

Full Length Research Paper

Evaluating the effectiveness of Students Industrial Work Experience Scheme (SIWES) programme to ensure quality of technical, vocational education and training in technical colleges in Lagos State

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This study evaluated the effectiveness of SIWES Programme in Lagos State to ensure quality of technical, vocational education and training. Three research questions and two hypotheses guided the study in which survey research design was used. The entire population of 130, comprising 120 teachers of technical vocational education and training in Lagos State and also 10 industrial supervisors from Reckit and Benkiser in Ogun State was used for the study. A 35-item questionnaire was used for data collection. The instrument was validated by three experts. Cronbach Alpha reliability method was used to determine the internal consistency of the instrument at a coefficient of 0.86. A total of 130 copies of the questionnaire were administered but only 127 copies were retrieved and analysed using mean, standard deviation and t-test. The study found out that there exist 10 challenges of Student Industrial Work Experience Scheme in developing the needed skill in the industry, 15 strategies that can be adopted in evaluating the effectiveness of SIWES in Nigeria and 10 remedies to the challenges faced by TVET student on their industrial attachment programme were identified. The paper recommended that government should grant tax relief and other incentives to private sector organizations who implement the SIWES programme satisfactorily, and that the administrators of TVET in technical colleges in Lagos State should organize orientation to industrial supervisors to fully understand the role they need to play in the student attachment programme. The paper concluded by saying that most of the students admitted to TVET programme found themselves in a helpless situation of securing a place of industrial attachment and also employment in the industry, hence the need for the evaluation of the SIWES programme.

Key words: Technical and vocational education and training (TVET), Students Industrial Work Experience Scheme (SIWES), evaluation, graduates, and practical skills.

INTRODUCTION

The growing demand for well-trained craftsmen by industries and also the need to produce technical and vocational education graduates with entrepreneurial skills who can be employers of labour and also add to the

development of a nation have made researchers and policy makers to evaluate the effectiveness of SIWES programme in Nigeria to ensure quality of technical vocational education and training. Okoye and Arimonu

(2016) in Momoh (2012) stated that technical vocational education and training is a form of education whose primary purpose is to prepare persons for employment in recognized occupation. The concept of technical, vocational education and training is used as an all-embracing term in the educational process involving, in addition to general education, the study of technologies and related sciences and acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life (Federal Government of Nigeria - FGN, 2014). Eze (2013) also opined that technical, vocational education and training is that type of education that emphasizes the application of skills, knowledge and attitudes required for employment in a particular occupation or cluster of related occupations in any field of social and economic activity. Audu et al. (2013) opined that technical vocational education and training 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. For the purpose of clarity, technical, vocational education and training is that skill-based programme designed for sub-professional level education and based on a specific vocation. Technical, vocational education and training education develops in the individual capacities for decision making and the qualities necessary for active and intelligent participation, team work and leadership at work and in the community as a whole and also for the industrial development of the nation. TVET equips people with a broad range of knowledge, skills and attitudes that are now recognized as indispensable for meaningful participation in work and life (Okwelle, 2013). This is because no nation can develop to its fullest and keep pace with trends in science and technology without effective and efficient technical and vocational educational and training (TVET) system (Imogie, 2014). In line with this, Idoko (2014) explained that acquisition of practical skills involves the development of new skills, practice and ways of doing things or performing a task, usually gained through training or experience.

Students Industrial Work Experience Scheme (SIWES) is a skill development program designed to prepare students of Nigerian tertiary institutions for transition from the college environment to work (Akerejola, 2008) as cited in Abraham- Ibe (2014). The need for this arises as a result of global competitiveness in the industry and also the need to produce graduates of TVET who have the skills needed in the industries in Nigeria and the world at large (Njoku, 2014). Students' Industrial Work Experience

