in Rivers State.

Statement of the Problem

Polytechnic is one of the institutions which provide training that leads to the production of professional personnel in various discipline including electrical trades. There is a general concern over the low performance of technical college students, most especially those of electrical electronics craft who cannot cope with the world of work (Ebele, 2014). The goal of electrical trades in polytechnic according to Osang, Obi and Ewona, (2013) is to produce graduates with good knowledge of the working principles of machines and the techniques and safety practices involved in machines maintenance. Polytechnic graduates have prospects of either being employed in the industries or set-up their own electrical workshops and become self-employed.

Skills are needed by electrical graduates of polytechnic to function well, since global technology led to the use of electricity in various homes, offices, industries, institutions as well as many aspects of human endeavour. Individuals trained in electrical specialization in polytechnic are expected to acquire skills for manufacturing, servicing in industries, power generation and utilization. But it appears that the skill acquisition of polytechnic graduates in skills in Rivers State is inadequate, and below expectation. This may be due to low level of exposure of students for training in practical skills in the school workshops and laboratories, inadequate equipped workshops and laboratories for training experience, inadequate tools and training materials, and classroom facilities among others. This makes the realization of the goal for polytechnics in most states in the country including Rivers State to be far below expectation. Therefore, to bridge such gap between theory and practice, school industry partnership is necessary to assist the learner develops functional skills for the world of work. Most countries have found an

effective way to train their technical man power in new technologies through cooperation/collaboration between industries and technical institutions.

On the contrary in Nigeria including Rivers State low level in partnership between oil and gas industries and technical institutions (polytechnics) has resulted in dearth of skilled and technical manpower (Ojerinde, 2015). Oil and gas industries are expected to provide partnership in areas like Student's Work Experience Scheme (SIWES) at the end of their first two years of their study that leads to the award of National Diploma (ND), assist polytechnic lecturers, instructors and other personnel in research work by allowing them to use their high-tech laboratories and to work on industrial machinery to upgrade their knowledge and skills as well as to keep abreast with new technologies. Industries are also expected to make special provision of occupational placement for the graduates of polytechnics. It was observed by Olakotan (2010) that despite these partnerships, yet there is skill shortage in electrical trades. Hence there is a need to determine the administrative strategies, school-based and industry-based activities that will improve school – industry partnership to expose students to more practical and skills acquisition in Rivers State with state of the art of technologies in industries.

Purpose of the Study

The purpose of the study is to examine partnership between polytechnics and oil and gas industries for addressing electrical skilled manpower shortage in Rivers State. Specifically, the study seeks to:

1. Find out how partnership in formulation of administrative policies between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State.
2. Find out how partnership in provision of infrastructural facilities between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State.

Research Questions

The following questions were answered to guide the study.

1. To what extent does partnership in formulation of administrative policies between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State?
2. To what extent does partnership in provision of infrastructural facilities between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance.

1. There is no significance difference in the mean response of electrical engineering lecturers of polytechnics and managers of oil and gas industries on the extent to which partnership in formulation of administrative policies between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State.
2. There is no significance difference in the mean response of electrical engineering lecturers of polytechnics and managers of oil and gas industries on the extent to which partnership in provision of infrastructural facilities between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State.

METHODOLOGY

The research design used for this study was descriptive survey design. The study was conducted in polytechnic and oil and gas industries in Rivers State. The population for this study comprises of a total of 171 respondents comprising all 38-teaching staff in Electrical Engineering from Rivers State polytechnics and 133 managers from eleven (11) private oil and gas industries. These polytechnics include Captain Elechi Amadi polytechnic, Port Harcourt and Kearsar Wiiwa polytechnic, Bori. No sample was drawn from the population of managers of oil and gas industries and teaching staff of polytechnic because the population is of a manageable size. Hence, the sample size for the study was 171 respondents (Managers = 133; Teaching Staff = 38). The research instrument for data collection for the study was a self-structured questionnaire titled “Polytechnic Oil and Gas Industries Partnership towards Electrical Skill Shortage Questionnaire (POGIPESSQ)” constructed on a 5-point Likert rating scale of Very High Extent (VHE), High Extent (HE), Moderate Extent (ME), Low Extent (LE) and Very Low Extent (VLE) with corresponding numerical values of 5, 4, 3, 2 and 1 respectively.

