ROLE OF STUDENTS INDUSTRIAL WORK EXPERIENCE SCHEME IN PRACTICAL SKILL ACQUISITIONS AND DEVELOPMENT IN THE TERTIARY INSTITUTIONS OF NIGER STATE

By

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Abstract

The study analyzes the role of Students Industrial Work Experience Scheme (SIWES) in practical skill acquisition and development in tertiary institutions in Niger State. To elicit the responses from the subject, three research questions were asked. The sample of the study was made up of 83 students from State Polytechnic Zungeru and 87 from Federal Polytechnic Bida, all in Niger State. Information was collected for the study through the administration of questionnaire to the respondents. Data obtained were analyzed using mean, standard deviation and t-test. The findings revealed that students are aware of the objectives and contributions of SIWES to practical skill development. It also identified factors affecting students during SIWES. The implications of the findings were discussed and recommendations made to improve the programmes objective for developing skills in tertiary institutions in Niger State.

Introduction

Students' Industrial Work Experience Scheme (SIWES) is a planned, supervised and occupational experience programme involving practical activities conducted outside the regular classroom in a real industrial set-up. It is a skill-development programme designed to expose and prepare students for real work situations they are likely to meet in their selected fields after graduation from school. Realizing the important role played by hand on-experience' in technical education, the Federal Government recently reviewed the operation and funding of the scheme and made it compulsory only for students majoring in technical, engineering and applied science programmes in the universities and Polytechnics/College of Technology.

The schemes was primarily designed to 'catch them young' under the Federal Ministry of Commerce and Industry which transferred the scheme to Industrial Training Fund (ITF) for effective operation and management. The scheme aimed at promoting the full acquisition of skills by students undergoing training in vocational and technical courses in the institutions of higher learning; Saba (2006), Yalams & Ndom (2000) stated that the acquisition of skills in the industry and commerce is directly relevant to the establishment of the Industrial Training Fund (ITF) in order to generate a pool of indigenous manpower to meet the ever-increasing economic needs of the country. The major objectives of

establishing the scheme as published in ITF (2002) include:

- To expose and prepare students to methods of handling equipment and tools that may not be available in educational institutions.
- To promote cordial relationship between institutions and the industrial sector.
- The involve employers of labour in the entire educational process of preparing students as future employers.
- To expose and prepare students in vocational technical and science related courses for the industrial working situation they are likely to meet after graduation.
- To bridge the gap between theoretical learning in the classroom and practical experience on the field, and
- To prepare students for a business career by merging their analytical powers with their practical skills for self-reliance.

The major goal of industrial attachment programs in technology is to bridge the gap between school and work in technological occupation by adapting to changes through learning by doing SIWES is therefore one of the major components of technology education programme designed to meet the needs of students, the industries (or work environment) and the society at large, the sustenance of which will bring about national development (Asikadi, 2003 and Jamerigbo, 2003).

Specially, students in the technical colleges are expected to acquire the skills needed for employment in the Engineering industry or for self-employment after graduation. Daluba and Audu (2006); Umoh (2003); and Oyeshola (2003) observed that Nigeria has been making series of desperate efforts to keep pace with other developed nations of the world through her emphasis on science, Technology and Mathematics Education (STME). However, the present situation of unemployment in this country among technical college graduates is an indication that the national objective of the self-reliance has not been achieved. Okorie (2001), Osuala (1998) defined skill as the ability to perform expertly, facilitate performance, dexterity and tact. It is therefore that type of training given to students or learners for expert performance during employment. Okoro (2006) the individual is expected to use the knowledge effectively and readily in the execution of his performance. It implies that in possessing a skill, there is the need to demonstrate the habit of acting, thinking and behaving in specific activity in such a way that the process becomes natural to the individual through repetition or practice.

Purpose of the Study

The purpose of this study is to assess the role of Student Industrial Work Experience Scheme (SIWES) in practical skill acquisition and development in the tertiary institutions of Niger State. Specifically, this study aims at determining.