Scheme (SIWES) is a skill development programme established by Industrial Training Fund (ITF) in 1973 with the headquarters in Jos Nigeria. It is meant to enable students in tertiary institutions in Nigeria acquire technical skills and experience for professional development in their course of study as it bridges the gap between theory and practice. It is the accepted skills training programme in institutions of higher learning in Nigerian that forms part of the approved academic requirement in various degree programmes. It is a three credit unit course, which must be met by students in technical and vocational education before graduation. Nsu (2012) in Ojokuku et al. (2015) opined that the scheme is a planned, supervised training and intervention programme based on stated and specific learning and career objectives, leading to the development of occupational competencies of the participants. It also expose and prepare students in institutions of higher learning for the industrial work situations which they are to meet after graduation. The scheme equally helps to familiarize students with work methods and expose them to the necessary experience to handle equipment and machinery that are not available in their institutions. In the same vein, Ojokuku et al. (2015) is of the opinion that SIWES also bridges the existing gap between theory and practice and expose students to necessary skills for smooth transition from the classroom to the world of work. It enables students to acquire technical skills and experience for professional development in their study. Before the inception of the Scheme, there was a growing concern among Nigerian industrialists that graduates of institutions of higher learning lacked adequate practical background experience necessary for employment. Employers were of the opinion that the theoretical education provided by higher institutions did not meet nor satisfy the needs of the economy. It was against this background that the Industrial Training Fund during its formative years introduced SIWES to provide students with the opportunity of exposure to handle equipment and machinery in industry to enable them acquire prerequisite practical knowledge and skills. The Student Industrial Work Experience Scheme (SIWES) is also a skills training programme designed to expose and prepare students of universities and other tertiary institutions for the industrial work situation they are likely to meet after graduation (Elijah, 2017). Abraham-Ibe (2015) stated that students' work experience scheme is an educational programme where students participate in work activities while still attending school. This gives students the opportunity to be directly involved and be part of the actual work situation outside the classrooms. It was specifically designed to provide students of tertiary

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institutions in specific courses, with the opportunity of acquiring practical skills and experiences on the job before graduation so that they can graduate as professionals. The scheme aimed at promoting the much desired technological know-how for the advancement of the nation, in addition, to developing a well-skilled and articulated human resources needed for self-reliant economy. Student Industrial Work Experience Scheme in this context can be defined as a practical training programme organized for the students of tertiary institutions and technical colleges in vocational and technical education department and engineering to enable them acquire practical skills so as to be employable in the labour market and also job creators.

The objectives of SIWES as stated by the industrial Training Fund (2013) is to:

- 1) Provide an avenue for students in higher institutions of learning to acquire industrial skills and experience in their course of study.
- 2) Prepare student for the industrial work situation they will meet after graduation.
- 3) Expose students to work methods and techniques in handling equipment and machinery that may not be available in their institutions.
- 4) Make the transition from school to the world of work easier and enhance student's contacts for job placement.
- 5) Provide students with an opportunity to apply the knowledge in real work situation to their training thereby bridging the gap between theory and practice.
- 6) Enlist and strengthen employer's involvement in the entire education process and prepare student for employment in industry and commerce.

A cursory look at this scheme have continued to pilot public concern over the issue of evaluating the effectiveness of Student Industrial Work Experience Scheme (SIWES) in boosting the standard of performances of students in the labor market. This is because the objectives of establishing the scheme has not been met since the student finds it difficult to secure a place for the programme and in a situation where a place is secured, most students are not in the department relevant to their field of study. This warranted Taiwo (2016) to state that securing a placement in an organisation that has modern equipment and facilities is very difficult; therefore most students settled for organisations that are not well equipped for the training, hence the need for its evaluation.

Evaluation is the appraisal of the worth or values of a thing or action and the making of appropriate decisions on the basis of such appraisal. It involves the collection of data and the use of such data to assess the effectiveness or quality of a programme or performance. SIWES programme improvement should be the most important functions or purpose of evaluating the effectiveness of SIWES to ensure quality of technical, vocational

education and training in Nigeria.

