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Assessment of the effect of globalization on the 21st century skills among automobile technology graduates from technical colleges in osun state

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Abstract
The study investigated the effect of globalization on the 21st-century skills among automobile technology graduates in technical colleges in Osun state. This study will answer three research question and survey the research design was used for the study. The population of the study comprised of 56 registered senior automobile technology artisans and technicians operating an automobile mechanical and electrical workshop in Osun state, who were purposively sampled. A structural questionnaire was used for data collection and was face validated by three experts. The reliability of the instrument was tested using the Cronbach Alpha reliability method to obtain the reliability coefficient of 0.87. A total of 56 questionnaires were administered and retrieved showing 100% response rate. Standard and mean deviation was used to answer the research questions. The study revealed the emerging technical skills required by automobile technology graduates in repairing automobile engine and braking system as well as the factors affecting technical skills possess by technical college graduates in the State. Based on the findings, recommendations were made among which are that modern industrial equipment/tools should be provided for the teaching of skills in the school workshop and that the Government should provide a takeoff grant to every apprentice that completes stipulated training to acquire skills in motor vehicle trade in Osun State, it also recommended that the identified skills should be packed and inculcated into the curriculum of automobile technology in technical colleges in Osun State among others.

Keywords: technical colleges, automobile technology, skill, graduates and globalization

Introduction

Technical colleges are institutions that prepare people for the world of work, keeping them abreast of the latest happenings in the industry by inculcating in the students' the skills for entrepreneurship so as to be able to combat the effect of globalization and unemployment. Technical college according to Ohize and Ahmad (2014) [11] is a wide economic investment through which boys and girls are trained to acquire saleable skills that will enable them to secure employment which will benefit not just they as students but Nigeria's industries as well. The inability of technical college education system to train the youth for the demand of industries led to the absence of opportunity for creative work and expression. Federal Republic of Nigeria (FRN), 2013) stated that Technical College is a post-primary institution equivalent to senior secondary and is established to prepare students and help them gain practical skills and basic scientific knowledge. After graduating from the college, students are expected to secure employment, set up their own business so as to be self- reliant or further their studies. According to Ogbuaya and Akinduro (2017), the United Nations Educational, Scientific and Cultural Organisation and International Labour Organization (UNESCO & ILO, 2002) states that technical education should aim at lifelong learning. Technical education provides workplace skills apart from academic skills namely; creativity, problem-solving, collaborative and high order thinking skills so as to increase students' flexibility and job mobility. Anindo, Mugambi and Matula (2016) mentions that technical college of education on the other hand is mainly aimed at helping participants to acquire the practical skills, know-how and understanding necessary for employment in a particular occupation, trade or group of occupations or trade, among which is automobile technology.

In furtherance, automobile technology is the study of the complete automobile that is divided into a subsystem approach. In automobile technology programme students are instructed on the operation of all automobile systems processes. The programme emphases are on problem-solving techniques, repair procedures, service techniques, diagnostic analysis and workshop safety (Nduononwi and Akpan, 2016). (Medugu and Dawha, (2015) [6] posited that automobile technology programme emphases are on problem-solving techniques, repair procedures, service techniques, diagnostic analysis and workshop safety and that it involves the application of scientific knowledge in the design, selection of materials, construction, operation and maintenance of automobiles. Automobile Technology is one of the mechanical trades offered as Motor Vehicle Technology (MVT) in Technical Colleges in Osun State and other States of the Federation (FRN, 2013). Automobile technology programmes examined students based on National Business and Technical Education (NBTE) curriculum for the award of

National Technical Certificate (NTC) and Advance National Technical Certificate (ANTC) respectively (Medugu and Dawha, 2015) [6]. Automobile technology education is also the type of education designed to provide its' graduates with creative, problem solving, and psych productive kills (Nduononwi and Akpan, 2016). It is an entrepreneurial oriented occupation. This is because it is one of the very few occupations in which about 90 per cent of its graduates are expected to be self-employed. The main purpose of automobile technology is to provide labour for creative development. Automobile technology has more than 80 sub-trades or occupations within it. These sub-occupations or trades are interconnected to each other. Thus, automobile technology is an entrepreneurial occupation as well as a unique training programme for the eradication of poverty if adequate skills are obtained.

