



Investigating the impact of work-experience on TVET students generic employability skills: A case of Hassan Usman Katsina Polytechnic

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Abstract

The establishment of Student Industrial Work Experience Scheme (SIWES) program in Nigerian tertiary institutions was to provide students with the practical knowledge, skills and experience required for professional studies. The aim of this paper was to assess the impact of this program on the generic employability skills of TVET students. A research question was formulated to guide the study. The population of the study consists of all NCE II and NCE III students of technical education department of Hassan Usman Katsina polytechnic who had received industrial training. The research question was addressed through the use of a descriptive survey instrument to gather data. The four generic employability skills—communication, teamwork, problem-solving, and technology utilization—were selected as the dependent variable constructs for the study. The reliability assessments reveal that the Cronbach's alpha value for each construct in the entire item was over 0.80, indicating very good reliability (r) for all the employed items. Four experts in the discipline validate the instrument. The chi-square (χ^2) goodness of fit test was employed to assess the hypotheses at the 0.05 significance level. As demonstrated by the study's findings, students' effective participation in SIWES program has high significant impact on their generic employability skills.

Keywords: Student industrial work experience scheme (SIWES), technical vocational education and training (TVET), industrial training fund (ITF)

Introduction

A program called the Student Industrial Work Experience Scheme (SIWES) enables students to get practical knowledge and experience for their professional growth while they are in school (Ekpehyong, 2010) [7]. By giving students the opportunity to use industrial machinery and equipment, it helps them develop the necessary skills and knowledge. SIWES, one of the Industrial Training Fund (ITF) programs, was established in 1974 as a result of Nigerian engineering and technology students' inability to complete the practical training requirements. The requirement to help students combine their academic knowledge with the practical skills required to improve their chances of finding job in the workforce. In addition to bridging the gap between theory and practice, SIWES has been extremely beneficial to the program's students by giving them the chance to work in one or more industrial sectors, opening up career opportunities.

Over time, it seems that companies are more concerned with practice than with what students already know (theory). Employers of labor are interested in the employee's abilities to manage and use the company's resources, perform well under pressure, resolve disputes when necessary, and operate machines and equipment. It is pretty evident that TVET students tend to learn both in theoretical and practical knowledge with reference to their position in the world of work. SIWES is intended to prepare students at Nigerian tertiary institutions for the transition from the academic setting to the workplace (Akerejola, 2008) [1]. Work experience, according to Oyedele, (1990) [27], is a program for education in which students engage in employment activities while participating in classes. Students get the chance to participate in a real work environment outside of the classroom due to this work experience program. Thus, educators and economic planners have been concerned about the effects of students participating in SIWES,

particularly with regard to graduate employment. With all the effort in place, the students' lack of the Generic Employability Skills (GES) demanded by the workforce when they enrolled in SIWES also caused a severe problem, making it exceedingly difficult to meet the program's learning objectives.

In TVET sectors, GES are more crucial than ever. The majority of industries now employ sophisticated machinery and methodical procedures, necessitating the use of highly skilled, integrated, and multi-skilled employees (Committee on the Engineer of 2020 & National Academy of Engineering, 1900). Employers therefore prioritize GES when employing new employees, leading to a marked increase in the need for competent graduates in Nigeria (Lee & Senanayake, 2004) [16].

In Nigeria, TVET education has long been seen as a method of developing moral integrity and employment skills, response to the drastic changes in the labor market. The tertiary education system has to do a better job of enhancing the GES of its students and putting in place the right programs to satisfy the evolving demands of industry. Undergraduate students can benefit from SIWES program to assist them improve their GES.

Statement of the Problem

Providing graduates with the skills they need to join the workforce is a critical problem that higher education institutions are currently facing. Despite the fact that Nigeria boasts a significant number of higher education institutions. Nigeria's three higher education institution sectors are universities, colleges of education, and polytechnics. There are 49 federal universities, 59 state government universities, and 111 private universities in Nigeria (NUC, 2022). There are 122 private colleges of education, 51 state government colleges of education, and 28 federal government colleges of education (NCCE, 2021). Additionally, there are 40

federal polytechnics, 49 state government polytechnics, and 76 private polytechnics in Nigeria (NBTE, 2022). The goals of higher education are to: (1) contribute to national development through the development and inculcation of appropriate values for societal sustenance; (2) develop appropriate high-level manpower training; (3) promote scholarship, community service, national unity, and international understanding. This is according to FRN, (2019) higher education policy. It may be claimed based on the three points that there is no set standard that regulates the teaching of GES.