This is because vast sums of money were being spent on the programme by Nigeria government and this money is supposed to produce good SIWES programmes for students. Programme that would serve the needs of the country and also bring about whatever changes are expected in the behavior, character, skill level and social life of students who pass through technical and vocational education and training. Evaluation makes it possible for data and information relating to programme and students to be collected. Such collected data are used in judging the effectiveness of the programme and in detecting deficiencies in the programme that need to be removed. Shittu et al. (2017) in Coombs (2008) is of the view that evaluation is the process of establishing the value of behavioural change in students and it determines how much knowledge, skills and attitudes students had acquired or obtained in a measurement processes. Ebere et al. (2017) stated that evaluation is the collection, review and use of information about a course to improve students learning. This means that evaluation of course according to Monday (2012) in Ebere et al. (2017) focuses on what the students knows, as they are able to demonstrate values acquired when they graduate. Evaluation in this work can be seen as the process of attainment of the stated objectives by comparing what is to what should be so as to impact the required skills to the graduates to enable them manipulate tools and equipment. In Nigeria, because of a growing number of institutions producing TVET graduates each year and the diminishing employment opportunities in the country, many employers have raised the bar by looking for those graduates who are boots- trappers that have acquired the needed knowledge in industry through the industrial attachment programme. There has been much concern on the quality of practical experience the students gain on the job market in their industrial attachment which has resulted to unemployment since the objectives of the programme has not been met.

The high rate of unemployment among the graduate of TVET which is as a result of lack of skill acquisition and also mismatch of skill from what is happening in industry and also the school have given policy makers a source of concern. This growing impression informs a compelling need to evaluate the effectiveness of SIWES to ensure quality of technical, vocational education and training with a view to determining their proficiency so as to acquire practical skills. Idoko (2014) explained that acquisition of practical skills involves the development of new skills, practice and way of doing things or performing a task, usually gained through training or experience. From the foregoing, practical skills acquisition could be referred to as an organized process of training which eventually leads to effectiveness in a given trade. It is an ability to do a given job better and faster with enhanced output. Muhammad and Rufai (2014) were of the view that in the contemporary Nigeria, quality of technical college

graduates has been a major source of concern by most employers who express their dissatisfaction on the level of technical skills possessed by these technical college graduates. In the same vein, Njoku (2014) pointed out that there are evidences of the inability of the technical colleges to meet the set standard of the quality of education for some years now; leading to the situation where technical college graduates now parade the streets with paper qualifications and lack the needed saleable skills for gainful employment. Okwelle and Ojutule (2018) in Nwolu-Elechi (2013) asserted that the shabby performance of technical education graduates in Nigeria is no longer news as very important projects in the country, particularly the construction industries are now run by technicians and craftsmen from neighbouring West African countries. Okwelle and Ojutule (2018) stated that lack of these skills is frustrating to the industrial sector and its effects are equally grave on the society in all spheres of the economy. In the same vein, Oluwatumbi (2015) asserted that it is appalling that many students graduate yearly from technical colleges without acquiring relevant practical skills due to some constraints in the technical colleges. This could also be the case with technical colleges' graduates from Lagos State of Nigeria. It is against this background that the researchers sought to evaluate the effectiveness of students industrial work experience scheme (SIWES) programme to ensure quality of technical, vocational education and training. A number of researchers have attributed lack of these practical skills to some issues of constraints in the technical colleges among which are the constraint to the achievement of the objectives of SIWES. Specifically, the study will determine the challenges and remedies of Student Industrial Work Experience Scheme and also the strategies that can be adopted in evaluating the effectiveness of SIWES to ensure quality of technical, vocational education and training in Nigeria. Two null hypotheses were also tested using the student's t-test of independent population at 0.05 levels of significance.

METHODOLOGY

The study adopted the survey research design. Nworgu (2015) stated that a survey research design typically employs interview and questionnaire to determine the opinions, preferences, attitudes and perceptions of peoples about issues. The study therefore adopted this design as it sought the opinions of technical college teachers and industrial workers on the challenges and remedies of achieving the objectives of Student Industrial Work Experience Scheme and also the strategies that can be adopted in evaluating the effectiveness of SIWES to ensure quality of technical, vocational education and training in Nigeria. The study was carried out in the five technical colleges in Lagos State. Lagos was chosen because it is one of the commercial nerve centres in Nigeria and has a lot of industries where the graduates of TVET can work or gain experience during the course of their training. The population for this study comprised all the 120 vocational and technical education teachers in the five technical colleges in Lagos State and 10 industrial supervisors from Reckit and Benkiser industry in Ogun State. There was no sampling for the study because of the small

size of the populace.

