

**IMPACT OF SIWES ON SKILLS ACQUISITION OF  
ELECTRICAL AND ELECTRONICS GRADUATES IN MINNA  
METROPOLIS**

*BY*

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## **CERTIFICATION**

I GEORGE CHABYA GANI, Matric no.2009/3/34168BT an undergraduate student of the department of Industrial and Technology Education, certify that the work embodied in this project is original and has not been submitted in part or full for any other diploma or degree of this or any university.

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## APPROVAL PAGE

This project has been read and approved as meeting the requirement for the award of B.Tech degree in Industrial and Technology Education, School of Science and Science Education, Federal University of Technology, Minna.

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## **DEDICATION**

This project is dedicated to the Lord Jesus Christ and to my lovely daughter Miss Gladys David Gani including My Family.

## **ACKNOWLEDGEMENT**

This is practically difficult to acknowledge all those that assisted me during the period of my schooling but few people will be mentioned for the contribution. First and famous, the researcher sincere thanks and appreciation goes to God almighty for the protection and guidance of my life and making my effort crowned with success.

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My sincere prayer is that, the good lord will reward you all (Amen)

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## **ABSTRACT**

The study analyses the Impact of Student Industrial Work Experience Scheme (SIWES) on skills acquisition of electrical and electronics graduates in minna metropolis. To elicit the responses of the study, three research questions were asked. the population of the study was made up of 25 graduates from Bosso area and 25 graduates from chanchaga area in Minna metropolis 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 indicated that graduates are aware of the objectives and contribution of SIWES to skill acquisition. It also identified factors affecting graduates during SIWES, the implication of the study was discussed and recommendations made to improves the programmes objective for developing skills I electrical and electronics graduates in Minna metropolis.

## CHAPTER I

### INTRODUCTION

#### **Background of the study**

The meaning high incidence of unemployment and underemployment among Nigeria youths especially graduates from tertiary institutions, the radical change in workforce requirements and qualification in industries prompted the Federal Government to introduce SIWES in 1973. Indeed, SIWES an acronym for Students Industrial Working Experience Scheme was specifically designed to meet the changes in world or work, and to serve as a stimulating factor in making education both real and meaningful to the students. Furthermore, the scheme is meant to expose and prepare the students for industrial working situation that they are likely to meet after their graduation. They are exposed to methods and experience in handling equipment and machines that may not be available in the school (Industrial Trust Fund, 1965). It is a program which focuses on preparing young Nigerians for employment which ultimately may lead to rapid development of the country. Apparently, it is becoming a thing of the past when the “pen pushing job” or “white-collar job” was viewed with not only reverence but as the most rewarding type of on some African countries, that development in this continent can be attained by promoting a new relationship between education and work (Okorie, 2011).

Through SIWES scheme, a meaningful work experience is combined with formal education. Thus, enabling students to require knowledge, skills and appropriate attitude for work. The students work experience scheme is designed to bridge everwiding gap

between theory and practice (Agbai, 1993). Perhaps, one major reason for the introduction of SIWES according to Ezeani (1992) was as a result of inadequacy and obsolescence of existing infrastructural equipment for technical works/teaching science and technology in Nigeria institution of higher learning.

In Nigeria, Students' Industrial Training Program was not formally harmonized until 1973 when the Industrial Training Fund (ITF) was established. Furthermore, the scheme has been consistently endorsed since inception by participating student's employers, teachers, and coordinators especially as it aimed at correlating theoretical and other phases of classroom work with practical industrial work experience.

The Federal Government Decree no 47 of 8<sup>th</sup> Oct; 1971 as amended in 1990. Highlighted the capacity building of human resources in industry, commerce and government through training and retraining of workers in order to effectively provide the much needed high quality, goods and services in a dynamic economy as ours (Jemerigbo, 2003). This decree led to the establishment of Industrial Training Fund (ITF) in 1973/1974.

The Industrial Training Fund introduced Students' Industrial Work Experience Scheme (SIWES) in 1973. The central focus of the scheme is to enlist and strengthen employers' involvement in the entire educational process of preparing students for employment in commerce and industry after graduation (Agbo, 1993). Aina and Beecroft (1982) described SIWES as a program that uses the work environment to expose students to work methods and provide needed experience in handling equipment and machinery that may not be available to educational institutions. The program is compulsory for all

vocational-technical students to participate and earn a pass grade as condition for award of certificates. The program is planned, coordinated, supervised and evaluated by ITF, training institutions and industries so that each contributes to the students' education and their employability.

The growing concern, among our industrialists that graduates of our institutions of higher learning, lack of adequate practical background studies preparatory for employment in industries, led to the formation of students industrial work experience scheme (SIWES) by ITF in 1993/1994 (Information and guideline for SIWES, 2002). ITF has as one of its key functions;

1. To work as cooperative entity with industry and commerce where students in institutions of higher learning can undertake mid-career work experience attachment in industries which are compatible with students area of study. (Okorie 2002, in Asikadi 2003).

The students Industrial Work Experience Scheme (SIWES) is a skill training program designed to expose and prepare students of Agriculture, Engineering, Technology, Environmental, Science, Medical Sciences and pure and applied science for the industrial work situation which they likely to meet after graduation. Duration of SIWES is four months in polytechnic at the end of NDI, four months in college of Education at the end of NCE II and six month in the Universities at the end of 300 or 400 or 500 levels depending on the discipline (Information and Guideline for SIWES, 2002).

According to Information and Guideline for SIWES, (2002). The objectives of SIWES include:

- ❖ Provide an avenue for students in institutions of higher learning to acquire skills and experience in their approved course of study.
- ❖ Prepare students for the industrial works situation which they are likely to meet after graduation.
- ❖ Expose students to work methods and techniques in handling equipment and machinery not available in their institutions.
- ❖ Provide students with an opportunity to apply their knowledge in real work situation thereby bridging the gap between theory and practices.
- ❖ Enlist and strengthen employers' involvement in the entire educational process and prepare students for employment in industry and commerce.

Akerejola (2002) reported the growing concern among our industrialist that graduates of our institutions of higher lacked adequate practical background studies preparatory for employment in the industries. He noted that the employees were of the opinion that theoretical education going on in higher institutions was not responsive to the needs of the employers of labor. It is against this background that we begin to appreciate the relevance of student work experience scheme (SIWES) as a veritable tool for practical skill acquisition and subsequent development of vocational and Technical Education in Nigeria. Since the inception of the SIWES program, there is no doubt that the program has accomplished much in equipping the learner with knowledge and

practical skills and making learning more meaningful especially when external industrial environment is integrated with classroom work. However, with the increase in student enrolment in our school and colleges and the present economic climate, which may not likely permit the setting up of new industries and the maintenance of already existing industries and organization, it is important to determine the extent the laudable objectives of SIWES program is being accomplished in the present dispensation.

### **Statement of the problem**

A greater proportion of problems confronting technical education in Nigeria today is rooted in the failure to impart appropriate skills and attitudes readily for gainful and sustainable self-employment for graduates. Lack of physical resources such as infrastructural facilities, equipment and classroom materials are evident and affect the acquisition of practical skills (Ibe, 1997). The foreign materials are too costly to be imported. Consequently, the teachers are not ready to improvise at least those materials that can be improvised, due to lack incentives.

Ogunseye (1974) observed that training in technology-based subjects in our institutions is associated with poor, coordination, inadequate planning and very shallow course content. Prominent among the major problems facing Nigeria today is the level of half-baked graduates of electrical/electronics who continue to parade offices and industries for which they are not qualified for (Eric, 2005), (Dikko, 1980) rightly observed that employers even prefer workers with skilled training to those with theoretical training from polytechnics and other institutions of higher learning.



Nwgba (2002) observed that the serious problem that has hindered the success of technical Education is inadequate funding which has led to shortage of workshop equipment. This shortage of workshop equipments he explained have definitely affect the quality of practical skills acquisitions.

Akpale (2000) also admitted that lack of infrastructure facilities among other factor have been some of the factors affecting the growth and development of Technical Vocational Education and Training (TVET). Similarly, Hassan (2006) opined that because of the capital intenseive nature of Technical Education which is due to high demand for equipment specialized manpower and funding of student practical experience, it has been difficult to realize the objectives of technical education. Technical education as reported by FGN/UNICEF/UNESCO/UNDP (2000) suffer from dearth of equipment in practical skills workshops and laboratories with high rate of failure in technical education examinations.