The questionnaire was face and content validated by two experts in Electrical/Electronic Engineering from Kearsar-Wiwa Polytechnic, Bori, Rivers State and Captain Elechi Amadi Polytechnic, Port Harcourt, Rivers State. The instrument “Polytechnic Oil and Gas Industries Partnership towards Electrical Skill Shortage Questionnaire (POGIPESSQ)” was subjected to reliability test using test-retest method of reliability. Scores obtained from the respondents (teaching Staff and Managers) responses were statistically analyzed using Pearson Product Moment Correlation method of reliability which produce a coefficient of 0.86. Out of 38 copies distributed to polytechnic teaching staff, only 34 copies were retrieved while 114 copies were retrieved from 133 copies that were given to oil and gas industries managers. This gives a total of 148 copies that were retrieved with 91% rate of return. The data were collected based on the response in the questionnaire in line with the research objectives. These research questions were analyzed using mean and standard deviation $\bar{x}$, while hypotheses were tested using independent

sample t-test. Any mean value equal and above 3.00 was regarded as High Extent (HE) while mean values less than 3.00 was considered as Low Extent (LE). The standard deviation was used to determine the homogeneity of the respondents. For hypothesis testing, if the calculated value of z (zcal) is less than the critical value of z (zcrit), the null hypothesis was accepted; otherwise, it was rejected.

Results and Discussion of Findings

The results of the study were presented as follows.

Research Question 1: To what extent does partnership in formulation of administrative policies between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State?

Table 1: Response of the Respondents on Formulation of Administrative Policies in Addressing Electrical Skilled Manpower Shortages between Polytechnic and Industries

S/N	Item Statement	Teaching Staff			Managers		
		$\bar{X}_1$	SD ₁	RMK	$\bar{X}_2$	SD ₂	RMK
1	Industries set up school industry advisory committee to monitor implementation of approved courses in Polytechnic.	4.52	1.02	VHE	3.68	0.71	HE
2	Industries set up coordinating units/boards to carry out survey of skills needed by industries and giving feedback to the school.	4.11	0.68	HE	3.98	0.53	HE
3	Industrial-industries liaison offices/coordinating units are in place.	4.08	0.94	HE	4.56	0.94	VHE
4	Formulation of Policies and laws that will encourage industries and polytechnics to develop training programmes that can meet their internal needs.	3.60	0.72	HE	4.80	1.11	VHE
5	Absorption of students for industrial attachment.	3.43	1.11	ME	3.65	0.76	HE
6	Industrial based job skills are included in the curriculum of polytechnic.	4.52	1.03	VHE	4.01	1.02	HE
7	Industries are involved in screening and recommending courses or trades in polytechnic.	4.73	0.73	VHE	3.77	0.67	HE
8	Formulation of policies for giving of scholarship to students.	3.68	0.80	HE	3.08	0.88	ME
9	Consistent training between school-industries for knowledge update.	4.63	1.13	VHE	3.30	0.60	ME
10	Provision of internship training and on-the-job training by industries.	3.05	0.92	ME	4.50	0.71	VHE

11	Policies to organizing regional trade fair and exhibition of polytechnic students and instructors' inventions.	3.89	0.59	VHE	3.70	1.11	HE
12	Payment of allowances to students on industrial attachment by the industries.	4.17	1.10	HE	3.15	1.03	ME
13	Supervision of students on industrial training attachment by the industry-school based supervisors.	3.38	0.77	ME	3.62	0.55	HE
14	Policies ensuring that industries are involve in sponsoring projects and research works in polytechnics.	3.48	0.60	ME	3.41	0.69	ME
15	Award of scholarship to students by the industries for further studies can improve school.	4.80	0.82	VHE	3.19	0.87	ME
16	Industries and polytechnics sharing of facilities can improve school-industry collaboration.	4.98	0.93	HE	4.10	1.01	HE
Average Mean/SD		4.33	0.87	HE	3.78	0.82	HE