1. Contributions of SIWES to skill acquisition in tertiary institutions of Niger State.
2. Challenges faced by students during SIWES.
3. Strategies to be adopted to enhance effectiveness in SIWES programme towards practical skill development in students.

Scope of the Study

The scope of this study is limited to assessing the contributions made by SWIES, challenges faced by students during SIWES as well as proffering solution to these challenges. Such issues as it relates to other SIWES stakeholders such as the school, ITF, government and the industry will not be covered in this study due to time and financial constraints.

Research Questions

The following research questions were raised to guide the study:-

1. To what extent has SIWES contributed to practical skill acquisition in students in tertiary institutions of Niger State?

2. What are the challenges faced by students during SIWES?

3. What are the strategies to be adopted to enhance the effectiveness of SIWES towards practical skill development by students?

Research Hypotheses

The following hypothesis wwere raised and tested at 0.05 level of significance.

Ho1: There is no significant difference between the mean responses of Federal Polytechnic students and their state polytechnic counterparts as regards the contributions of SIWES to practical skill acquisition in tertiary institutions in Niger State.

Ho2: There is no significant difference between the mean responses of Federal polytechnic students and state polytechnic students on the challenges faced by students during SIWES.

Ho3: There is no significant difference between the mean responses of federal polytechnic students and state polytechnic students on

strategies to be adopted to enhance the effectiveness of SIWES programme towards practical skill acquisition.

The population of the study comprise of all the engineering students in ONDII, HND1 and HNDII Eight-three (83) students from Zungeru and eight-seven (87) from Bida.

A self developed "RSIWES & SAD" questionnaire was used as the instrument for data collection. Face validity was carried out by two experts in Technical Education Department of Kaduna Polytechnic and one Ph.D ITF retiree in Federal Capital Territory (FCT). Suggestions made by these experts were reflected on the final copy before administering for reliability. Cronbach Alpha formula was used to estimate the reliability co-efficient of the instrument. The result of pilot-test carried out in Kaduna State was 0.82, which was considered high enough to ascertain the reliability of the instrument.

Administration of the Instrument

The instrument was administered and collected personally by the researcher. The return rate was 100%. The data collected was analyzed using mean standard deviation and t-test statistics.

Results

Research Question 1

To what extend has SIWES contributed to skill acquisition in students?

Table 1: mean responses of federal and state polytechnic students on the extent to which SIWES has contributed to skill acquisition in students.

S/N	ITEM	X_1	X_2	X_t	Remarks
1	The programme leads to the establishment of on-the job training	3.56	3.53	3.55	Agree
2	It makes student to become self reliant	3.72	3.66	3.69	Agree
3	Student become productive and employable in community after partaking in the programme	3.62	3.69	3.66	Agree
4	Participating in the programme results into acquisition of practical, scientific and applied knowledge	3.8	3.87	3.84	Agree
5	SIWES exposes student to real life situation	3.97	3.92	3.95	Agree
6	SIWES bridges the gap between theory and practice	3.79	3.91	3.85	Agree
7	The programme equips students with an in-depth knowledge of theoretical lessons	3.62	3.65	3.64	Agree
8	It facilitates students exposure to professional practices	3.8	3.88	3.84	Agree
9	It enhances practical application of engineering technology and manufacturing process	3.64	3.66	3.65	Agree
10	It provides employment opportunity	3.26	3.3	3.28	Agree
11	It encourage group work and accurate project implementation	3.93	3.97	3.95	Agree
12	The enhances proficiency in handling tools and equipments	3.99	3.98	3.99	Agree
13	It inculcates safety measures, rules, habits and regulation to the students	3.6	3.69	3.65	Agree
14	It facilitates quick learning and skill development	3.99	3.83	3.91	Agree
15	It develops students attitude to work	3.68	3.75	3.72	Agree
16	It encourages the development of problem solving techniques.	3.72	3.74	3.73	Agree

Key

X_1 Mean of state polytechnic X_2=Mean of federal polytechnic

X_t=Average mean of federal and state polytechnic students

The data in table 1 revealed that the respondents agree with all the items with mean scores between 3.28 – 3.99

Research Question 2:   What are the challenges faced by students during SIWES?