Practical acquisition has been identified as an integral component of technical education. As important as this aspect is, nobody seems to have come out with an objective and scientific appraisal of practical skills acquisition. Therefore, there is need for this study. (ITF, 1990)

### **Purpose of the Study**

The purpose of the study was to access student Industrial Work Experience Scheme (SIWES) and the skill acquisition needs of Electrical/Electronic graduates in Niger state.

The study specifically assessed the:

1. The extent to which SIWES has contributed to occupational skills of Electrical/Electronic graduates
2. Way to which SIWES provide employability skills required in the work place.
3. Strategies to be adopted to enhance SIWES programme toward practical skill development of electrical/electronic graduates.

### **Significance of the study**

Upon the completion of this work, the study will be of benefit to the following: Siwes program and the academic performance of the electrical and electronics graduates.

Equip products of the nation technology institution with practical experience required for work in industries and their sectors of the economy. However this study would provide measure for technology specifically in institutions and in the country at large by providing adequate machineries and equipment in line with industries demand.

The partnership between education and industries are formed through SIWES the school system education and industries common needs, problem, issues, strength and weakness of vocational and technical program with industry. Also the study would enable the tertiary institutions and industries that should run as an integrated part of the training program where tools machineries and materials being used in such institutions workshops or laboratories would be the same thereby ensuring a close connection between institutions and productive work. It will bring practical components in technology education to the standard of equipping graduates or developing the potentials in graduate fully to make them self-reliant. This study will also improve youth employment, aiding social economic survival of the nation, after the completion of industrial attachment.



### **Scope of the study**

This study is delimited to:- the extent to which SIWES has contributed to occupational skills of electrical and electronics graduates, ways to which SIWES provide employability skills required in the work place and strategies to be adopted to enhance SIWES programme toward practical skills development of electrical/ electronics graduates.

### **Assumption of the study**

The response from respondents would provide valid information for realistic decision on contribution of SIWES program to electrical and electronic technologies graduates.

### **Research questions**

The following research questions were developed to guide the conduct of the study.

- i. To what extent has SIWES contributed to occupational skill acquisition in Electrical/Electronic graduates?
- ii. In which way does SIWES provide graduates with employability skills required in the workplace?
- iii. What are the strategies to be adopted to enhance SIWES program towards skill development of electrical/electronic graduates.

## **Research hypotheses**

In order to answer the research questions stated above, the following hypothesis was tested at 0.05 level of significance.

H<sub>01</sub>: There will be no significance difference in the mean responses of graduates with respect to their opinion on the extent to which SIWES program contributed to occupational skills acquisition in Electrical/Electronics.

H<sub>02</sub>: There will be no significant differences between the mean responses in the opinion on the strategies to be adopted to enhance SIWES program towards skill development of electrical/electronic graduates.

## **CHAPTER II**

### **Review of related literature**

This chapter presents the review of related literature under the following sub-headings:-

1. Historical development of Technology Education in Nigeria.
2. Students Industrial Work Experience Scheme (SIWES) in Nigeria.
3. The role of Industrial Training Fund (ITF) in Nigeria.
4. Roles of Bodies involve in SIWES
5. Achievement of SIWES
6. Emerging problems in SIWES
7. Strategies for improving SIWES program in Nigeria.

### **Historical development of technology education in Nigeria**

Technology education in one form or another already existed before the introduction of western education to Nigeria the various skill taught as part of the education of the Nigerian were blacksmithing, carving leather work, glass and bead working etc. However these were not institutionalized as is the case today. Some of the mission schools in the last century introduced farming, bricklaying, carpentry as part of the curriculum but these skills were not seriously regarded by pupils and parents as an integral part of western education and the practice virtually died out before the turn of the present century except for the Blaize Memorial Industrial School in Abeokuta.

A successful means of providing work experience in electronics engineering and providing great opportunity of employment in industries after graduation is through student Industrial experience Scheme (SIWES). Electrical and Electronics technology came into existence many centuries ago with the development of the first formal apprenticeship system. They began to understand that electrical and electronics technology graduates have the skills required by the industries after graduating (Bamawo 1997). However it's imperative to examine the problem affecting Industrial Training (IT) of electrical electronics technology in higher institution with a means to identifying possible strategies for improving the practical skills through IT after graduating from the institution.

One of the important recommendations of the Federal Republic of Nigeria (FRN, 2004) was the necessity to set up agencies outside academic institutions for purpose of exposing Nigeria Students to relevant additional skills and training especially post-secondary level. The industrial training fund (ITF) introduced SIWES in 1973. The central focus of the scheme was to enlist and strengthen employers' involvement in the entire educational process of preparing students for employment in commerce and industry after graduation especially in electrical and electronic technology (Agbo, 1993). Aina and Beecroft (1982) described SIWES as a program that uses the work environment to expose students to work methods and provide needed experience in handling equipment and machineries that may not be available in educational institutions. The program is compulsory for all vocational technical students to participate and earn a pass grade as conditions for award of certificate.

The program is planned, coordinated supervised by ITF, Training institution each contributes to the student's education and their employability.

Founded by some Nigerians and West Indians in 1984 and the hope Waddle institute in calabar established by the CMS (catholic Mission School) in 1895 (Nwagu 1972).

The establishment of courses in the various government departments for example, Nigerian Railway, Marina, Public work department etc. between 1908 and 1935 marked the beginning of organized technology education in Nigeria. These were followed by thee engineering course at the Yabba, higher college in 1932. Despite this only a selected few could benefit from this type of arrangement. Moreover, the courses were of post-secondary school nature. Consequently there was no formally technical education at the post-primary or secondary school level (Taiwo 1995).

The first recommendation for the introduction of technology education was made in 1945 when the commission of higher technical education in West Africa proposed that the premises of the defunct Yabba higher College should be converted into a technical institute. They visualized a future need for further technical institutions in Nigeria as for example Enugu and Kaduna. Kaduna polytechnic can provide not only the building but also much of the necessary equipment of teaching and learning for the development of technical manpower in the region in particular and the country as a whole. It would provide for much of the instruction at present being given in several government departments and would benefit the student by enabling them to have the activities of larger and more varied groups. The commission also recommended a territorial college



for Nigeria with view to meeting the need of government and commercial firm at the post-secondary level (Fafunwa 1972).

The 1948 ten year plan for development and welfare incorporated the commission recommendation for the plan proposed handcraft center for training in manual arts trade center for training of skills craft men and technical institute for the training of technicians. A grant of #400,000 was provided by the government under the colonial development and welfare scheme toward the promotion of the programmed for the first five years (Okoro 1973).

Therefore regional government started in earnest to implement the scheme particularly in the North where fourteen craft schools were built between 1956 and 1960 (West built four, east nine and Lagos two) (Oranu and Okoro 1993). This initial enthusiasm on the part of various governments on technical education, made vocational and technical education prominent in Nigeria since 1970s to date.

### **Students industrial work experience scheme (SIWES) in Nigeria**

In Nigeria, student industrial Training Program was not formally harmonized until 1973 when the industrial Training Fund (ITF) established what is now known as students Industrial Work Experience Scheme (SIWES). The Industrial Training Fund which also established two years earlier through Decree no 47 in October 1971 has the aim of promoting and encouraging the acquisition of skills in Industry and commerce with a view of generating a pool of indigenous trained manpower sufficient to meet the needs of the economy (Okoro 1999).

The ITF solely funded the scheme during its formative years, but as the financial involvement become unbearable to the Fund it withdrew from the scheme in 1978. The federal government landed over the scheme in 1979 to both the National University Commission (NUC) and the National Board for Technical Education (NBTE). Five years later, precisely in November 1984 the Federal Government reverted the management and implementation of SIWES Program to ITF and it was effectively taken over in July 1985 with the funding being solely borne by the Federal Government through Federal Ministry of Industries (SIWES Information and guidelines 2002).

It should be noted that prior to the inception of SIWES in 1973, there was glaring evidence that the inadequacy of practical exposure of students in tertiary institution posed a serious challenge to both the quality and standard of engineering and technology education in this country. The industries established especially, found the engineering graduates lacking in practical skills to undertake industrial work, the Nigerian Students were then seriously criticized for their inadequate practical exposures. (Abdurrahman 1995).