Source: *Researchers' Field Result, 2021*

Table 1 shows the extent to which partnership in formulation of administrative policies between polytechnics and oil and gas industries addresses electrical skills shortage in Rivers State. The result revealed that policies formulation addresses shortage of skilled manpower to a different extent base on the response of teaching staff of Electrical Engineering Department in Polytechnic in Rivers State and managers form oil and gas industries in Rivers State. For teaching staff responses, the result shows that item 1, 6, 7, 9, 11 and 15 were considered to be at Very High Extent (VHE) with a mean score between 4.50 and 5.00. The standard deviation values between 0.00 and 0.99 indicated that the respondents (teaching staff) were close in their responses while standard deviation value greater than 1.00 indicated that the respondents were far apart in their responses. Also, the result shows that item 2, 3, 4, 8, 12 and 16 were considered to be at High Extent (HE) with a mean score between 3.50 and 4.49. The standard deviation values between 0.00 and 0.99 indicated that the respondents were homogenous in their responses while standard deviation value greater than 1.00 indicated that the respondents were heterogeneous in their responses. Furthermore, result shows that item 5, 10, 13 and 14 were considered to be at Moderate Extent (ME) with a mean score between 2.50 and 3.49. The standard deviation values between 0.00 and 0.99 indicated that the respondents were close in their responses while standard deviation values greater than 1.00 indicated that the respondents were far apart in their responses. The result of Table 1 has an average mean and standard deviation of 4.33 and 0.87 respectively for teaching staff response. This implies that the respondents agree that partnership in formulation of administrative policies between

polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State to a High Extent (HE).

On the other hand, for managers' responses, the result revealed that policies formulation addresses shortage of skilled manpower to a different extent base on the response of managers of oil and gas industries in Rivers State. For managers' responses, the result shows that item 3, 4 and 10 were considered to be at Very High Extent (VHE) with a mean score between 4.50 and 5.00. The standard deviation values between 0.00 and 0.99 indicated that the respondents (managers) were close in their responses while standard deviation value greater than 1.00 indicated that the respondents were far apart in their responses. Also, the result shows that item 1, 2, 5, 6, 7, 11, 13 and 16 were considered to be at High Extent (HE) with a mean score between 3.50 and 4.49. The standard deviation values between 0.00 and 0.99 indicated that the respondents were homogenous in their responses while standard deviation value greater than 1.00 indicated that the respondents were heterogeneous in their responses. Furthermore, result shows that item 8, 9, 12, 14 and 15 were considered to be at Moderate Extent (ME) with a mean score between 2.50 and 3.49. The standard deviation values between 0.00 and 0.99 indicated that the respondents were close in their responses while standard deviation values greater than 1.00 indicated that the respondents were far apart in their responses. The result of Table 1 has an average mean and standard deviation of 3.78 and 0.82 respectively for managers' response. This implies that the respondents agree that partnership in formulation of administrative policies between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State to a High Extent (HE).

Research Question 2: To what extent does partnership in provision of infrastructural facilities between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State?

Table 2: Response of the Respondents on Provision of Infrastructural Facilities in Addressing Electrical Skilled Manpower Shortages between Polytechnic and Industries

S/N	Item Statement	Teaching Staff			Managers		
		$\bar{X}_1$	SD ₁	RMK	$\bar{X}_2$	SD ₂	RMK
17	Provision of classroom blocks to polytechnics by the industries for teaching and learning.	3.98	0.86	HE	4.53	0.66	VHE
18	Construction of e-library for school utilization.	4.56	0.64	VHE	3.73	1.11	HE
19	Building of workshops by the industries for practical training of the students.	3.44	0.77	ME	3.41	1.03	ME
20	Provision of computer studio.	4.72	1.13	VHE	3.86	0.92	HE

21	Provision of public conveniences for school use.	4.02	0.82	HE	4.70	0.57	VHE
22	Donation of chairs to classrooms.	3.30	0.72	ME	3.66	0.70	HE
23	Construction of internal access road within the schools.	3.20	0.58	ME	3.02	0.58	HE
24	Renovation of students' hostels.	4.60	1.21	VHE	4.22	1.11	HE
25	Construction of school administrative blocks by industries.	3.88	1.11	HE	4.68	0.66	VHE
26	Provision of water supply to schools (bore-hole services).	4.11	0.61	HE	4.55	0.92	VHE
27	Donations of alternative generator for power supply.	4.68	0.80	VHE	3.78	0.74	HE
28	Construction of alternative source of power supply (renewable energy) to polytechnic institutions.	3.41	1.03	ME	3.24	0.68	ME
29	Building of medical service (sick bay) for staff and students used.	3.89	0.77	HE	3.46	1.04	ME
30	Provision of internet services to the institutions.	4.69	0.60	VHE	4.08	1.11	HE
31	Construction of recreational centre such as sports and games.	3.43	0.75	ME	3.98	0.83	HE
Average Mean/SD		3.99	0.83	HE	3.93	0.84	HE