Given the foregoing, the researcher wants to determine how SIWES impacts on GES of Hassan Usman Katsina Polytechnic TVET students.

Research Question

The following research question will be addressed by this study:

1. What impact does SIWES program have on GES of TVET students'?

Null Hypothesis

At a significance level of 0.05 the following null hypothesis was generated and tested.

NH₀₁. SIWES program has no impact on GES of TVET students.

Literature Review of the Study

This section discussed on the SIWES, GES and the recent employability skills literature in Nigerian context.

SIWES

Knowing something practically involves doing. (Ochiagha, 1995) ^[24] asserts that without practical knowledge, it may be too difficult to attain mastery of a field of knowledge. Practical knowledge is the ability to accomplish tasks that are linked to a topic of study while using tools or other equipment to build skills. Without helping its youth to develop the required practical skills, no society can make real progress. They can utilize the resources at their disposal to address societal requirements due to these talents. In light of this, Eze, (1998) ^[8], notes that by establishing the Industrial Training Fund (ITF), the government has acknowledged the significance of SIWES. The ITF was created in 1971 with the responsibility of training and developing human resources. After the ITF was established, SIWES started in 1974 with the goal of bridging the enormous gap between theory and practice in engineering, technology, and science-related subjects in Nigeria's postsecondary institutions. The federal government's April 1978 Gazette provided the following comprehensive overview of SIWE's stated goals:

1. To give undergraduate students a way to get practical experience and skills in the workplace while pursuing their studies.
2. To provide students a chance to put their knowledge into practice through real-world of work.
3. To facilitate students' transfer from education to the workplace and to strengthen their contacts for potential future employment.

The Nigerian Federal Government, the Industrial Training Fund (ITF), the Nigerian Universities Commission (NUC), the National Board for Technical Education (NBTE), and

the National Commission for Collages of Education (NCCE) are all partners in the cooperative industrial training program known as SIWES. It is scheduled in the NBTE/NCCE curriculum and is also required at the National Diploma (ND) and National Certificate of Education Technical (NCE-Technical) levels. For the four-year Bachelor of Science (Bsc) degree program, the training program is started in the third year. For the five-year Bachelor of Engineering (B. Eng) and Bachelor of Technical Education (B.Tech) degree programs, it is started in the fourth year.

Generic Employability Skills (GES)

Diverse definitions of GES have been put forth by researchers worldwide. As to Makhbul & Yussof, (2015) ^[19], GES refer to non-technical skills that students require beyond academic accomplishments to guarantee them to excel in various fields, including work. According to bin Buntat, (2006) ^[3], GES are non-technical skills that are important for the development of the student's personality and preparation for the competitive world. Husain *et al.*, (2015) ^[14] argue that GES are essential for graduates' employability. This indicates that GES are important since graduates with strong technical competence but lack these skills will be rated as having low quality. In today's industry, which is always moving toward globalization and diversity, employers are increasingly seeking for applicants with technical skills as well as GES. A review of the literature revealed that communication skills, team work skills, problem-solving, and technology utilizing skills were among the most often stated GES (Francia, 2010) ^[10].

Communication skills

Speaking and writing skills, as well as information technology, are means by which people may disseminate knowledge, interests, feelings, opinions, experiences, and ideas in order to persuade and eventually influence others (Brewer, 2013) ^[4]. Communication is the art and practice of creating and exchanging ideas. It takes a lot of concepts to communicate effectively (Training, 2010).

Team work skills

A group of people may combine their resources and talents through teamwork in order to work together and achieve shared goals (Mackall, 2004b) ^[18]. In order to reduce workload and perform better for the joint achievement of goals, Sanyal & Hisam, (2018) ^[28], who worked together by dividing tasks equally among all team members, support the claim. They discovered that teamwork is the strength of a group of individuals in making more effective decisions efficiently. The most difficult challenge nowadays is managing technical projects in high potential teams since it calls for a skilled leader to do the planning, organizing, monitoring, and feedback together with engaged colleagues who will carry out the assigned tasks.

Problem solving skills

The ability to create unique ideas and proposals is referred to as a problem-solving skill (Mackall, 2004a) ^[17]. A different perspective argues that the ability to solve problem is to examine information or circumstances, break them down into their component parts, consider many methods and solutions, and then choose the best one (Brewer, 2013) ^[4]. Yu *et al.*, (2015) ^[32] concurred and pointed out that this

also entails the ability to formulate potential solutions, pick the best ones, implement them, evaluate the results, and revise those solutions in light of those outcomes. Ulya, (2016) [31] defines problem-solving skills as the capacity to apply existing information to unique circumstances demanding sophisticated mental processes.