The introduction of SIWES was therefore a laudable attempt by the government to meet up with the challenges mentioned above although the scheme was also greeted with initial skepticism that is characteristic of Nigerians towards most government scheme. However, within thirty years of existence, the scheme has received wide and varied write-ups, analysis, discussions and amendments on its viability, models of operations and financing. Furthermore, the scheme has been consistently endorsed since inception by participating students, employers, teachers, and coordinators especially as it aimed at

correlating theoretical and other phases of classroom work with practical industrial work experience (Okorie 2001).

### **Objectives of SIWES**

Following the introduction of SIWES in 1973, the following objectives were outlined for the scheme:

- (a) To expose students to work methods and techniques in handling equipment and machinery that may not be available in their institutions.
- (b) To prepare students for the working situation they are to meet after graduation.
- (c) To provide avenue for students in Institutions of higher learning to acquire industrial skills and experience in their course of study ; especially in engineering and applied fields.
- (d) To enlists and strengthen employers' involvement in the entire educational process of preparing students for employment in industries.
- (e) To make transition from school to world of work easier and enhance students contact for later job placement. (ITF 2002). Evidently, the objectives of both vocational education and SIWES complement each other I terms of enhancing communal productive labor and the preparation of young people to contribute to the making of a dynamic and progressively developed socio-economic environment. The emphasis is thus on educating a given community toward cooperative endeavor, equality, and the responsibility to serve the community

through special occupational ability in Agriculture, Engineering, Trades, Hospitality, Textile and printing trades business etc..

A synthesis of the objectives further intends that the gains of the students of vocational education through SIWES should include personal benefits, opportunity to inspire changes in human society, and to positively influence the wider national economic development environment. Under the internship of SIWES, and the practice of self-reliance.

### **Operational policies of SIWES**

The operation of SIWES in is multi-faceted involving the ITF as the sole coordinator, the Federal Government as the major Financier, collaborating agencies like National Universities Commission for colleges of Education as regulating bodies, the establishments of the job training centers and the institutions as the providers of the trainees each of the bodies is assigned definite role in so much as it affects the smooth operation and effective management of the scheme. (SIWES Information and guidelines, 2002).

#### **(A) Federal Government:-**

- i. To provide adequate funds to the industrial training fund through the Federal Ministry of Industries for the running of the scheme;
- ii. To make mandatory on all ministries, companies and Parastatals to offer places for the attachment of students in line with provision of Decree No 47 of 1971;

#### **(B) The Industrial Training Fund (ITF):-**

- i. To formulate policies and guidelines on SIWES distribution to all participating bodies
- ii. To continuously review and carry out research into the operation of SIWES;
- iii. To provide information on companies for attachment and assist industrial placement of students.
- iv. To supervise and disburse allowances to students on Industrial attachment.

**(C) Collaborating Agencies NUC, NBTE and NCCE:-**

- i. Ensure the establishment of SIWES units in institutions under their jurisdiction;
- ii. Meet regularly with the ITF to deliberate on SIWES matters including approval of courses for the scheme;
- iii. Ensure that institutions under their supervisions comply with SIWES operation guidelines;
- iv. Ensure adequate funding of the SIWES unit in all institutions under directives.

**(D) The Employer:-**

- i. To accept students for Industrial attachment;
- ii. To participate in the assessment of students performance;
- iii. To appoint an industrial supervisor to supervise students on attachment.

**Roles of Industrial Training Fund (ITF) in Nigeria**

The Industrial Training Fund (ITF) decree according to Agbo (1997) spell out by the ITF in the projected Development plans which would result in raising the proportion of the Nations economically active population in order to produce a greater ratio of

effective labor force participation efficiency in overall national economy. To be able to manpower the governing council of the ITF, it was empowered by the decree.

- To provide facilities for training of persons employed in industry or commerce.
- To improve course and facilities provided by other persons.
- To consistently and regularly consider operational area of industry commerce that acquires special manpower development action and to ensure that such standards are met.
- To assist persons in finding facilities for training for employment in industry and commerce.
- To conduct or assist other persons to conduct research into any matter relating to training in industry.

In addition to these Banawo (1997) in his study stated that the function of ITF also include

- Giving financial assistance to trade centers and vocational schools as well as institutes of higher learning such as Universities for practical education programs.
- Operating a cooperative system with Industries and commerce so as to enable students in institutions of higher learning to acquire industrial workshop experience during their course of study while in school.
- Training and re-training employers.

Agbonna (2001) sees the function of the ITF as intended to increase the rate of effective of labor for its productivity and participation in the national economy to transfer

management and auxiliary functions to Nigerians and adopt the policy of self-reliance so that Nigerians would be trained and re-trained to cope with skillful responsibilities.

Other activities and services of the ITF according to Agbo (1993) are

- Company visitation and identification of training needs of firms
- In-plant training schemes for small and medium sized companies.
- Fund direct training course, seminars and workshop.
- Production and distribution of training aids.
- Research and consultancy services.
- Establishment of ITF Vocational Training Center (VTC)

The corporate policy of industrial training fund (ITF) is that every eligible student should have the means to attain acceptable level of competence in his vocation or skill through the program implemented in the bid to attain the objective for which it was set up. Notable achievements and benefits have been recorded through the implementation of SIWES program since its inception.

### **Roles of Federal Government of Nigeria**

- (a) To provide adequate funds to the Industrial training fund through the Federal Ministry of Industries.
- (b) Make it mandatory to all ministries, companies and parastatals to offer places for the attachment of students in accordance with provision of decree No 47 of 1971 as amended in 1990. The relevant provisions of the decree are to accept students for industrial attachment purpose. Section 7A (1) (5) stipulated, they shall accept



students for industrial attachment purpose. Section 7A (2) stipulated penalties in default of section 7A (1) (b).

### **Students' Industrial Attachment**

Mbonu (2000) listed the roles of the students during industrial attachment as follows.

- (a) Before the commencement of the industrial attachment students must collect the following SIWES document. SPE 1 (student payment through employers), ITF form eight and log book form their institution.
- (b) On resumption at the employers of labor the student must give the employer the SPE1 form and must be sent to the nearest ITF office
- (c) Be regular and punctual at their respective places of industrial attachment.
- (d) Comply with employers' rules and regulations.
- (e) Keep proper records of training activities and other assignments in their log books.
- (f) Arrange for their own accommodation during the period of attachment
- (g) During industrial attachment, students must get log book verified endorsed and stamped by the nearest ITF office.
- (h) Submit log book to the ITF through their institution at the program and ITF form8 duly completed by the student employer and the institutions.

### **The role of institution on SIWES**

The roles of the institution on SIWES are as follows.

- (a) Establish functional SIWES coordinating unit adequately staffed and equipped within the institution.
- (b) Appoint fulltime industrial coordinators to operate the scheme at institution level.
- (c) Prepare and submit masters and placement list to the respective coordinating agencies and ITF.
- (d) Place students on industrial attachment with employers of labor
- (e) Organize orientation for students to prepare them for industrial training and to acquaint thee students with SIWES and its objectives
- (f) Prepare and handover to all students going on industrial attachment the necessary SIWES log book and institution introductory letters.
- (g) Visit and supervise students on industrial attachment and sign their log book and assess their experience on site and render possible advisory assistance, also evaluate the student performance according to required criteria.
- (h) Ensure the payment of all students who successfully completed their period of attachment etc..

### **Achievement of student industrial experience scheme**

Student industrial experience scheme (SIWES) was introduced in 1973 being founded by ITF and was put in place to ensure that students of vocational and technical education including universities, polytechnics, and colleges of education technically acquire industrial training before graduation. The work experience is an opportunity for the students to utilize some of their academic knowledge and skills in real life industries job environment (Okoro 1993).

Many vocational educators within the Nigerian educational system have testified to the fact that there were no educational programs so far implemented in the country that evoked high enthusiasm and excitement among vocational students as SIWES. This is simply so because of the invaluable roles SIWES plays in the life of the students. According to Umoh (1998) identified some benefits derived from the SIWES program. Some of the areas where the impact of SIWES has contributed to skills development in Nigeria are:

- (a)** Heads of institutions of higher learning in the country have now realized the usefulness and invaluable contribution of SIWES in the training of students as a means of improving the quality of skilled manpower in Nigeria. Standard which is limited resources in the institution cannot provide. In view of the above, more and more institutions are involved in the program, leading to a yearly increase in the number of institutions and student participation in SIWES. This has also led to the establishment of SIWES units in some institutes, resulting in the appointment of SIWES coordinators in such institutions.
- (b)** Implementation of the SIWES program has helped to reduce the need for the employment of foreign expatriates in the fields of Engineering, technology, and other professions.
- (c)** Through SIWES, the cost of acquiring the necessary practical skills relevant to our economic and technological needs is reduced to a minimum level compared with what is used to cost before to send Nigerians abroad to acquire such skills or to maintain foreign expatriates in the country. Apart from the cost, the local training provided the right approaches to solving our manpower problems through appropriate techniques.