Table 2: mean responses of federal and state polytechnic students on the challenges faced by students during SIWES.

S/N	ITEM	X_1	X_2	X_t	Remarks
17	Students are not well supervised by industrial based supervisors	2.81	2.69	2.75	Agree
18	Difficulty to find placement	3.84	3.87	3.86	Agree
19	Students are been treated poorly in the industries	3.93	3.81	3.87	Agree
20	They are not placed in the right department that relates with their field or discipline	3.82	3.84	3.83	Agree
21	No proper curricula is available for the industrial training	3.94	3.4	3.67	Agree
22	Lack of proper supervision	3.86	3.78	3.82	Agree
23	Staff handling the programme are not proficient in the field	3.37	1.58	2.48	Agree
24	There is delay in payment of allowance	3.97	3.92	3.95	Agree
25	Period of SIWES is too short for any relevant training in industries	3.63	3.61	3.62	Agree
26	SIWES in between school calendar year is disorganizing to students	1.87	1.15	1.51	Agree
27	Students are aware of the objective of SIWES	3.22	3.45	3.34	Agree
28	Students are not properly motivated by lectures, coordinator and industrial based supervisor of SIWES.	3.15	3.88	3.52	Agree
29	Students are overworked during SIWES.	3.87	3.48	3.68	Agree
30	Parents do not give their students well deserved support during SIWES.	3.38	3.92	3.65	Agree

The data presented in table 2 revealed that the respondents agreed with all the items with mean scores between 2.75 – 3.95, except items 23 and 26 with mean scores of 2.48 and 1.51 respectively.

Research Question 3:

What are the strategies to be adopted to enhance the effectiveness of SIWES towards skill development in students?

Table 3: Mean responses of federal and state polytechnic students on the strategies to be adopted to enhance the effectiveness of SIWES towards practical skill acquisition.

S/N	ITEM	X_1	X_2	X_1	Remarks
31	Design and utilization of updated effective training manual or curricula to be used by the industries for SIWES training	3.99	3.88	3.94	Agree
32	On job and summative assessment should be provided for all students	3.98	3.88	3.93	Agree
33	Motivation of industrial instructors/supervisors through incentive allowances	3.57	3.56	3.57	Agree
34	Institution of an award for best SIWES student	3.91	3.14	3.53	Agree
35	Duration of SIWES programme should be extended	3.56	3.68	3.62	Agree
36	Parents and students should be properly sensitized on the importance of SIWES	3.99	3.55	3.77	Agree
37	Students should be subjected to examination and graded at the end of the training	3.94	3.97	3.96	Agree
38	Students should be monitored regularly during the programme	3.98	3.87	3.93	Agree
39	Student that fail to participate in SIWES should be prevented from moving to next level	3.44	3.46	3.45	Agree
40	Incorporate SIWES assessment in to the students result during computation.	3.52	3.68	3.6	Agree
41	School should organize placement of students	3.84	3.92	3.88	Agree
42	Organizers of SIWES should also update themselves with current industrial experience	3.97	3.92	3.95	Agree
43	Competent staff should be employed to handle the programme	3.99	3.97	3.98	Agree
44	Student's allowance should be paid immediately i.e. on resumption to school	3.99	3.98	3.99	Agree
45	SIWES should be shifted to the last academic programme for the students.	2.47	2.4	2.44	Disagree
46	SIWES should cancel funds used too steadily but consistently equip schools laboratories and workshops	2.39	2.44	2.42	Disagree
47	Cordial relationship between school and industries should be established	2.81	3.58	3.2	Agree
48	Industrial training centres should be built in every state	3.97	3.65	3.81	Agree
49	Qualified industrial personnel should be employed to train the students	3.99	3.94	3.97	Agree
50	Students', work Log Book should be properly monitored	4	3.99	4	Agree

The data in table 3 revealed that all respondents agreed with all the items with a mean score ranging from 3.20 to 4 except items 46, & 47 with means scores of 2.44 and 2. 42 respectively.