Source: *Researchers' Field Result, 2021*

Table 2 shows the extent to which partnership in provision of infrastructural facilities between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State. The result revealed that partnership in provision of infrastructural facilities addresses shortage of skilled manpower to a different extent base on the response of lecturers of Electrical Engineering Department in Polytechnic in Rivers State and managers form oil and gas industries in Rivers State. For teaching staff responses, the result shows that item 18, 20, 24, 27 and 30 were considered to be at Very High Extent (VHE) with a mean score between 4.50 and 5.00. The standard deviation values between 0.00 and 0.99 indicated that the respondents (teaching staff) were close in their responses while standard deviation value greater than 1.00 indicated that the respondents were far apart in their responses. Also, the result shows that item 17, 21, 25, 26 and 29 were considered to be at High Extent (HE) with a mean score between 3.50 and 4.49. The standard deviation values between 0.00 and 0.99 indicated that the respondents were homogenous in their responses while standard deviation value greater than 1.00 indicated that the respondents were heterogeneous in their responses. Furthermore, result shows that item 19, 22, 23, 28 and 31 were considered to be at Moderate Extent (ME) with a mean score between 2.50 and 3.49. The standard deviation values between 0.00 and 0.99 indicated that the

respondents were close in their responses while standard deviation values greater than 1.00 indicated that the respondents were far apart in their responses. The result of Table 2 has an average mean and standard deviation of 3.99 and 0.83 respectively for teaching staff response. This implies that the respondents agree that partnership in provision of infrastructural facilities between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State to a High Extent (HE).

On the other hand, for managers' responses, the result revealed that provision of infrastructural facilities addresses shortage of skilled manpower to a different extent base on the response of managers of oil and gas industries in Rivers State. For managers' responses, the result shows that item 17, 21, 25 and 26 were considered to be at Very High Extent (VHE) with a mean score between 4.50 and 5.00. The standard deviation values between 0.00 and 0.99 indicated that the respondents (managers) were close in their responses while standard deviation value greater than 1.00 indicated that the respondents were far apart in their responses. Also, the result shows that item 18, 20, 22, 23, 24 and 27 were considered to be at High Extent (HE) with a mean score between 3.50 and 4.49. The standard deviation values between 0.00 and 0.99 indicated that the respondents were homogenous in their responses while standard deviation value greater than 1.00 indicated that the respondents were heterogeneous in their responses. Furthermore, result shows that item 19, 28, 29, 30 and 31 were considered to be at Moderate Extent (ME) with a mean score between 2.50 and 3.49. The standard deviation values between 0.00 and 0.99 indicated that the respondents were close in their responses while standard deviation values greater than 1.00 indicated that the respondents were far apart in their responses. The result of Table 2 has an average mean and standard deviation of 3.93 and 0.84 respectively for managers' response. This implies that the respondents agree that partnership in provision of infrastructural facilities between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State to a High Extent (HE).

Hypothesis 1: There is no significance difference in the mean response of electrical engineering teaching staff of polytechnics and managers of oil and gas industries on the extent to which partnership in formulation of administrative policies between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State.

Table 3: z-Test Analysis on Extent of Partnership in Formulation of Policies

Group	Mean	SD	N	df	z_{cal}	z_{crit}	Remark
Teaching Staff	4.33	0.87	34	146	3.23	1.96	Rejected
Managers	3.78	0.82	114				

Source: *Researcher's Field Result; 2020* Accept H_0 if $z_{cal} < z_{crit}$; Otherwise Reject

Table 3 presents the summary of z-test analysis on the responses of polytechnic teaching staff in Electrical/Electronic Engineering Department and Managers of oil and gas industries on the extent to which partnership in formulation of administrative policies between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State. The data revealed that the calculated z-value is 3.23 at 146 degrees of freedom at 0.05 level of significant, while the critical z-value is 1.96. This implies that the calculated z-value of 3.23 is greater than the critical z-value of 1.96. Hence, the null hypothesis was rejected. This implies that there is no significance difference in the mean response of electrical engineering teaching staff of polytechnics and managers of oil and gas industries on the extent to which partnership in formulation of administrative policies between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State.