(d) SIWES as at the time of inception was limited to student of engineering and technology only. Today scheme covers many disciplines because of its relevance to technological and economic development.

### **Emerging problems on SIWES**

Although the scheme was and is still a laudable program however, some problems are gradually unfolding in the smooth operation of the scheme. In support of this unpleasant observation, Ahmed (1992) opined, “despite the points raised in favor of SIWES, its execution has met problems that threaten its viability and effectiveness in realizing its objectives” Indeed, in the following areas:-

#### **A. Supervision:**

The students are expected to be supervised by lecturers from their institutions and also by officials from the ITF Office. At least each student is to have a minimum of two visits (that is, the first visit at the beginning and the second visit at the end of the program) although three visits is much more ideal, alas, some lectures and indeed officials of ITF hardly visits the students. Even those that make the visit don't meet the minimum requirement of two visitations. This has made the truant students and establishments to see the SIWE period as mere “rituals”. Consequently, this leads to forgery on the part of the students as they desert their posting stations, forge entries into their logbooks and write or possibly endorse confidential reports and even scores meant for industry based supervisor.

#### **B. Duration of SIWES:**

The period of SIWES usually runs into the period earmarked for student to participate in teaching practice. This is most peculiar for students of Nigerian college of education. Therefore, instead of spending four-six months for the program, the students are left in a dilemma of attending two most important schemes almost at the same time.

At the University and Polytechnic level, the period of six and four months respectively is also too short. The students hardly have enough time to acquire experiences covering the vast course content. The establishments also don't benefit from the students, as time is not just available for the students to practice what has been taught by making an input in the establishment.

#### **C. Feedback/ follow-up Services:-**

After the period of attachment, schools hardly organize any forum to have feedback from the student on their experiences and skills acquired during attachment. The schools rely mostly on LOGBOOK entries, which as pointed out earlier, can be foiled with all forms of forgeries by the students.

#### **D. Lack of Modern Facilities/ Machineries in Training Stations:-**

Another problem that is seriously threatening the realization of the objectives of SIWES is lack of modern facilities/machineries in establishments where students are sent to train. Thus they are denied the opportunity to acquire the desired skills and experience in their field of endeavor. This problem is further compounded by the fact that as the population of students embarking on SIWES increases yearly the number of establishments providing placement for the students is not growing

peripasu. Hence, while the harsh economic climate has been forcing some of the industries to fold up, the surviving ones continue to manage obsolete machineries.

### **Strategies for improving SIWES program in Nigeria**

It is generally believed that the acquisition of the requisite skill is means necessary for increasing the productive power of a nation. Therefore, the Nigeria society should recognize the fact that every citizen should be equipped to contribute effectively the highest possible development is achieved only when each individual produce to the limit of his/her capacity. This discrepancy becomes appealingly clear when one considers that over 70% of the gainfully employed people are engaged in works that require manual skill and technical force must be able to initiate independent production or to perform skill worth of a diversified nature (Eblen, 1964)

Perhaps it is for these reasons that many Nigerians are seen particularly in our cities and town engaged in different trades and services. They are bulk of these people constitute what may be called the informal sector. They are engaged in carpentry and joinery, vehicle body building, fabrication and welding, mechanical engineering craft practice, motor vehicle mechanic work et.c. (Walker and Veblen, 1957). This group of people is composed mostly of schools dropout from primary and secondary institutions. As they have no genuine certificate with which to secure meaningful jobs they strive to increase their proficiency in their trades and services. Apart from the dropout there are those with native ability and skills which enable them establish on their own. These sets of people are generally found in the villages. On the other hand some of these people are

so few in proficiency that they may actually be operating a loss. But the only reason why these people continue with what they have is lack of alternative jobs. Sincerely require training in order to operate efficiently. This is because modern technology requires a higher degree of ability and operating skill. Electronic technician for example are required to possess some degree of technical knowledge in addition to manual skill. Their work demands an acquaintance with theory of electronic as well as with the construction of various models. Hence they require training to assist them to acquire skills which make them productively or able to work as operators in factories and construction firms.

The ultimate aim of vocational and technical education program is the acquisition of skills. A skill is an activity involving knowledge judgment, accuracy and usually manual dexterity all of which are acquired as a result of long training and practice.

Okobiah and Nwasogu (197) stated that the ability to perform expertly and will arise from the repetitive process in which the skill is to demonstrate the habit of acting, thinking, or behaving in or specific activities which has become automatic. Constant practice of an act makes for perfection on the act. One of the aims of technical education according to FRN (1981) is to give training and impart the necessary skills leading to the production of craftsmen's technician and other skilled personnel who will be enterprising and self-reliant. There are three major categories of skills according to Okorie and Ezeji (1988) that a vocational technical education program should provide for its products. The skills are:-

- Technical skills which involves understanding and proficiency in a specific activity or operation or techniques.
- Human skills involving the ability to relate effectively in a group situation.
- Concept skills involving the capability of the management personnel to perceive the organization as an integral unit.

Technical skills are one of the vocational skills necessary for an individual to succeed in his job. Okobiah and Nwaogu (1997) stated that vocational skills can be classified to be technical and non-technical skills. The further stressed that these skills should be taught to individuals so as to ensure that workers training or in the labor forces possess them.

Before the meaningful and effective program can be attained, different factors have to come into play to yield positive result.

Nwze (1986) report that one of such is the kind of supervision and skill needed in industrial training. The industrial relationship between the supervisors and those who work under him is often the major factor in developing a procedure and satisfactory work climate. There should be well designed program of instruction on the job during the attachment. He further maintained that industries should have qualified instructors and should handle limited numbers of precisely not more than ten (10) students at a time. In view of this the instructor can immensely influence success of the program.

A well run organization especially SIWES program is characterized by constructive and pleasant personal relationship and day to day accomplishment intelligent and strong leadership. Choosing a supervisor should be on technical competence in the



occupation ethics and habits to emulate ability and willingness to allot sufficient time and effort for training ability to adopt competence in human relation and willingness to work with school coordinator. Some instructors think that showing the student how to operate a machine for once is enough. The assumption underlines the principle of habit formation which needs constant practice. This has been one of the most outstanding factors that had hindered realistic student acquisition of skills confidence and correct attitude in their chosen occupation.

Generally the program has always faced some problems as always expressed by students of industrial attachment in their log book during the end of their program report. On this note Dikko (1986) maintained that the greatest simple constraints to the Student Industrial Work Experience Scheme is the shortage of suitable work experience facility within the industrial set up it has been observed that in most cases the employer of labor display the unwillingness attitude towards acceptance of student for the program, which to loss precious weeks within the designated period for attachment on the side of the student. The Adani rice project which serves as place of attachment for most, has a lot of machines but almost all of them are broken down and out of use, so there is virtually little or inadequate training facilities for training students on attachment. This makes the experience more theoretical that practical.

The program has not been successful in preparing the students for entry into job and advancement on the jobs. Moreover, the employers prefer employing experienced low income workers as a means of maximizing their profit. Only a few privileged students benefit from the work experience program in Nigeria. Therefore, there is the

need to determine the effect of this program on the career aspiration and self-esteem of students.

## **CHAPTER THREE**

### **METHODOLOGY**

This chapter discusses the methodology to be adopted in this study under the following sub-headings: research Design, Area of Study, Population of the study, Sampling and sampling Techniques, Instrument for Data Collection, Validation of Instrument, Administration of Instruments, Method of Data Collection, and Method of Data Analysis.

#### **Design of the study**

The study adopted the descriptive survey research design. A survey research is a type of research used for gathering data about a large number of people or objects by studying a representative sample of the group (Yalams and Ndomi, 2000). Therefore, Questionnaires were used to determine the opinions and perception of the respondent on the item presented to them in the questionnaire.

#### **Area of the study**

The study was carried out in Minna Metropolis. Bosso and Chanchaga local Government area were used for the study. These Local Government were used because the houses Para-stables and Agencies which accept and engage student on SIWES

#### **Population of the study**

The population of the study comprises of 25 graduates from Chanchaga Local Government Area and 25 graduates from Bosso Local Government in Minna metropolis. The entire population was used for the study, hence no sampling procedure was adopted.