Hypothesis I

There is no significant difference between the mean responses of federal polytechnic students and their state counterparts on the extent to which students have benefited from the SIWES programme.

Table 4: t-test analysis of mean scores of federal and state polytechnic students on the extent to which students have benefited from SIWES

S/N	ITEM	X_1	X_2	SD_1	SD_2	t-cal	Remarks
1	The programme leads to the establishment of on-the job training	3.56	3.53	0.55	0.55	0.36	NS
2	It makes student to become self-reliant	3.72	3.66	0.53	0.5	0.76	NS
3	Student become productive and employable in community after partaking in the program	3.62	3.69	0.49	0.47	0.95	NS
4	Participating in the programme results into acquisition of practical, scientific and applied knowledge	3.8	3.87	0.41	0.35	1.2	NS
5	SIWES exposes student to real life situation	3.97	3.92	0.19	0.28	1.37	NS
6	SIWES bridges the gap between theory and practice	3.79	3.91	0.42	0.29	2.16	S
7	The programme equips students with an in depth knowledge of theoretical lessons	3.62	3.65	0.66	0.59	0.32	NS
8	It facilitates students exposure to professional practices	3.8	3.88	0.41	0.34	1.39	NS
9	It enhances practical application of engineering technology and manufacturing process	3.64	3.66	0.53	0.48	0.26	NS
10	It provides employment opportunity	3.26	3.3	0.64	0.59	0.43	NS
11	It encourages group work and accurate project implementation	3.93	3.97	0.26	0.19	1.15	NS
12	The enhances proficiency in handling tools and equipments	3.99	3.98	0.11	0.15	0.5	NS
13	It inculcates safety measures, rules, habits and regulation in to the students	3.6	3.69	0.61	0.47	1.08	NS
14	It facilitates quick learning and skill development	3.99	3.83	0.11	0.38	3.77	S
15	It develops students attitude to work	3.68	3.75	0.63	0.56	0.77	NS
16	It encourages the development of problem solving techniques	3.72	3.74	0.51	0.47	0.27	NS

Key

SD_1 = Standard Deviation of State Poly Students SD_2 = Standard Deviation of Federal Polytechnic Students t –cal = t – calculated t- critical $\pm$ 1.96 df (degree of freedom) =168

x_1 = Mean of State Poly Students x_2 = Mean of Federal Poly Students

The data in table 4 showed that t-cal values of two items, 6, and 14 were greater than the t-table values while t-cal values for fourteen items 1, 2,3,4,5,6,7,8,9,10,11,12,13,15 & 16 were below the t-table. Therefore, the null hypothesis was rejected for each of the items while it was accepted for each of the fourteen items. It therefore means that the opinions of the respondents differed in two items but did not differ in fourteen items concerning the benefits of SIWES to students.

Hypothesis II

There is no significant difference between the responses of Federal Polytechnic students and their state polytechnic counterparts on the challenges faced by students during SIWES.

Table 5: t-test analysis of mean scores of Federal and state polytechnic students on the challenges faced by students during SIWES.

S/N	ITEM	X_1	X_2	SD_1	SD_2	t-cal	Remark
17	Students are not well supervised by industrial based supervisors	2.81	2.69	0.79	0.83	0.97	NS
18	Difficulty to find placement	3.84	3.87	0.58	0.49	0.37	NS
19	Students are been treated poorly in the industries	3.93	3.81	0.31	0.57	1.72	NS
20	They are not placed in the right department that relates with their field or discipline	3.82	3.84	0.5	0.48	0.27	NS
21	No proper curricula is available for the industrial training	3.94	3.4	0.29	0.88	5.43	S
22	Lack of proper supervision	3.86	3.78	0.5	0.52	1.03	NS
23	Staff handling the programme are not proficient in the field	3.37	1.58	0.69	0.8	15.65	S
24	There is delay in payment of allowance	3.97	3.92	0.19	0.28	1.37	NS
25	Period of SIWES is too short for any relevant training in industries	3.63	3.61	0.6	0.54	0.23	NS
26	SIWES in between school calendar year is disorganizing to students	1.87	1.15	0.96	0.39	6.36	S
27	Students are aware of the objective of SIWES	3.22	3.45	1.12	0.74	1.58	NS
28	Students are not properly motivated by lectures, coordinator and industrial based supervisor of SIWES.	3.15	3.88	1.16	0.48	5.32	S
29	Students are overworked during SIWES	3.87	3.48	0.46	0.71	4.27	S
30	Parents do not give their students well deserved support during SIWES.	3.38	3.92	0.74	0.28	6.24	S