Technology utilizing skills

Technical skills are one of the skills required for employment. These skills enable employees to use information technology correctly and effectively to complete their work successfully. Using and understanding technology is one of these skills (Fajaryati & Akhyar, 2021) [9]. According to Fraser, (2020) [11], employers value this skill above all other employability skills.

Recent employability skills Literature in Nigerian context

Providing graduates with the knowledge and skills needed to succeed in the job market after graduation is a primary goal of higher education institutions. In line with current global trends, most graduates continue to find employment after completing post-secondary education. Policymakers developed the SIWES program to help students achieve their goals. The literature in the TVET sector shows how important it is for TVET students to acquire the GES they need to find and keep a job after graduation. A study by Aliu & Aigbaybo, (2019) [2] examined how employers view the employability of building technology graduates. The research shows that most graduates lack extensive knowledge of local and global trends, and GES, contributing to the high unemployment rate among building technology graduates. Further research by Olojuolawe & Amin, (2019) [25] found that students studying electrical and electronic technology usually need technical and GES, and that a deficiency in one of these skills results in a skill mismatch. Majority of graduates have difficulty finding a job because they do not meet the qualifications. This means that TVET graduates need to acquire both technical and GES to address the skills gap that leads to unemployment. To support this, Olojuolawe et al., (2019) [25] looked at the hierarchy of GES electrical and electronic technology students are expected to possess and how the lack of these skills leads to unemployment after graduation. They also talked about the fact that graduates usually leave school with only technical skills, making it difficult to find a job after graduation. Shola F et al., (2019) [29] show that graduates of the Nigerian higher technical institutions specialize in metalwork technology also lack GES and become unemployed after graduation. According to employers, communication skills are the most common GES that most students lack at the time of recruitment, making them unsuitable for vacancies. Bridging the skills gap required integration with GES to enhance technical skills. Also due to high unemployment, some TVET students plan to start their own business after graduation. A study by Edokpolor & Abusomwan, (2019) [6] found that TVET students' intentions to start a business were significantly influenced by their GES.

Methods and Procedures

For the study, a survey research design was used.

Subject of study

Hassan Usman Katsina Polytechnic was the subject of the study. Understanding the impact of the SIWES program on TVET polytechnic students required consideration of the study institution chosen.

Study's Population and sample size

All of the Hassan Usman Katsina Polytechnic's technical education department students make up the study's population. The population was reduced to all NCE II and NCE III technical education students who had received industrial training. Since SIWES program is often completed over the long break after the second semester, all NCEII and NCEIII students are included in the study since they must have completed SIWES program. The number of students that were eligible to participate as study respondents is shown in Table 1 below.

Table 1: Number of sample students

Sex	NCE II (Technical) Students	NCE III (Technical) Students
Male	26	23
Female	2	12
Total	28	35

Research Instrument

A descriptive survey tool was used to collect data (questionnaire). The instrument created by the researcher is adopted and modified by (Fajaryati & Akhyar, 2021) [9]. Four experts in the field validate the instrument. Questionnaires were divided into 2 main sections (Section A and Section B). To obtain an answer to the research question, section B of the survey covered information on the four GES constructs (communication skills, teamwork skills, problem-solving abilities, and technology utilization skills). Section A of the survey covered the students' personal information.

According to a reliability analysis, the Cronbach's Alpha value for each construct in the whole item was over 0.80, indicating a very good reliability (r) for all the questionnaire items employed. This outcome shows that the distribution of the items was reliable and applicable to the research. Haber et al., (2007) [13] state that reliability is considered weak if the Alpha Cronbach value is less than 0.60, acceptable if it is 0.70 and good if it is equal or greater than 0.80.

Method of Analyzing the Instrument

To examine the data and determine the response to the research question, mean and standard deviation were used as simple descriptive statistics. For decision-making, a mean cut-off value of 2.50 was employed. The range of a mean response was defined as Strongly Disagree (SD) as 0.00-1.49, Disagree (D) as 1.50-2.49, Undecided (A) as 2.50-3.49, Agree (A) as 3.50-4.49, and Strongly Agree (SA) as 4.50-5.00 (SA). The chi-square (χ^2) test of goodness of fit was used to evaluate the hypotheses at the .05 level of significance. The alternative hypothesis was accepted and the null hypothesis was rejected if the estimated (χ^2) value was larger than the p-value, and vice versa.