## **Instrumentation for Data Collection**

The instrument used in this study was a structured questionnaire developed to gather information from respondents. The instrument consist of three (3) parts 1, 2, and 3. Part 1 contained personal data, part 2 is an instruction on how to respond to the questionnaire and part 3 contained the research questions and its item under each questions. The questionnaire item for all the research question is totaling Sixty-Two (62). All items are to be responded to using the four point rating scale as stated below;

Very High Extent (VHE)	=	4	Strongly Agree (SA)	=	4
High Extent (ME)	=	3	Agreed (A)	=	3
Low Extent (LE)	=	2	Disagreed (D)	=	2
Very Low Extent (VLE)	=	1	Strongly Disagreed (SD)	=	1

## **Validation of instrument**

The instrument was validated by three lecturers in the department of Industrial and Technology Education, Federal University of Technology, Minna and contributions on the appropriateness of the instrument were considered before producing a final copy of the research instrument.

## **Administration of instrument**

The questionnaire was personally administered by the researcher himself.

## **Method of data analysis**

Data collected for this study was analyzed by using mean, standard deviation for research question while t-test was used to test the hypothesis at 0.05 level of significant.

**Decision rule**

Acceptance level for any item is 2.50. Therefore, any item with mean value up to 2.50 and above will be considered agreed and any item that is below will be considered disagreed.

## **CHAPTER IV**

### **PRESENTATION AND DATA ANALYSIS**

This chapter deals with the presentation and analysis of data with respect to the research questions formulated for this study, the result of this data analysis for the research questions are presented as follows.

#### **Research Question I**

To what extent has SIWES contributed to occupational skill acquisition in Electrical/Electronic graduates?

**Table I:**

**Mean responses of graduates of Bosso and Chanahaga on the extent to which SIWES has contributed to occupational skill acquisition of Electrical/Electronic graduates**

N<sub>1</sub>=25,

N<sub>2</sub>=25

S/N	ITEMS	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_t$	Remarks
1	Interpret circuit schematic	2.40	2.12	1.00	L Extent
2	Test system components using appropriate device	2.12	2.04	2.08	L Extent
3	Troubleshoot and repair A.C. circuits	2.16	2.12	2.14	L Extent
4	Troubleshoot multistage amplifiers	2.04	2.04	2.04	L Extent
5	Interpret instrument reading	2.96	3.08	3.02	H Extent
6	Troubleshoot regulated and switching power supply circuit	3.08	3.04	3.06	H Extent
7	Construct combinational logic circuits	1.76	1.72	1.74	L Extent
8	Troubleshoot digital to analogue and analogue to digital.	2.40	2.24	2.32	L Extent
9	Identify faulty microprocessor	3.40	3.32	3.36	H Extent
10	Inspect components of equipment for accuracy of assembly, installation and for detects such as loose connection and frayed wire.	3.44	3.36	3.40	H Extent
11	Interpret colour code and other component descriptors	3.36	3.56	3.46	H Extent
12	Measure power in D.C. circuit	2.20	2.20	2.20	L Extent
13	Recognize physical and electrical characteristics of capacitors and inductors	2.60	3.00	2.80	H Extent
14	Troubleshoot fiber optic circuits	3.00	2.96	2.98	H Extent
15	Repair/reinstall operating system	3.04	3.08	3.06	H Extent
16	Ability to wire a bungalow	3.40	3.40	3.40	H Extent
17	Differentiate between conduit and surface wiring	3.40	3.48	3.44	H Extent



18	Ability to identify burnt cable and make replacement	3.52	3.64	3.58	H Extent
19	Identify a hot spot in a conductor	2.60	3.08	2.84	H Extent

**Key** N1 = Numbers of Chanchaga graduate,

N2= Numbers of Bosso graduate

X = Mean of Chanchaga graduate,

X2 = Mean of Bosso graduate

Xt = Average mean of Chanchaga and Bosso graduates

The data presented in Table one revealed that the respondents high extent with all the items with mean score ranging between 2.80-3.58 and low extent with the items on 1, 2, 3, 4, 7, 8, and 12 with mean score of 1.00-2.32.

## Research Question II.

In which way does SIWES provide graduates with employability skills required in the workplace?

**Table II:**

**Mean( $\bar{X}$ ) responses of graduates of Bosso and Chanahaga LGA's on ways SIWES provides employability skills required in the workplace**

S/N	ITEMS	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_t$	Remarks
20	Conveying information one-to-one	3.40	3.44	3.42	Agree
21	Communicating verbally to groups and peers	3.80	3.72	3.76	Agree
22	Ability to write report	2.80	2.48	2.64	Agree
23	Using proper grammar, spelling and punctuation	2.40	2.32	2.36	Disagree
24	Establishing good rapport with subordinate	3.40	3.20	3.30	Agree
25	Working well with fellow employees	3.80	3.64	3.72	Agree
26	Resolving conflict	3.44	3.60	3.52	Agree
27	Identifying problems	3.36	3.16	3.26	Agree
28	Analyzing problems	2.60	2.72	2.66	Agree
29	Identifying essential components of problems	2.88	2.72	2.80	Agree
30	Sorting out the relevant data to solve problem	2.84	2.60	2.72	Agree
31	Take decision in a short period of time	2.20	2.40	2.30	Disagree
32	Identifying political implications of the decisions arrived at	1.52	1.92	1.72	Disagree
33	Assigning/delegating responsibilities	3.04	2.60	2.82	Agree
34	Monitoring progress against plan	2.12	2.08	2.10	Disagree
35	Allocating time efficiently	2.88	2.36	2.62	Agree
36	Managing/overseeing several tasks at once	2.16	2.08	2.12	Disagree
37	Meeting deadlines	2.76	2.84	2.80	Agree
38	Listening attentively	3.20	3.48	3.34	Agree
39	Taking reasonable job related risks	3.00	3.00	3.00	Agree
40	Self esteem	3.52	3.56	3.54	Agree
41	Responsibility	3.42	3.68	3.55	Agree
42	Sociability	3.40	3.20	3.30	Agree
43	Self – management	3.28	3.16	3.22	Agree
44	Integrity/ honesty	3.04	3.20	3.12	Agree

45	Consciousness	2.88	2.60	2.74	Agree
46	Ability to work without supervision	3.40	3.60	3.50	Agree

The data presented in Table two revealed that the respondents agree with all the items with mean score ranging between 2.80-3.76 and disagree with the items on 23, 31, 32, 34, and 36 with mean score of 1.72-2.36.

### **Research Question III**

What are the strategies to be adopted to enhance SIWES program towards skill development of electrical/electronic graduates.

**Table III:**

**Mean( $\bar{X}$ ) responses of graduates of Bosso and Chanahaga on the strategies to be adopted to enhance SIWES program towards skill development of electrical/electronic graduates.**

S/N	ITEMS	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_t$	Remarks
47	Design and utilization of update effective training manual or curricula to be used by the industries for Siwes training.	3.60	3.20	3.40	Agree
48	On the job and summative assessment should be provided for all students	3.60	3.60	3.60	Agree
49	Motivation of industrial instructors/supervisors through incentives allowances	3.80	3.40	3.60	Agree
50	Institution of an award for best Siwes students.	3.80	3.80	3.80	Agree
51	Duration of Siwes should be extend	3.40	3.60	3.50	Agree
52	Proper sensitizing of parents and students on importance of Siwes.	3.00	2.96	2.98	Agree
53	Subjecting students to examination at the end of the training	2.40	2.40	2.40	Disagree
54	Proper monitoring of graduate during the programme	3.60	3.40	3.50	Agree
55	Preventing students that fail to participate on Siwes from moving to the next level	2.60	3.08	2.84	Agree
56	Incorporate Siwes assessment for result computation for all students	2.40	2.16	2.28	Disagree
57	School should organize placement for students	3.20	3.40	3.30	Agree
58	Employment of competent staff to supervise the programme	3.80	3.60	3.70	Agree
59	Cordial relationship between schools and industries	3.68	3.12	3.40	Agree
60	Proper monitoring of students, work log book	3.32	3.64	3.48	Agree
61	Monthly allowance be paid to students by employers	3.80	3.88	3.84	Agree
62	Institution securing places of attachment for students	3.48	3.56	3.52	Agree

The data presented in Table two revealed that the respondents agree with all the items with mean score ranging between 2.84-3.80 and disagree with the items on 53 and 56 with mean score of 2.28-2.40.

