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Influence of Work-Based Skills for Enhancing School-to-Work Transition of Automobile Technology Graduates of Technical Colleges in Northern, Nigeria

Mohammed Abdullahi Shehu, Ahmed Garba and Salisu Ahmed

Department of Automobile Technology, Federal College of Education (Tech) Bichi, Kano, Nigeria

ABSTRACT

The descriptive survey research design was used for the study, the population of the study were 50 made up of 17 Automobile technology teachers and 33 Automobile technology industrial supervisors. The purpose of this study is to determine the influence of work-based skills for enhancing school-to-work transition of Automobile Technology graduates of technical colleges in northern Nigeria. Two research questions were developed inline with the purpose of the study. Twenty five structured questionnaire items were developed and used for the study, while 3 experts were engaged to face validate the instrument. The instrument was pilot tested on 4 respondents who are not part of the population for the study and the reliability coefficient of the entire instrument was 0.89. Based on the findings of the study, the following recommendations were made: Teachers should embark on frequent supervision of students on SIWES and other cooperative education programmes to ensure that these students are given the appropriate work-based skills needed for effective school-to-work transition and Parents, community and society at large should assist in enhancing work-based skills for smooth school-to-work transition of Automobile technology students of technical colleges by allowing them to demonstrate what they have learnt in the classroom to real life situation.

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Key Words
Technical and vocational education, work-based skills, automobile technology, technical colleges

Corresponding Author
Mohammed Abdullahi Shehu, Department of Automobile Technology, Federal College of Education (Tech) Bichi, Kano, Nigeria

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INTRODUCTION

The hope of any country yearning for technological advancement and relevance in the world depends on its achievement in the field of technical and vocational education. Technical education according to federal republic of Nigeria (FRN) is the aspect of education which leads to the acquisition of practical skills as well as basic scientific knowledge. Technical and vocational education provides training designed to prepare individual to enter into a paid employment in any recognized occupation. Technical and vocational education is any form of education whose primary purpose is to prepare people for gainful employment in a recognized occupation.

Technical and vocational education is to provide education for self-reliance and goals of technical and vocational education include: To provide trained manpower in the field of applied sciences, technology and business particularly at craft, advanced craft and technical level, to provide technical and vocational skills necessary for agricultural industrial, commercial and economic development and to give training and impact the necessary skills to individual who shall be self-reliant economically[1].

Technical and vocational education is very important aspect of education due to the fact that it produces highly skilled manpower needed for national development. In recognition of the importance of technical and vocational education, Okoro[2] pointed out that the main importance of technical and vocational education is the production of highly competent and well-motivated skilled manpower. With employees who are emotionally, intellectually and professionally equipped for effective productivity at all levels of technology in Nigeria. In the pursuit of the goals of technical education, northeast government established science and technical school's management board, then model school management board with six technical colleges.

Automobile Technology is one of the trade subjects offered at the Technical Colleges level in Nigeria whose main objective is to equip students with the necessary basic knowledge, skills and relative attitude to self-reliance. Automobile Technology at Technical Colleges level consists of three components/subjects as follows: Service station mechanics work, Engine maintenance and refurbishing and Auto electricity. The program of Automobile Technology in Nigeria Technical Colleges is designed to produce competent motor vehicle craftsmen for Nigeria Technical and industrial development[3]. Therefore, teachers teaching Automobile Technology at Technical College level must acquire the right skills to impart to the learners in order for them to acquire skill and the right skills for gainful employment. Teachers teaching Automobile Technology should equip the technical students not only with necessary theoretical knowledge and practical skills but also with socially and emotional behaviors that will enable them develop rational sense to secure paid employment, be able to set up their workshops/industries and be self-employed and even employ others[4].

The role of industry in manpower development that or employing technical college graduates as worker (employees) work can be viewed as: Paid employment, an activity that produces something of value for other people, exertion of physical or mental energy or accomplishment of specific purposes, work is a form of activity/job that has social approval and a real need for the individual to be active, productive, creative and respectful and to acquire prestige. Skill refers to the ability to perform an act expertly, It Is that expertness, practiced ability of proficiency displayed in the performance or a task, Skill is a well-established habit of doing something. It Involves acquisition of performance capability through repetitive performance of an operation. Work-based skills have been thought as Imperative for the development of students and their preparation for work place. However, work-based skills are not always acquired merely because student is in the workplace. What matter Is student's participation in the work place activities[5].