The data in table 5 showed that t-cal values of six items, 21,23,26,28,29 and 30 were greater than the t-table values while that for eight items 17, 18,19,20,22,24,25 & 27 were below the t-table. Therefore, the null hypothesis was rejected for each of the six items while it was accepted for each of the eight items, it implies that the options of the respondents differed in six items but did not differ in eight items concerning challenges faced by students during SIWES.

Hypothesis 3

There are no significant differences between the mean responses of Federal polytechnic student and their state counterparts on the strategies to be adopted to enhance the effectiveness of SIWES programme.

Table 6: t-test analysis of mean scores of federal and state polytechnic students on the strategies to be adopted to enhance practical skill acquisition in SIWES.

S/N	ITEM	X_1	X_2	SD_1	SD_2	t-cal	Remarks
31	Design and utilization of updated effective training manual or curricula to be used by the industries for SIWES training	3.99	3.88	0.11	0.34	2.87	S
32	On job and summative assessment should be provided for all students	3.98	3.88	0.22	0.34	2.29	S
33	Motivation of industrial instructors/supervisors through incentive allowances	3.57	3.56	0.65	0.55	0.11	NS
34	Institution of an award for best SIWES student	3.91	3.14	0.46	0.99	6.56	S
35	Duration of SIWES programme should be extended	3.56	3.68	0.72	0.47	-1.29	NS
36	Parents and students should be properly sensitized on the importance of SIWES	3.99	3.55	0.11	0.68	5.96	S
37	Students should be subjected to examination and graded at the end of the training	3.94	3.97	0.24	0.19	-0.91	NS
38	Students should be monitored regularly during the programme	3.98	3.87	0.16	0.49	1.99	NS
39	Student that fail to participate in SIWES should be prevented from moving to next level	3.44	3.46	0.93	0.73	-0.16	NS
40	Incorporate SIWES assessment in to the students result during computation.	3.52	3.68	0.86	0.64	-1.38	NS
41	School should organize placement of students	3.84	3.92	0.56	0.28	-1.17	NS
42	Organizers of SIWES should also update themselves with current industrial experience	3.97	3.92	0.25	0.35	1.08	NS
43	Competent staff should be employed to handle the programme	3.99	3.97	0.11	0.19	0.85	NS
44	Student's allowance should be paid immediately i.e. on resumption to school	3.99	3.98	0.11	0.15	0.5	NS
45	SIWES should be shifted to the last academic programme for the student	2.47	2.4	0.87	0.94	0.48	NS
46	SIWES should cancel funds used too steadily but consistently equip schools laboratories and workshops	2.39	2.44	0.93	1.24	-0.3	NS
47	Cordial relationship between school and industries should be established	2.81	3.58	0.63	0.49	-8.87	S
48	Industrial training centres should be built in every state	3.97	3.65	0.19	0.38	7	S
49	Qualified industrial personnel should be employed to train the students	3.99	3.94	0.11	0.12	2.84	S
50	Students, work Log Book should be properly monitored	4	3.99	0.11	0.34	2.87	S

The data in table 6 showed that t-cal values of eight items, 31,32,34,36,37,47,48,49 and 50 were greater than the t-table value while that of twelve items 33,35,37,38,39,40,41,42,43,44,45, and 46 were below the t-table. Therefore, the null hypothesis was rejected for each of the eight items while it was accepted for each of the twelve items. It therefore means that the options of the respondents differed in eight items but did not differ in items concerning strategies to be adopted to enhance practical skill acquisition during SIWES.