## **Hypothesis I**

There are no significant differences in the mean rating of Chanchaga and Bosso graduates regarding the extent to which SIWES program contributed to occupational skills acquisition in Electrical/Electronics.

**Table IV:**

**t- test analysis of Chanchaga and Bosso graduates regarding the extent to which SIWES program contributed to occupational skills acquisition in Electrical/Electronics.**

N1 = 25

N2 = 25

S/N	ITEMS	$\bar{X}_1$	SD <sub>1</sub>	$\bar{X}_2$	SD <sub>2</sub>	T-cal	Remarks
1	Interpret circuit schematic	2.40	1.02	2.12	0.82	1.07	NS
2	Test system components using appropriate device	2.12	0.86	2.04	0.87	0.33	NS
3	Troubleshoot and repair A.C. circuits	2.16	1.12	2.12	0.86	0.14	NS
4	Troubleshoot multistage amplifiers	2.04	0.96	2.04	1.04	0.00	NS
5	Interpret instrument reading	2.96	0.60	3.08	0.63	-0.69	NS
6	Troubleshoot regulated and switching power supply circuit	3.08	0.93	3.04	0.66	0.18	NS
7	Construct combinational logic circuits	1.76	0.76	1.72	0.83	0.18	NS
8	Troubleshoot digital to analogue and analogue to digital.	2.40	1.02	2.24	1.07	0.54	NS
9	Identify faulty microprocessor	3.40	0.80	3.32	0.79	0.36	NS
10	Inspect components of equipment for accuracy of assembly, installation and for detects such as loose connection and frayed wire.	3.44	0.57	3.36	0.89	0.38	NS
11	Interpret colour code and other component descriptors	3.36	0.69	3.56	0.70	-1.02	NS
12	Measure power in D.C. circuit	2.20	1.17	2.20	0.85	0.00	NS
13	Recognize physical and electrical characteristics of capacitors and inductors	2.60	0.98	3.00	1.02	-1.41	NS
14	Troubleshoot fiber optic circuits	3.00	1.13	2.96	1.00	0.13	NS
15	Repair/reinstall operating system	3.04	0.96	3.08	1.06	-0.14	NS
16	Ability to wire a bungalow	3.40	0.80	3.40	0.63	0.00	NS
17	Differentiate between conduit and surface wiring	3.40	0.80	3.48	0.81	-0.35	NS
18	Ability to identify burnt cable and make replacement	3.52	0.57	3.64	0.62	-0.71	NS
19	Identify a hot spot in a conductor	2.60	1.02	3.08	0.93	-1.74	NS

**Keys**            N1 = Numbers of Chanchaga graduate.  
                      N2 = Numbers of Bosso graduate.  
                      S.D1= standard deviation of Chanchaga graduate,  
                      S.D2 = standard deviation of Bosso graduate.  
                      t= t-test value of Chanchaga and Bosso graduate.  
                      S= Significant.  
                      NS= Not significant.

The analysis in table 5: showed that the t-cal values of all the nineteen (19) items were below the t-cal value which is  $\pm 1.96$ . Therefore, the null hypothesis was accepted for each of the 19 items. This implies that there is no significant difference for the items accepted in the mean ratings of Chanchaga and Bosso graduate concerning the extent to which SIWES program contributed to occupational skills acquisition in Electrical/Electronics.



## **Hypothesis II**

There is no significant differences between the mean ratings of Chanchaga and Bosso graduates regarding the strategies to be adopted to enhance SIWES program towards skill development of electrical/electronic graduates.

**Table V:****T-test analysis of Chanchaga and Bosso Graduates regarding the strategies to be adopted to enhance SIWES program towards skill development of electrical/electronic graduates**

N1 = 25

N2 = 25

S/N	ITEMS	$\bar{X}_1$	SD <sub>1</sub>	$\bar{X}_2$	SD <sub>2</sub>	T-cal	Remarks
47	Design and utilization of update effective training manual or curricula to be used by the industries for Siwes training.	3.60	0.49	3.20	0.75	2.23	S
48	On the job and summative assessment should be provided for all students	3.60	0.49	3.60	0.49	0.00	NS
49	Motivation of industrial instructors/supervisors through incentives allowances	3.80	0.40	3.40	0.80	2.24	S
50	Institution of an award for best Siwes students.	3.80	0.40	3.80	0.40	0.00	NS
51	Duration of Siwes should be extend	3.40	0.49	3.60	0.49	-1.44	NS
52	Proper sensitizing of parents and students on importance of Siwes.	3.00	0.63	2.96	1.04	0.16	NS
53	Subjecting students to examination at the end of the training	2.40	1.02	2.40	1.02	0.00	NS
54	Proper monitoring of graduate during the programme	3.60	0.49	3.40	0.49	1.44	NS
55	Preventing students that fail to participate on Siwes from moving to the next level	2.60	1.02	3.08	0.98	-1.70	NS
56	Incorporate Siwes assessment for result computation for all students	2.40	1.02	2.16	0.88	0.89	NS
57	School should organize placement for students	3.20	0.75	3.40	0.75	-0.94	NS
58	Employment of competent staff to supervise the programme	3.80	0.40	3.60	0.49	1.58	NS
59	Cordial relationship between schools and industries	3.68	0.73	3.12	0.91	2.40	S
60	Proper monitoring of students, work log book	3.32	0.97	3.64	0.62	-1.39	NS
61	Monthly allowance be paid to students by employers	3.80	0.40	3.88	0.32	-0.78	NS
62	Institution securing places of attachment for students	3.48	0.62	3.56	0.70	-0.43	NS

The analysis in this table 6: showed that the t-cal values of all the 16 items were below the t-cal except for 3 items 47, 49 and 59. Therefore, the null hypothesis was rejected for each of the three items while it was accepted for each of thirteen items. Hence the opinion of the respondents differed in three items but did not differ in thirteen items in relation to the strategies to be adopted to enhance SIWES program towards skill development of electrical/electronic graduates.

## **FINDINGS**

Based on the data collected and analyzed, the following findings were made according to the research questions raised for the study.

Finding related to the extent SIWES has contributed to occupational skill acquisition in Electrical/Electronic graduates. Both respondents agreed with the following.

1. Interpret instrument reading.
2. Troubleshoot regulated and switching power supply circuit.
3. Inspect components of equipment for accuracy of assembly, installation and for detects such as loose connection and frayed wire.
4. Recognize physical and electrical characteristics of capacitors and inductors.
5. Repair/reinstall operating system.
6. Differentiate between conduit and surface wiring.
7. Ability to identify burnt cable and make replacement.
8. Identify a hot spot in a conductor.

Finding related to how SIWES provide graduates with employability skills required in the workplace. Both respondents agreed with the following.

1. Conveying information one-to-one.
2. Communicating verbally to groups and peers.
3. Establishing good rapport with subordinate.
4. Working well with fellow employees.
5. Resolving conflict.
6. Responsibility.
7. Ability to work without supervision.
8. Self esteem.

Finding related to the strategies adopted to enhance SIWES program towards skill development of electrical/electronic graduates. Both respondents agreed with the following.

1. Design and utilization of update effective training manual or curricula to be used by the industries for Siwes training.
2. On the job and summative assessment should be provided for all students.
3. Motivation of industrial instructors/supervisors through incentives allowances.
4. Institution of an award for best Siwes students.
5. Proper monitoring of graduate during the programme.
6. School should organize placement for students.
7. Cordial relationship between schools and industries.
8. Monthly allowance be paid to students by employers.

## **DISCUSSION OF THE FINDINGS**

The discussions of the findings are based on the research questions raised for the study.

Finding from table 1 of the study confirm that repair/reinstall operating system. This is in high extent with Akerejola (2002) who reported the growing concern among our industrialist that graduates of our institutions of higher lacked adequate practical background studies preparatory for employment in the industries. He noted that the employees were of the opinion that theoretical education going on in higher institutions was not responsive to the needs of the employers of labor. It is against this background that we begin to appreciate the relevance of student work experience scheme (SIWES) as a veritable tool for practical skill acquisition and subsequent development of vocational and Technical Education in Nigeria. Since the inception of the SIWES program, there is no doubt that the program has accomplished much in equipping the learner with knowledge and practical skills and making learning more meaningful especially when external industrial environment is integrated with classroom work. However, with the increase in student enrolment in our school and colleges and the present economic climate, which may not likely permit the setting up of new industries and the maintenance of already existing industries and organization, it is important to determine the extent the laudable objectives of SIWES program is being accomplished in the present dispensation.