Results and Discussion

The data given below is required for generating an answer to the research question: "What impact does the SIWES program have on the GES of TVET students?"

Table 2: Mean Ratings, Standard Deviation, Remarks and Significant Value for GES

S/N	Constructs	Items	Mean	SD	Remarks	P- Value
1.	Communication Skills	I was able to enhance my communication skills during the SIWES training.	4.32	.737	Agree	.001
2.		Through the SIWES training, I learned how to be friendly when exchanging information.	4.35	.864	Agree	.001
3.		While taking part in the SIWES training, I was able to improve my listening skills.	4.08	1.052	Agree	.001
4.		I was able to develop a more effective communication style through SIWES.	4.08	.938	Agree	.001
5.		During the SIWES training, I was able to improve my spoken English.	3.71	1.250	Agree	.001
6.	Teamwork Skills	Because of my involvement in SIWES training, I was able to gain solid public domain knowledge and skills	4.19	.895	Agree	.001
7.		Throughout SIWES training, I was able to work together with other students to complete tasks.	4.41	.927	Agree	.001
8.		I was able to establish solid relationships with team members through the SIWES training.	4.03	.999	Agree	.001
9.		During SIWES training, I was able to work more efficiently in a group than when I was working there alone.	4.22	1.099	Agree	.001
10.		I developed maturity in how to handle criticism and disagreement throughout my SIWES training.	3.48	1.203	Undecided	.001
11.	Problem Solving Skills	I acquired time management ability through SIWES training to fulfill my work deadlines.	4.25	.842	Agree	.001
12.		Through SIWES training, I have a greater chance of dealing with problems that arise in real life.	3.78	1.325	Agree	.001
13.		I developed my ability to write routine communication while completing SIWES training.	3.60	1.144	Agree	.001
14.		With SIWES training I was able to adjust with working environment	3.98	1.211	Agree	.001
15.		My confidence in my abilities and myself grew throughout the SIWES training.	4.10	1.160	Agree	.001
16.	Utilization of technology skills	I was able to get a good understanding of the significance of technology during the SIWES training.	4.48	.780	Agree	.001
17.		I learned how to effectively use technology at the SIWES training.	4.35	.901	Agree	.001
18.		During SIWES training, I frequently use technology to search for, gather, and distribute information.	4.08	1.112	Agree	.001
19.		I was able to use both my technological and physical abilities during the SIWES training.	4.35	.864	Agree	.001
20.		I improve my technological proficiency through SIWES training.	4.35	.883	Agree	.001

With the exception of item 10 on teamwork skills, which indicates that respondents are neutral about their development of maturity in how to handle criticism and disagreement throughout their SIWES training, the data represented in Table 2 above revealed that almost all of the items on GES constructs showed high mean scores, indicating that the majority of respondents agreed to the positive impact of the SIWES program on their GES. Additionally, the chi-square test reveals that every item's P-value is .001, which is less than .05, meaning that the null hypothesis is rejected. This indicates the strong positive impact the SIWES program has on TVET students' GES.

Based on the analysis of the data above certain findings were made that SIWES program has a strong positive impact on GES of TVET student. This finding supports much of the existing literature. Obasi, (2015) [23] study highlights that working in an organizational environment increases students' awareness of GES values such as effective communication skills, teamwork skills, problem-solving skills and utilizing technology skills. This shows that SIWES training offers many benefits that cannot be achieved with traditional classroom training. Lazim, (2018) [15] also pointed out that effective training increase the knowledge needed for the job. This suggests that increases in training are matched by increases in the knowledge base of practitioners.

Conclusion

The ITF established SIWES program in 1974 in response to the problem of tertiary graduates lacking the skills to work in Nigerian industry. SIWES was created as a skills training program to help students discover and prepare for the industrial work environment they will face after graduation. This approach helps with knowledge application and makes the transition from the classroom to the job easier. Students completing this program will be equipped with the experience, knowledge and practical skills necessary for professional study. The aim of this paper was to assess the impact of this program on the GES of TVET students. A research question was formulated to guide the study. The data was analyzed and findings were made that SIWES program has a strong positive impact on GES of TVET student.

Recommendation

The results of the study led to the following recommendations:

1. Policymakers should focus more on the execution and accomplishment of SIWES in all higher education institutions to strengthen their programs.
2. Policymakers should create outcome-based SIWES programs that will enable students to put what they have learned into practice and aid in career development and opportunity once they graduate.
3. The SIWES program needs to be strengthened with sufficient funding from the government. This ensures

fair pay for supervisory staff in government agencies and educational institutions.

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