A structured questionnaire was the instrument for data collection. The items used a 5-point Likert scale of highly agreed, agreed, undecided, disagreed and highly disagreed, which were assigned numerical values of 5, 4, 3, 2, and 1 respectively. The instrument was subjected to face and content validation by two lecturers from the School of Vocational and Technical Education, Adeniran Ogunsanya College of Education Lagos State to attest the appropriateness of the instrument in measuring what it is intended to measure. The instrument was trial tested on 20 vocational and technical education teachers in Government Technical College, Aiyetoro, Ogun State. This yielded a reliability co-efficiency of 0.86 using the Cronbach Alpha formula.

One hundred and thirty (130) copies of the questionnaires were distributed to the technical vocational education and training teachers in the five technical colleges in Lagos State and the industrial workers. The 130 copies of the questionnaires were returned yielding a 100% return rate. The data were collected by administering the questionnaire directly on the respondents by the researchers and two research assistants. The data collected from this study were analyzed using mean and standard deviation in answering the research questions and t-test to test the hypotheses at a probability level of 0.05 degree of freedom. Any item with a mean value of 3.50 and above was regarded as agreed while any item with a mean below 3.50 was regarded as not agreed. When the calculated t-value is greater than the t-table value, the null hypotheses was rejected.

RESULTS

Research Question 1

What are the challenges of Student Industrial Work Experience Scheme in developing the needed skill in the industry?

Table 1 showed that all the 10 items on the challenges of Student Industrial Work Experience Scheme in developing the needed skill in the industry had their mean values ranged from 3.80 to 4.67 which were above the cutoff point of 3.50. The standard deviation indicates that the responses do not vary widely from the mean.

Research Question 2

What are the strategies that can be adopted in evaluating the effectiveness of SIWES in Nigeria?

Table 2 showed that all the 15 items on the strategies that can be adopted in evaluating the effectiveness of SIWES in Nigeria had their mean values ranged from 3.73 to 4.69 which were above the cutoff point of 3.50. The standard deviation indicates that the responses do not vary widely from the mean.

Research Question 3

What are the remedies to the challenges faced by TVET student on their industrial attachment programme?

Table 1. Challenges of Student Industrial Work Experience Scheme in developing the needed skill in the industry.

S/N	Item Description	X	SD	Remark
1.	Challenge of finance to the student and teachers, to ease their burden during the programme.	3.80	1.09	Agreed
2.	Challenge of securing a place for attachment.	4.14	0.74	Agreed
3.	Poor programme monitoring from Industrial Training Fund.	4.20	0.79	Agreed
4.	Lack of proper planning of SIWES programme	4.67	0.87	Agreed
5.	Failure by the SIWES administrators to prepare the master list and placement list of student on time.	4.57	0.55	Agreed
6.	Absence of orientation programme for SIWES participating students.	4.51	0.55	Agreed
7.	Inadequate training facilities	4.47	0.66	Agreed
8.	Lack of free access to machines and equipment during training.	4.55	0.51	Agreed
9.	Lack of modern facilities/machineries in training stations.	4.14	1.12	Agreed
10.	Limited number of well-equipped industries to absorb SIWES students.	4.32	0.78	Agreed

Table 2. Strategies for evaluating effectiveness of SIWES in Nigeria.