The finding reveals that Inspect components of equipment for accuracy of assembly, installation and for detects such as loose connection and frayed wire. This is in

line with (Okorie 2001) who said SIWES was a laudable attempt by the government to meet up with the challenges mentioned above although the scheme was also greeted with initial skepticism that is characteristic of Nigerians towards most government scheme. However, within thirty years of existence, the scheme has received wide and varied write-ups, analysis, discussions and amendments on its viability, models of operations and financing. Furthermore, the scheme has been consistently endorsed since inception by participating students, employers, teachers, and coordinators especially as it aimed at correlating theoretical and other phases of classroom work with practical industrial work experience (Okorie 2001).

The study also reveals that Recognize physical and electrical characteristics of capacitors and inductors. This is also in high extent with (Okorie, 2011). Who lamented that the scheme is meant to expose and prepare the students for industrial working situation that they are likely to meet after their graduation. They are exposed to methods and experience in handling equipment and machines that may not be available in the school (Industrial Trust Fund, 1965). It is a program which focuses on preparing young Nigerians for employment which ultimately may lead to rapid development of the country. Apparently, it is becoming a thing of the past when the “pen pushing job” or “white-collar job” was viewed with not only reverence but as the most rewarding type of on some African countries, that development in this continent can be attained by promoting a new relationship between education and work.

Okobiah and Nwasogu (197) stated that the ability to perform expertly and will arise from the repetitive process in which the skill is to demonstrate the habit of acting, thinking, or behaving in or specific activities which has become automatic. Constant practice of an act makes for perfection on the act.

Finding from Table 2 indicated that self esteem. The views of respondent agreed with Bamawo (1997). Who reveals that it's imperative to examine the problem affecting Industrial Training (IT) of electrical electronics technology in higher institution with a means to identifying possible strategies for improving the practical skills through IT after graduating from the institution.

Findings from the study also indicate that ability to work without supervision. This is in line with Abdurrahman (1995). Who noted that prior to the inception of SIWES in 1973, there was glaring evidence that the inadequacy of practical exposure of students in tertiary institution posed a serious challenge to both the quality and standard of engineering and technology education in this country. The industries established especially, found the engineering graduates lacking in practical skills to undertake industrial work, the Nigerian Students were then seriously criticized for their inadequate practical exposures

Findings from the study indicated that conveying information one-to-one. The views of the respondents is in line with Nwze (1986) reveal that the industrial relationship between the supervisors and those who work under him is often the major factor in developing a procedure and satisfactory work climate. There should be well

designed program of instruction on the job during the attachment. He further maintained that industries should have qualified instructors and should handle limited numbers of precisely not more than ten (10) students at a time. In view of this the instructor can immensely influence success of the program.

He also shows that establishing good rapport with subordinate, in a well run organization especially SIWES program is characterized by constructive and pleasant personal relationship and day to day accomplishment intelligent and strong leadership. Choosing a supervisor should be on technical competence in the occupation ethics and habits to emulate ability and willingness to allot sufficient time and effort for training ability to adopt competence in human relation and willingness to work with school coordinator. Some instructors think that showing the student how to operate a machine for once is enough. The assumption underlines the principle of habit formation which needs constant practice. This has been one of the most outstanding factors that had hindered realistic student acquisition of skills confidence and correct attitude in their chosen occupation.

Findings of the study reveals that working well with fellow employees. This is in line with the three major categories of skills according to Okorie and Ezeji (1988) who said that vocational technical education program should provide for its products. The skills are:-

- Technical skills which involves understanding and proficiency in a specific activity or operation or techniques.



- Human skills involving the ability to relate effectively in a group situation.
- Concept skills involving the capability of the management personnel to perceive the organization as an integral unit.

Okobiah and Nwaogu (1997) also stated that vocational skills can be classified to be technical and non-technical skills. The further stressed that these skills should be taught to individuals so as to ensure that workers training or in the labor forces possess them.

Findings from table 3 indicate that monthly allowance be paid to students by employers. This is in agreement with Okoro (1973) who lamented over the 1948 ten year plan for development and welfare incorporated the commission recommendation for the plan proposed handcraft center for training in manual arts trade center for training of skills craft men and technical institute for the training of technicians. A grant of #400,000 was provided by the government under the colonial development and welfare scheme toward the promotion of the programmed for the first five years

Findings from the study also indicated that cordial relationship between schools and industries. The views of the respondents are in line with Dikko (1986) who maintained that the greatest simple constraints to the Student Industrial Work Experience Scheme is the shortage of suitable work experience facility within the industrial set up it has been observed that in most cases the employer of labor display the unwillingness attitude towards acceptance of student for the program, which to loss precious weeks within the designated period for attachment on the side of the student. The Adani rice project which serves as place of attachment for most, has a lot of machines but almost all of them are broken down and out of use, so there is virtually little or inadequate training

facilities for training students on attachment. This makes the experience more theoretical than practical.

Finding from the study also revealed that proper monitoring of graduate during the programme. This was supported by Ahmed (1992) who said “despite the points raised in favor of SIWES, its execution has met problems that threaten its viability and effectiveness in realizing its objectives” Indeed, in the following areas:-

#### **A. Supervision:**

The students are expected to be supervised by lecturers from their institutions and also by officials from the ITF Office. At least each student is to have a minimum of two visits (that is, the first visit at the beginning and the second visit at the end of the program) although three visits is much more ideal, alas, some lecturers and indeed officials of ITF hardly visits the students. Even those that make the visit don't meet the minimum requirement of two visitations. This has made the truant students and establishments to see the SIWE period as mere “rituals”. Consequently, this leads to forgery on the part of the students as they desert their posting stations, forge entries into their logbooks and write or possibly endorse confidential reports and even scores meant for industry based supervisor.

#### **B. Duration of SIWES:**

The period of SIWES usually runs into the period earmarked for student to participate in teaching practice. This is most peculiar for students of Nigerian college of education. Therefore, instead of spending four-six months for the

program, the students are left in a dilemma of attending two most important schemes almost at the same time.

At the University and Polytechnic level, the period of six and four months respectively is also too short. The students hardly have enough time to acquire experiences covering the vast course content. The establishments also don't benefit from the students, as time is not just available for the students to practice what has been taught by making an input in the establishment.

**C. Feedback/ follow-up Services:-**

After the period of attachment, schools hardly organize any forum to have feedback from the student on their experiences and skills acquired during attachment. The schools rely mostly on LOGBOOK entries, which as pointed out earlier, can be foiled with all forms of forgeries by the students.

**D. Lack of Modern Facilities/ Machineries in Training Stations:-**

Another problem that is seriously threatening the realization of the objectives of SIWES is lack of modern facilities/machineries in establishments where students are sent to train. Thus they are denied the opportunity to acquire the desired skills and experience in their field of endeavor. This problem is further compounded by the fact that as the population of students embarking on SIWES increases yearly the number of establishments providing placement for the students is not growing peripasu. Hence, while the harsh economic climate has ban forcing some of the industries to fold up, the surviving ones continue to manage obsolete machineries.

## CHAPTER V

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### Summary

Technology is the systematic application of scientific or other organized knowledge to practical task. The Student Industrial Work Experience Scheme (SIWES) was therefore designed and organized for students to enable them gain exposure to practical skills and technological practices towards imparting specific technical skills to students. It is also meant to help students appreciate engineering and technical discipline by interacting with staff in the industries on how industrial content is related to the academic level of training.

The study considered the alarming problems of high rate of unemployment among Nigerian graduates most of which arise from lack of requisite practical training. The purpose of the study therefore investigated the contributions of SIWES to practice skill acquisition and strategies to be adopted to enhance skill acquisition during SIWES in tertiary institution in Niger state.

A survey approach was used for the study and sixty two (62) items validated questionnaire was developed to elicit response from the respondents. The respondent was made up of twenty five (25) graduates from Bosso area and twenty five (25) graduates from chanchaga area which bring the total number of respondents to fifty (50) graduates. Respondents selected had already taken part in the SIWES programme in their respective

institutions. The instrument was analysis using mean, standard deviation and t-test tested at 0.05 level of significance.