Work-based skills can be acquired In Industries. Work-based skills can only be acquired in Industries through work-based activities such as: Internship training, on-the-job training and mentoring co-operative education[6]. Internship training is a form of work experience programme that is doneafter theory and other In-school experiences which is used in professional or sub professional curriculum and pays the student on Internship training an allowance or salary because he Is productive person but his pay Is usually of a reduced rate because he is a trainee and not all his time is fully productive. On-the-job training is a type of training conducted cither by employee's immediate supervision or by an expert from any department of the organization. The employee uses the same machines, equipment under which he works. What he produces while learning is a contribution to the day's effort. Apprenticeship training is a procedure by which young person's acquire skills necessary to be proficient in a trade, craft, arts or profession under the tutelage of a master practitioner. Mentoring is a co-operative education that combines learning experiences gained through regularly scheduled supervised employment in the community and vocational oriented in-school Instruction[6]. The employing community services as a laboratory where students have opportunity to apply the principles and practices they have learned in school in the challenging world of work. Work-base skills in automobile technology can be classified according to following areas of mechanic work technology: Engine

skills, auto-electric skills etc. Fabrication welding is the process of producing different fabricated components or products through the process of sheet metal working and welding. Sheet metal working is the process of cutting the sheets to the size of the produced pattern and formed into the required shape/size e.g. car body, trucks body, tanker body etc. welding on the other part is pinning (joining) of two or more metals by means of heat to fuse the parent metals together. Machine work is the process of using different devices (powered by electric current) graduates, even though career decision is a lifelong process school-to-work transition on-the-job training, apprenticeship, cooperative education agreement or other programmes designed to prepare student to enter the job market[7].

Learning activities is any activity that promotes the achievement of any Stated objectives and learning outcomes. Demonstrated that school-based teaming activities focus on career exploration and counseling, student's selection career trade or programme of study based on academic and skills standard[8]. In a programme of instructions that integrate academic and vocational training, scheduled evaluation and weakness and procedures that facilitate student's participation in additional training or technical college work-based learning is a planned programme of training or experience, paid work experience, work place inventory and instructing in general work place competencies and all aspect of industries. Community-based learning activities include matching students with work-based learning opportunities, providing a shop mentor to act as a liaison for the student to provide technical assistance and services to employers, linking programmes to participant with community services. Community members should keep students and other diverse adolescents against access to career development, skills, knowledge and competences that enhance their transition into the World of work and productive career. United Nations Educational Scientific and Cultural Organization, Dunham[9] opined that Nigeria involved in student transition from school-to-work through the introduction of student industrial work Experience scheme (SIWES). The SIWES is a skill training programme designed to exposes and prepare student of Technical Colleges for work situation as they exist inthe world of work. UNESCO further emphasized that there a need for Federal Republic of Nigeria (FRN) to Improve in the funding of technical education andmonitor the activities of the existing Industries.

Statement of the problem: Most the Automobile Technology graduates in Nigeria are not properly prepared for work as a result of lack of work-based skills especially for industries and commerce. Majority of Automobile Technology graduates who had no work-based skills may have some delay in transition from school-to-work. As a result of lack of work-based skills Automobile Technology graduates are graduating from school-to-unemployment, the issue of unemployment in Nigeria has been the major problem affecting the Nigerian youths.

The inadequacy in skill possessed by Automobile Technology graduates leads to low productivity of products, poor quality product and high cost of production. There is need to harmonize the activities of technical colleges and that of the world of work can be learnt in school. The plan for school-to-work should be a programme that will connect education to the world of work by allowing students to apply what they learn in class room to real life situation. Also, it is obvious that, industrial growth and development in automobile mechanic technology will continue to be delayed, unless an avenue is created to share responsibilities between workplace and technical colleges for effective training of technical college students.

This indicates that there is need to determine the work-based skills in Automobile Technology for enhancing school to work transition of Automobile Technology graduates of technical colleges with respect to Service station mechanics work, Engine maintenance and refurbishing and Auto electricity skills. so as to have smooth transition from school-to-work of Automobile Technology graduates of technical colleges.