S/N	Item Description	X	SD	Remark
1.	There should be great input in curriculum development from the industry expert.	4.46	0.61	Agreed
2.	In-depth development of student practical skills should be accessed with the set standard.	4.48	0.50	Agreed
3.	There should be collaborative provision of employment opportunities to the student by the industry.	4.34	0.48	Agreed
4.	Tools with high degree of closeness to those found in the industry should be used in the school workshop.	4.10	1.18	Agreed
5.	Industrial visitation should be organized by the TVET schools so that the students can reflect on the actual job practice in demand.	4.34	0.48	Agreed
6.	There should be occasional visitation of professionals and resource persons to speak on career and industrial related issues.	4.19	0.74	Agreed
7.	There should be set objectives to be achieved at the end of the practical session.	4.46	0.61	Agreed
8.	There should be prompt assessment of student knowledge on the identification of appropriate tools and equipment.	3.96	0.98	Agreed
9.	There should be a proper documentation of checklist for assessment.	3.95	0.49	Agreed
10.	There should be follow up studies in order to give the graduate's opportunities to make suggestions to the institution regarding new changes in the world of work and also changes in the programme to suit the new changes in the dynamic business world.	3.75	1.44	Agreed
11.	There should be prompt assessment of student knowledge of safety and environment.	3.73	1.18	Agreed
12.	Student ability to work with little or less supervision should be assessed.	4.38	0.49	Agreed
13.	Checklist of tools and equipment should be made prior to the commencement of the practical section	4.69	0.44	Agreed
14.	There should be proper assessment of student tools manipulative skills.	4.13	1.38	Agreed
15.	There should be instructional guide for teaching and learning of vocational technical education	3.75	1.44	Agreed

Table 3 showed that all the 10 items on the remedies to the challenges faced by TVET student on their industrial attachment programme had their mean values ranged from 3.96 to 4.68 which were above the cutoff point of 3.50. The standard deviation indicates that the responses do not vary widely from the mean

Hypothesis 1

There is no significant difference between TVET teachers and industrial supervisors on the challenges of Student Industrial Work Experience Scheme in developing the needed skill in the industry.

Table 4 showed that all the 10 items on the challenges of Student Industrial Work Experience Scheme in developing

the needed skill in the industry had their t-cal values less than that of the t-table of 1.96. This indicated that there was no significant difference in the mean ratings of the responses of the technical college teachers and the industry workers on the challenges of Student Industrial Work Experience Scheme in developing the needed skill in the industry.

Hypothesis 2

There is no significant difference between TVET teachers and industrial supervisors on the strategies that can be adopted in evaluating the effectiveness of SIWES in Nigeria.

Table 5 showed that all the 15 items on the strategies that can be adopted in evaluating the effectiveness of

Table 3. Remedies to the challenges faced by TVET student on their industrial attachment programme.

S/N	Item Description	X	SD	Remarks
1.	Students should be placed on industrial work experience relevant to their course of study.	3.96	0.60	Agreed
2.	Industrial Training Fund should increase the allowances given to students at the end of the SIWES Programme to motivate the students	4.03	0.74	Agreed
3.	There should be collaboration between industry based supervisors and institutional based supervisor.	4.63	0.60	Agreed
4.	I.T.F. should establish an effective monitoring mechanism for SIWES Programme.	4.68	0.40	Agreed
5.	Students should write a report of their experience at the end of the training and it should be presented in form of a seminar paper.	4.40	0.61	Agreed
6.	Institutions should confirm the appropriateness of Industrial placement before posting out the students.	4.38	0.49	Agreed
7.	There should be adequate collaboration between the industries and the school to provide adequate pedagogical and infrastructural facilities to meet the changing needs of skilled personnel in industry.	4.65	0.44	Agreed
8.	The industries should provide job opportunities for the outstanding student after the internship programme.	4.48	0.63	Agreed
9.	Loan facilities and grants should be provided to students who are interested in entrepreneurship after graduation.	4.48	0.63	Agreed
10.	Officials in the industry who harass students during the SIWES programme should be disciplined	4.65	0.44	Agreed

Table 4. Mean and t-test Analysis of the responses of the respondent on the challenges of Student Industrial Work Experience Scheme in developing the needed skill in the industry N=130.