### **Implication of the Study**

The study indicates that majority of the graduates taking part in the Student Industrial Work Experience Scheme (SIWES) are aware of the objectives and contributions for which it was established, primarily on issues relating to theory and practice. They were usually eager to take part in the scheme: many consider their experience and time spent in the training as rewarding. Much of what they learned in theory became more real when they themselves practiced it.

SIWES could therefore be seen as a tool for bringing harmony in technical/vocational education in tertiary institution in Niger State. However the study revealed that the laudable objectives of

SIWES would be marred due to certain challenges faced by students. Some of these challenges include poor supervision of students during SIWES, difficulty in getting placements, late payment of allowances. A situation such as this does not augur well with the aim of the programme as students interest in the programme must be sustained for the success of the programme.

### **Conclusion**

Solving the problem of skill acquisition by graduates of Nigerian 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 type equipment. However, if the scheme is not adequately implemented, it becomes difficult for graduates of the system to secure employment in the occupations or make a smooth transition from school to work.

Incompetence in workplace is related to the kind or quality of training in the school. To improve on the scheme's implementation, student should be placed in industries relevant to their fields of study. There is need for greater cooperation between industries and educational institutions on how best to implement the SIWES programme. It can thus be concluded that in spite of apparent economic difficulties, the SIWES in Nigerian institutions are attaining its objectives, and that industrial experience in real setting is very necessary if the attainment of SIWES objectives will be fully realized because it offers the student learning experiences which cannot be directly gained in the classroom

Therefore, in order to evaluate or measure the outcome of SIWES, at the planning stage, it must be clearly stated what constitutes an acceptable work experience for every course or trade. The Industrial Training Fund (ITF) should as a matter of fact annually publish their review and study of the progress of SIWES. Such studies may use opinion polls of parents, employers, students and graduates. The school workshops and laboratories should be well-equipped with similar industrial outfits to provide good background for successful industrial experience.

Furthermore, Industrial and Business Organizations (with more than 25 employees as stipulated in section 6 of Federal Government Decree No. 47 of 1971) should be

statutorily required to pay at least 10% of annual profits of ITF to improve its financial position. For effective supervision of the programme, qualified full-time coordinators with good public relations skill should be employed by the institutions. This will improve the degree of cooperation between industries and schools.

## **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 adequate functioning of the programme. In line with these findings, the following recommendation area made:

1. ITF should ensure the regular visitation of the ITF officers to supervising agencies institutions, employers and students on attachment.
2. The log-book issued to students at attachment by institutions must be checked and signed by the institutions and ITF supervisors responsible during supervision not in their offices at the end of attachment.
3. The training department of ITF should be providing adequate information about the biennial SIWES National Conference and Workshops on time.
4. Federal Government should refer to decree No. 47 section 7A (1) (b), section 7A (2) and fine any ministry, company or parastatal that fail to offer students places for the attachment.
5. ITF should be providing insurance cover to students on attachment and improve on paying students and supervisors allowances for motivation.
6. The banks should speed up their action in the clearing of cheques issued to avoid unnecessary delay.

## **Suggestions for Further Study**

Based on the finding of the study the followings topics were identified for further study

1. The impact of student's Industrial Work Experience Scheme on skill accusation of electrical and electronics graduates in Minna and other states of the federation.
2. Schools and industry partnership for sustainable skills training in Niger state.
3. The role of industries in skill acquisition in Niger state.



## REFERENCES

- Abdullahi, S.G (1991). Pre-Service skills needs for increasing employability of technical college unpublished ph.d Theses Department of Vocational Teacher Education University of Nigeria Nsukka.
- Aderogba, A.A & Liemobade, A.A (1994). Technology Education At Tertiary Education Level Journal of Technology Education 3(1) 2-6.Federal College of Education (Technical) Akoka, Lagos
- Agbai, (1993). Bridging the everwidening gap between theory and practice. A case study of students work experience scheme (SIWES).
- Agbo, C.O (1993). The Role of Industrial Training Fund In Man Power Training And Development Quarterly Journal Of Administration.24 (4) .292-297.
- Agbonna, E. (2001). ‘‘THE 6-3-3-4,The Expected Verses the Actual Education Today a Quarterly Journal of the Federal Ministry Of Education.4(4) 37
- Aina O. and Beecroft, G. A. (1982). Towards Adequate Supply of Quality Technical Man Power Education And Development’’. A journal of Nigeria Education Research Council 2(1),349
- Akerejola (2002) report of growth among graduates of higher institutions: Background Studies Preparatory for Employment in the Industries.
- Akpale (2000). Lack of infrastructure facilities as factors affecting the growth and development of Technical Vocational Education and Training (TVET).

- Asikadi,e. (2003). Restructuring SIWES to Meet the National Development Plan In Educational System .National Conference Of National Association For Research Development Asaba
- Asumbe, B .N. (2005). Paper Presentation at 6<sup>th</sup> Annual Engineering Conference. Engineering and Technology For Wealth Creation In Sprit Of Needs. School Industrial Partnership A Veritable Tool For Quality Technology Education Programme. P-130.
- Bamako, O. (1997). ‘‘the industrial training fund.(ITF) in spot light’’business time man
- Comfort, C, Taylor. S; & Varelids, N. (1983). ‘‘Learning Through Work Experience in Britain’’, Journal of European Industrial Training. 7,6.
- Dikko, M (1986). ‘‘Training Needs in Industrialized Society’’. Paper Presented at the Common Wealth Regional Seminar on Technical Education and Training Held at Ibadan April, 24 May, Information and Guideline for SIWES Review 2002 1-41.
- Fafunwa, A.B. (1972). History of Education in Nigeria. London; George Allen and Union.
- Federal Government of Nigerian (1975). Objectives of SIWES-ITF Policy Statement No of (1973)
- Federal republic of Nigeria,(2004). National Policy On Education, yaba,lagos NERC purs.
- FGN/UNICEF/UNESCO/UNDP (2000). high rate of failure in technical education examinations.

- Hassan (2006). Intensive nature of Technical Education due to high demand for equipment specialized manpower and funding of student practical experience.
- Ibe, 1997. Lack of physical resources such as infrastructural facilities, equipment and classroom materials as factors that affect the acquisition of practical skills
- ITF (1990). Operational guidelines of Industrial Training Fund on Student Industrial Work Scheme I.A.G.R. Department Jos.
- kahn, J.V.(1989). research in education. Prentice-hall of Indian private ltd. New Delhi
- Mbonu(2000). Information And Guideline for SIWES Review
- N.P.E, (2004). National Industrial Directory. Federal Office of Statistics. Nigeria Government Printer; Lagos.
- Nwgba (2002). Inadequate Funding: Problem hindering the success of technical Education.
- Ogunseye (1974). Poor Training in Technology-Based Subjects in our Institutions.
- Okorie, J. (2011). Vocational Industrial Education Published by League of Researchers in Nigeria (NRN), Bauchi.
- Okoro, O.M. (2006). Principle and Methods in Vocational and Technology Reduction. Nsukka University Trust Publisher.
- Prosser, C. A. (1929). A Pinch Hitting on Short Notice for Absent Speaker at A.V.A. Convention Philadelphia: Industrial Education Magazine, Vol. 5.
- Robert, R.W (1976). Vocational and Practical Art Education Committee on Research and Publication of the American Vocational Association. New York, Harper and Row Publisher.

- Saba T.M. (2006). Cultivating Positive Maintenance Culture Among Technical Teachers  
Journal of Technology 3(1)2. Federal College of Technology (Technical) Akoka  
Lagos.
- SIWES 1973. Introduction of Students' to Industrial Work Experience Scheme.
- Taiwo c.o (1995). The Nigeria Educational System Past, Present and Future. African  
University Press Ibadan, Nigeria .
- Umoh, M. (2003). An Introduction to Vocational and Technical Education Nigeria. Hil  
Alex Venture Publlisher Abuja.
- University Education in Nigeria (N.D.). Retrieved March 1221008  
<http://www.futminna.org/services/strategicplan.htm>.
- Veblen, T. (1964). The Instinct of Workmanship and State of the Industrial Arts. New  
York. Norton Press
- Walker C.R and Veblem (1957). Towards the Automobile Factory New Yale University  
Press.
- Yalams, S.M. and Ndomi, B. M. (2000). Research Project Writing and Supervision.  
Published by League of Researchers in Nigeria (LRD), Bauchi Nigeria.