Discussion

The findings of this study are substantiated by the findings from various previous studies. The study revealed that the experience gained through the programme will go a long way to make students become self-reliant after graduation. This is in line

with the policy objective of ITF in which emphasis was made on acquisition of skills by the students to enable them fit suitably in to the world of work. When students become self-reliant, they have achieved self-dependency to enable them generate and create their own saleable and marketable employment. By so doing, many students have got their names registered in to the catalogue of employers of labour rather than queueing for the white-collar or wage-employment that are not even there. This is also in agreement with the assertion of Saba (2006), Yalam and Ndom (2000) who elucidated that ITF is a relevant organization to equip the students with necessary skill to enable them generate pool of indigenous man power to meet the ever-increasing needs of the country.

It is also deduced from the findings that programme promotes professional and academic relationship and interaction among the industrial staff, the management and the students on industrial attachment. It also facilitates quick learning and permanent retention of the students because the gap between the theoretical aspect taught in their various institutions and the practical aspects has been successfully bridged. This corroborated the observation of Audu (2006), Umoh (2003) and Oyeshola (2003) in which the importance of ITF was explained as a component of technology education programme designed to meet the needs of the students, the industries (work-environment) and the society at large, the situation of which brings about national development.

Conclusion

Solving the problem of skill acquisition by graduates of Nigeria Technical/Vocational Education is a reason for the establishment of SIWES. It was planned to be a bridge between educational institutions and industrial employers with the latter providing general and specific occupational

skills and knowledge. This research indicates that the SIWES objectives are being achieved, although there are some constraints such as lack of industrial training equipment. However, if the scheme is not adequately implemented, it will become difficult for graduates in the system to secure employment or make a smooth transition from school to work.

Constraints in just few establishments when it comes to sophisticated/modern training equipment.

Recommendations

The operation of SIWES lies on the proper supervision. Thus, it becomes necessary that something must be done at the operational level to enhance functioning of the programme. In line with these findings, the following recommendations are made:

1. ITF management should ensure the regular visitation of the ITF officers to spartcipating Agencies, Institutions, Employers and students on attachment.

2. All the institutions involved should be organizing orientation courses in collaboration with the ITF for their students prior to their attachment with the attendance made mandatory for the students accepted for SIWES and ITF staff.

3. ITF should provide insurance cover for students on attachment and increase the allowances paid to them and their supervisors to motivate them.

4. ITF should ensure that the students Log Books are well vetted and the outstanding students be given awards to serve as motivation.

References

Asikadi, E. (2003). Restructuring SIWES to meet the National Development Plan in Education System, National Conference of Nigeria Association for Research Development Asaba.

Jemerigbo H. I. (2003) HECA/ITF Interactive Forum; Major Consortium Industrial Training Fund Booklet. 14(3)5

N.P.E, (2004) National Industrial Directory. Federal Office of Statistics. Lagos; Federal Government Press.

Okorie J. (2001) Vocational Industrial Education. Bauchi: League of Researchers press.

Okoro, O.M (2006) Principle and Methods in vocational and Technology reduction. Nsukka; University Trust Publisher

Oyeshola, F.K. (2003) Engineering Education in Nigeria: presenting system and challenges for the future. Retrieved June 6, 2008 from http://www.aaee.com.au/journal/2003/kofoworola03.pdf

Saba T. M (2006) cultivating positive maintenance culture among technical teachers.

Journal of technology education Federal College of Technology (technical) Akoka Lagos. 3(1)2

Umoh, M. (2003) an introduction to vocational and technical education Nigeria, Abuja Jil Alex Venture publisher.

Work -study (n-d) retrieved June 7, (2008 from http:/unilag.edu.ng index. Php?pagr=about student affairs.

Yalams, S.M Ndom, B. M (2000) research project writing and supervision. Bauchi; league of researchers press.