S/N	Item Description	X ₁	X ₂	X _G	SD	t-cal	H ₀
1	Challenge of finance to the student and teachers, to ease their burden during the programme.	3.71	3.99	3.85	1.07	-0.6	NS
2	Challenge of securing a place for attachment.	4.71	4.66	4.68	0.72	-0.3	NS
3	Poor programme monitoring from Industrial Training Fund.	4.32	4.59	4.45	0.78	-1.8	NS
4	Lack of proper planning of SIWES programme	4.63	4.66	4.64	0.86	-0.2	NS
5	Failure by the SIWES administrators to prepare the master list and placement list of student on time.	4.42	4.57	4.50	0.54	0.98	NS
6	Absence of orientation programme for SIWES participating students.	4.66	4.74	4.70	0.53	0.43	NS
7	Inadequate training facilities	4.34	4.45	4.40	0.64	0.30	NS
8	Lack of free access to machines and equipment during training.	4.25	4.44	4.34	0.53	0.84	NS
9	Lack of adequate facilities and machines at the training station.	3.83	3.26	3.54	1.10	1.52	NS
10	Limited number of well-equipped industries to absorb SIWES students.	4.66	4.74	4.70	0.76	0.43	NS

T-table =1.96, NS: Not Significant, X₁: Technical College teachers mean, X₂: Industry Workers mean.

SIWES in Nigeria had their t-cal values less than that of the t-table of 1.96. This indicated that there was no significant difference in the mean ratings of the responses of the technical college teachers and the industry workers on the strategies that can be adopted in evaluating the effectiveness of SIWES in Nigeria.

DISCUSSION

The study in Table 1 identified 10 challenges of Student Industrial Work Experience Scheme in developing the needed skill in the industry which were challenge of finance to the student and supervisors, to ease their burden during the programme, Challenge of securing a place for attachment, lack of proper planning of SIWES programme among others. On the hypotheses tested, the study found out that there were no significant difference in the mean ratings of the responses of technical college teachers and the industry supervisors on the 10

challenges of Student Industrial Work Experience Scheme in developing the needed skill in the industry. The findings are in agreement with Okwelle and Ojutule (2018) in Tambuwal (2012) who posited that SIWES is faced with many constraints which includes; problems of misconception, scarcity of place of attachment, school or institution problems, irregular supervision of the relevant agencies, resource or funding problems and ineffective organization. This is also in agreement with Elijah (2017) who stated that the challenges students encounter during their SIWES programme ranges from delay in the payment of their allowances, unfriendly attitude of supervisor and lack of basic training tools and accommodation problems. The implication of the result shows that majority of students from technical colleges in Lagos State do not properly participate in SIWES programme and hence their ineffectiveness in practical skill acquisition.

The findings of the study in Table 2 showed 15 strategies that can be adopted in evaluating the

Table 5. Mean and t-test analysis of the responses of the respondent on the strategies that can be adopted in evaluating the effectiveness of SIWES in Nigeria. N=130.

S/N	Item Statement	X ₁	X ₂	X _G	SD	t-cal	H0
1	There should be great input in curriculum development from the industry expert.	4.24	4.68	4.46	0.50	0.98	NS
2.	In-depth development of student practical skills should be accessed with the set standard.	4.42	4.54	4.48	0.50	0.97	NS
3.	There should be collaborative provision of employment opportunities to the student by the industry.	4.29	4.38	4.34	0.50	1.36	NS
4.	Tools with high degree of closeness to those found in the industry should be used in the school workshop.	4.13	4.06	4.10	1.24	0.15	NS
5	Industrial visitation should be organized by the TVET schools so that the students can reflect on the actual job practice in demand.	4.29	4.38	4.34	0.50	1.36	NS
6.	There should be occasional visitation of professionals and resource persons to speak on career and industrial related issues.	4.17	4.21	4.19	0.85	0.25	NS
7.	There should be set objectives to be achieved at the end of the practical session.	4.24	4.68	4.46	0.50	0.98	NS
8.	There should be prompt assessment of student knowledge on the identification of appropriate tools and equipment.	3.71	4.20	3.95	0.88	1.72	NS
9.	There should be a proper documentation of checklist for assessment.	3.95	3.94	3.94	0.43	0.03	NS
10.	There should be prompt assessment of student knowledge of safety and environment.	3.67	3.83	3.75	1.51	0.60	NS
11.	The overall quality of completed task should be assessed.	3.42	4.03	3.73	1.01	1.86	NS
12.	Student ability to work with little or less supervision should be assessed.	4.33	4.43	4.38	0.50	0.31	NS
13.	Checklist of tools and equipment should be made prior to the commencement of the practical section	4.81	4.56	4.69	0.50	1.91	NS
14.	There should be proper assessment of student tools manipulative skills.	4.20	4.06	4.13	1.54	0.34	NS
15	There should be instruction guide for teaching and learning of vocational technical education	3.67	3.83	3.75	1.51	0.60	NS