Purpose of the study: The purpose of the study is to determine the influence of work-based skills for enhancing school-to-work transition of Automobile Technology graduates of technical colleges in Northern Nigeria. Specifically, the study was aimed at determining:

- The Engine Maintenance Work-Based Skills that enhance School-to-Work Transition of Automobile Technology Graduates of Technical Colleges
- The Auto-Electricity Work-Based Skills activities that will enhance School-to-Work Transition of Automobile Technology Graduates of Technical Colleges

Research questions: The following research questions were formulated to guide the study:

- What are the Engine Maintenance Work-Based Skills activities that will enhance School-to-Work Transition of Automobile Technology Graduates of Technical Colleges?
- What are Auto-electricity Work-Based Skills activities that will enhance School-to-Work Transition of Automobile Technology Graduates of Technical Colleges?

Hypotheses: The null hypotheses formulated to guide the study were tested at 0.05 level of significance.

H_{O1}: There is no significant difference between the mean responses of Automobile Technology Teachers of Technical Colleges and Automobile Technology Industrial Supervisors on the Engine Maintenance Work-based skills that enhance school-to-work transition of Automobile Technology Graduates of Technical Colleges.

MATERIALS AND METHODS

The study was descriptive design. The population of the study 50 made up of 17 Automobile Technology Teachers and 33 Automobile Technology Industrial Supervisors in Nigerian. All the population was used because the population was manageable. The researchers developed instrument titled: Work-Based Skills for Enhancing School-To-Work Transition of Automobile Technology Graduates Questionnaire. (WBSSTATGQ) the instrument was validated by three experts from industrial technical education, one from Automobile technology industrial in northern Nigeria. The reliability of the instrument was determined using test retest reliability. The reliability coefficient of the study was 0.89 Pearson moment correlation was used to answer the research questions and to test the null hypotheses at 0.05 level of significance.

Presentation of the result

Research question one: What are the Engine Maintenance Work-Based Skills activities that will enhance School-to-Work Transition of Automobile Technology Graduates of Technical Colleges?

In Table 1 Automobile Technology Industrial Supervisor agreed in all the 5 items on the Engine Maintenance Work-Based Skills, learning activities that will enhance School-to-Work Transition of Automobile Technology Graduates of Technical Colleges. This is because the mean responded of the resplendent to all the items ranged from 3.55-4.28 which is greater than the cut-off Point of 3.50. The respondent completed standard deviation of Engine Maintenance Work-Based Skills ranged from 1.02-1.43 which indicate a consensus of opinion by the respondents.

Research question two: What are Auto-Electricity Work-Based Skills activities that will Enhance School-to-Work Transition of Automobile Technology Graduates of Technical Colleges?

Table 2 above shown that Automobile Technology Industrial Supervisor agreed in all the 10 items on the Auto-electricity work-based skills, learning activities that will enhance school-to-work transition of Automobile Technology Graduates of Technical Colleges. This is because the mean responded of the resplendent to all the items ranged from 3.70-4.22 which is greater than the cut-off point of 3.50.

Table 1: Mean and standard deviation of automobile technology teachers and automobile technology industrial supervisor responses on the engine maintenance work-based skills activities that will enhance school-to-work transition of automobile technology graduates of technical colleges

Items	Mean	S/D	Remarks
Insured the continuous implementation of a preventive maintenance program including the planning and coordination of major scheduled maintenance outages	4.28	1.30	Agreed
Prepare preventive maintenance schedules of various machinery and instruments to increase machine up time and equipment reliability	4.09	1.43	Agreed
Developed predictive/preventive maintenance schedules ensuring schedules adhered to findings communicated and necessary actions implemented	4.25	1.32	Agreed
Participated in the execution of preventive maintenance and major overhaul of reciprocating and centrifugal compressors	3.55	1.06	Agreed
Developed preventive maintenance procedures, implemented and documented to assist the local Bahrain staff	3.60	1.02	Agreed

Table 2: Mean and standard deviation of automobile technology teachers and automobile technology industrial supervisor responses on the auto-electricity work-based skills activities that will enhance school-to-work transition of automobile technology graduates of technical colleges