Hypothesis 2

There is no significance difference in the mean response of electrical engineering teaching staff of polytechnics and managers of oil and gas industries on the extent to which partnership in provision of infrastructural facilities between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State.

Table 4: z-Test Analysis on Extent of Partnership in Provision of Infrastructure

Group	Mean	SD	N	df	Z _{cal}	Z _{crit}	Remark
Teaching Staff	3.99	0.83	34	146	1.36	1.96	Accepted
Managers	3.93	0.84	114				

Source: *Researcher's Field Result; 2020* Accept Ho if $Z_{cal} < Z_{crit}$; Otherwise Reject

Table 4 presents the summary of z-test analysis on the responses of polytechnic teaching staff in Electrical/Electronic Engineering Department and Managers of oil and gas industries on the extent to which partnership in provision of infrastructural facilities between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State. The data revealed that the calculated z-value is 1.36 at 146 degrees of freedom at 0.05 level of significant, while the critical z-value is 1.96. This implies that the calculated z-value of 1.36 is less than the critical z-value of 1.96. Hence, the null hypothesis was accepted. This implies that there is no significance difference in the mean response of electrical engineering teaching staff of polytechnics and managers of oil and gas industries on the extent to which partnership in provision of infrastructural facilities between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State.

Discussion of Findings

Table 1 revealed that both teaching staff of polytechnics in Rivers State and managers of oil and gas industries agreed on the average that partnership in formulation of administrative policies between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State. These findings uphold that of Gofwen (2007) who stated that institutions should set up industrial/institutional advisory committee similar to academic advisory committee to approve courses as well as monitor the implementation of approved courses, and that it is essential that various curriculum and syllabus of technical institutions be discussed with as many employers as possible. The finding of the study was also supported by Ighedo (2014) that career programmed is bound to be defective if there is no input from appropriate personnel such as polytechnic teaching staff with relevant occupational fields.

Table 2 revealed that both teaching staff of polytechnics in Rivers State and managers of oil and gas industries agreed on the average that partnership in provision of infrastructural facilities between polytechnics and oil and gas industries addresses electrical skilled manpower shortage in Rivers State. These findings are in line with Umar and Ma'aji (2010) who state that private sector should be encouraged to initiate and participate in the provision of facilities, linkages between schools and the private sector should be strengthened and that there should be alliance between schools and interest groups. The study conducted in South Africa by Prew (2009) revealed that the community should be involved in determining that development priorities in the schools, supplying voluntary and paid services to the school, help the school raise and manage funds and sitting on and running some committees. In the same vein Umar and Ma'aji (2010) suggested that Non-Government Organization (NGOs), Community Based Organization (CBOs) and Parent Teacher Association (PTA) should be made to play a vibrant role in moving technical education forward through construction and renovation of classroom blocks among others. These findings are in agreement with Okoye and Okwelle (2013), Onyesom and Ashibogwu (2013) who opined that over the years TVET programmes in Nigeria which are offered in the polytechnics and other TVET institutions had suffered major setbacks in the areas of inadequate infrastructures; poor power supply; short supply of competent TVET teachers/instructors; poor supervision of TVET programmes; inadequate curriculum planning and implementation amongst others.

Conclusion

From the findings of the study, it was concluded that partnership between polytechnics and oil and gas industries in formulation of administrative policies for addressing shortage of electrical skilled manpower in Rivers State. Oil and gas industries uses resources (graduates and teaching

staff of polytechnic), hence infrastructural facilities should be provided through partnership to tackle skill shortages.

Recommendations

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

1. Polytechnic education curriculum planners should identify the skills needs of oil and gas industries and review polytechnic curriculum to address the skills needs through policy formulation.
2. The federal government, oil and gas industries, international organizations and various state governments should adequately provide oil and gas training facilities for polytechnic training institutions.



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