T-table =1.96, NS: Not Significant, X₁: Technical College teachers mean, X₂: Industry Workers mean.

effectiveness of SIWES in Nigeria. The strategies includes: great input in curriculum development from the industry expert, assessment of in-depth development of student practical skills with the set standard, collaborative provision of employment opportunities to the student by the industry among others. On the hypotheses tested, the study found out that there was no significant difference in the mean ratings of the responses of the technical college teachers and industry supervisors on the 15 strategies that can be adopted in evaluating the effectiveness of SIWES in Nigeria. The findings were in consonance with the assertion of Rita (2017) who indicated that payment of students' allowances before the commencement of SIWES, reduction of the duration of SIWES to four months, limiting the posting of students for SIWES to nearby places, provision of basic training tools, and proper humane supervision by the supervisors are the strategies that can be adopted in evaluating the effectiveness of SIWES programme in Nigeria.

The findings of the study in Table 3 showed 10 remedies to the challenges faced by TVET student on their industrial attachment programme. The remedies includes that students should be placed on industrial work experience relevant to their course of study; there should be collaboration between industry based supervisors and institutional based supervisor; students should write a report of their experience at the end of the training and it should be presented in form of a seminar

paper among others. The findings were in agreement with Oladimeji et al. (2016) who stated that the solutions to the challenges of Students Industrial Work Experience Scheme are: Proper coordination and supervision of the exercise, liaising with the various bodies and industries involved in the management of the SIWES programme ahead of time so as to minimize or reduce to the barest minimum the high level of refusal to accept students for their industrial training, issuing of Log books/IT letters on time, employment of the best candidate from the programme and above all timely payment of SIWES allowance to students.

The implication of this finding is that the professional experience of the respondent did not influence their responses on Evaluating the Effectiveness of Students Industrial Work Experience Scheme (SIWES) Programme to ensure quality of technical, vocational education and training in Technical Colleges in Lagos State. The findings of the authors cited above help to add validity to the result of this study.

Conclusion

Based on the findings of the study, 10 challenges of Student Industrial Work Experience Scheme in developing the needed skill in the industry were agreed by both the teachers and the industrial supervisors, why 15 strategies

that can be adopted in evaluating the effectiveness of SIWES in Nigeria were also agreed by the teachers and the industrial supervisors. The study also identified 10 remedies to the challenges faced by TVET student on their industrial attachment programme. The remedies to the challenges faced by TVET student on their industrial attachment programme if adhered to and followed will eliminate the challenges faced by the students. This is because most of the students admitted to TVET programme found themselves in a helpless situation of securing a place of industrial attachment and also employment in the industry, hence the need for the evaluation of the SIWES programme.

RECOMMENDATIONS

Based on the findings, some recommendations were made. These include:

- 1) There should be post attachment seminar to review the programme regularly.
- 2) The administrators of TVET in technical colleges in Lagos State should organize orientation to industrial supervisors to fully understand the role they need to play in the student attachment programme.
- 3) Government should encourage the SIWES scheme by funding the programme adequately.
- 4) Government should grant tax relief and other incentives to private sector organizations who implement the SIWES programme satisfactorily.
- 5) There should be urgent need for TVET administrators and government to revise and articulate the follow-up study and the supervised industrial work experience scheme to enable students, institutions and industries (experts) effectively participate in the simulation exercise of the SIWES programme.
- 6) Administrators of TVET should make sure that students are placed in their areas of study within the industry for training.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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