Items	Mean	S/D	Remarks
Maintained facilities electrical systems and production equipment	4.12	1.19	Agreed
Installed and modified production machinery to fit production specifications, Experienced in industrial electrical, three phase electrical systems and instrumentation	4.05	1.20	Agreed
Respond to faulty electrical systems-logically and systematically analyze a circuit and determine exactly what is wrong	3.70	0.16	Agreed
Installed and repaired electrical systems, apparatuses and electrical and electronic components of industrial and machinery and equipment	4.00	1.00	Agreed
Installed and repaired electrical systems, apparatuses and electrical and electronic components of industrial machinery and equipment	4.16	1.21	Agreed
Improved major mechanical equipment reliability and readiness for production	4.22	0.98	Agreed
Performed troubleshooting of other electrical and mechanical equipment using electrical and hydraulic schematics, PLC controls and testing equipment	4.07	1.06	Agreed
Worked with maintenance personnel in operating and maintaining electronic, hydraulic, pneumatic and mechanical equipment and components.	4.11	1.32	Agreed
Schedule, assign and perform preventive maintenance on electrical and mechanical equipment in accordance with standardized procedures	3.78	0.86	Agreed
Performed preventative maintenance and inspections on electrical and mechanical equipment in accordance with standardized procedures	3.94	1.01	Agreed

Table 3: The t-test analysis on the mean responses' standard deviation and t-calculated value of automobile technology teachers of technical colleges and automobile technology industrial supervisors on the engine maintenance work-based skills that enhance school-to-work transition of automobile technology graduates of technical colleges

Items	X_1	S/D_1	X_2	S/D_2	T-cal	T-value	RMKS
Insured the continuous implementation of a preventive maintenance program including the planning and coordination of major scheduled maintenance outages	4.22	0.46	4.07	0.58	0.68	1.95	NS
Prepare preventive maintenance schedules of various machinery and instruments to increase machine up time and equipment reliability	4.15	0.58	4.16	0.67	0.41	1.96	NS
Developed Predictive/preventive maintenance schedules ensuring schedules adhered to findings communicated and necessary actions implemented	4.30	0.60	4.10	0.57	0.98	1.96	NS
Participated in the execution of preventive maintenance and major overhaul of reciprocating and centrifugal compressors	4.30	0.54	4.16	0.64	0.47	1.96	NS
Developed preventive maintenance procedures, implemented and documented to assist the local Bahrain staff	5.15	0.70	4.08	0.58	1.02	1.96	NS

The respondent completed standard deviation of Auto-electricity Work-Based Skills ranged from 0.86-1.32 which indicate a consensus of opinion by the respondents.

Hypothesis 1:

H_{O1}: There is no significant difference between the mean responses of Automobile Technology Teachers of Technical Colleges and Automobile Technology Industrial Supervisors on the Engine Maintenance Work-based skills that enhance school-to-work transition of Automobile Technology Graduates of Technical Colleges.

Table 3 revealed that each of the 5 items in the Engine Maintenance Work-based skills learning activities that will enhance school-to-work transition of Automobile Technology Graduates had a calculated t-value less than the t-table value of 1.95 of 0.05 level of significant difference and 120 degree of freedom. This indicated that significant difference does not exit between the mean responses of Automobile Technology Teachers of Technical Colleges and Automobile Technology Industrial Supervisors on the Engine Maintenance Work-based skills that enhance school-to-work transition of Automobile Technology Graduates of Technical Colleges. With this outcome the null hypothesis of no significant difference was upheld of 0.05 level of significant.

CONCLUSION

Based on the findings of the study, the following conclusions are here by made: Work-bases skills learning activities for enhancing school-to-work transition of Automobile Technology Graduates of Technical Colleges if applied by Automobile Technology Department of Technical Colleges, Automobile Technology Industrial community and government in Northern Nigeria shall bring great success to the students offering Automobile Technology in Technical Colleges in Northern Nigeria to have smooth transition from school-to-work. It's necessary that the teachers of Automobile Technology in Technical Colleges and Automobile Technology Industrial Supervisors should acquaint themselves with the work-based skills for enhancing school-to-work transition in all their day-to-days activities for effective imparting of skills to high rate of production and good quality products.

RECOMMENDATION

Based on the findings of the study, the following recommendations were made: (1) Automobile Technology teachers should always update their knowledge and skills by visiting Automobile technology industries to gain practical skills which they will in turn impart to students, (2) Teachers should embark on frequent supervision of students on SIWES and other cooperative education programmes to ensure that these students are give the appropriate work-based skills needed for effective school-to-work transition, (3) Government should make it compulsory to all pubic and private companies to offer industrial training opportunities to technical college students and (4) Parents, community and society at large should assist in enhancing work-based skills for smooth school-to-work transition of Automobile technology students of technical colleges by allowing them to demonstrate what they have learnt in the classroom to real life situation.

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