A skill can be seen as an activity or group of activities involving knowledge, judgment, accuracy and usually manual dexterity, all of which are acquired as a result of longtime training and practice. Skill, according to Okorie (2000) in Ogbuanya, Akintonde and Bakare (2017) [10] was referred to as expertness in practical ability, dexterity and tact. Ogbuanya, Akintonde and Bakare (2017) [10] explains that, to be skilful is to exhibit the habit of acting, thinking and behaving in a particular given activity in such a way that the process becomes natural to the individual through repetition or practice. Skill in this context can also be seen as a person expertise in carrying out a task in a way that differentiated him from others. A skill denotes expertise or ability developed in the course of training and experience (Ayonmike and Okeke 2016) [4]. It does not only include trade and craft skills acquired by an apprentice. Occupational skills are tied to this study field and its subject matter, while employability skills are beyond occupational skills themselves because they have to do with personal skills that are needed for employment in the labour market. One reason why many students continue their studies at a university is to enhance their employability. However, while good academic qualifications are highly valued, they no longer seem to be sufficient to secure employment (Yorke, 2006) in (Ayonmike and Okeke 2016) [4]. Due to technological developments and the broadened international orientation of many companies, labour market demands have changed since technology is dynamic. With technological development and advancement, the world of work is in a constant state of flux and change. The rapid advancement in technological development has placed new demands for the 21st-century workforce which products of technical education are prepared to serve. The 21st-century workforce is unique where only people with adequate skills can serve. The unique characteristics of the 21st century according to Aguba (2012) [2] in Oviawe and Lukmon (2017) [14] are:

- A scientific and computer world;
- A technological or jet age demanding efficient use of the computer in all spheres of life;
- An age requiring sound scientific and technological skills for children to cope with its complexity;
- A world where emphasis will be more on accuracy, competence, efficiency and effectiveness, derived from educational foundation; and
- An era of highly skilled practitioners and generalists.

These unique characteristics have made employers of labour to find graduates unusable in the world of work (Oviawe and Lukmon 2017) [14]. Equipping Nigerian youths and school leavers with technical and vocational skills for personal fulfilment and production of goods and services no longer proves to be sufficient but is linked with workplace skills to be literate and being able to use specific applications may help people secure suitable employment and foster employment generally. Obviously, the 21st-century workplace needs the services of workers who can adapt to the fast-paced changes in technology around the world. As a result, greater emphasis should be placed on equipping students with wide learning and problem-solving skills in order to prepare them for a wide range of challenges posed by technological advancement and globalization (Szczurkwska, 1997) in (Oviawe and Lukmon 2017) [14].

Globalization can be said to be a process of integrating local characteristics into global flows, mostly done by means of new communication and information technology. In alignment with this, Pramila and Jeet (2015), stated that globalization is meant to describe the process of creating networks of connections among actors at multi-continental distances, mediated through a variety of flows including people, information and ideas, capital and goods. Globalization is conceptualized as a process that erodes national frontiers, integrates national economies, cultures, technologies and governance and produces complex relations of mutual interdependence. Etim, Apkan and Ibok (2013) opined that globalization is the breaking down of space and time through which instantaneous communication, knowledge and culture can be shown around the world simultaneously. They further state that it also is process in which geographic distances become a factor of irrelevance in the establishment and maintenance of cross-border economic political and socio-cultural relations. Despite the controversy, scholars agree that globalization has had a huge impact on societies at economic, political, and cultural levels, submerging our world. Hence, borders are no longer barriers to all forms of connections and integration of countries. Scholars also agree that the impact of globalization knows no boundaries, as it reaches both developed and developing countries. The effect of this globalization has presented a need for the evaluation of the 21st-century skills possessed by the graduates of automobile technology because many scholars are of the view that the graduates lacked skills that are needed in today's industry. Among the scholars are (Njoku 2014, Elechi, 2013, Ayonmike and Okeke 2016) [4]. Every year technical colleges produce graduates who cannot perform creditably in their education or take up employment especially in automobile trades. This has serious economic and social implications. Since skills acquisition depend on the skill training given to students, it is then very necessary to assess the training given to students of technical colleges in Osun State, especially in the aspect of Automobile technology.

Automobile technology trade is one of the vocational education trades which its objective is to produce craftsmen that will maintain, service and repair automobile cars and generators. National policy on education (NPE) (2014) stated that technical education of which automobile technology is a form, is an education through which practical technical skills

as well as basic scientific knowledge are to be acquired which will enable individuals to be enterprising, self-reliant or self-employed and useful members of the society. However, it is a surprise to know that the graduates of technical college in the country find it to be almost impossible to secure employment due to inadequate skills (Njoku 2014). Njoku further states that employers of labour feel reluctant to employ fresh graduate from technical colleges especially in automobile technology trades. According to Pamd off (2013) [15] the complaint by the employers is that the graduates do not perform up to expectation. Consequently there is high rate of unemployment among automobile technology graduates of technical colleges, especially in Osun State where graduates are not able to secure employment and also create one. In the technical colleges, the main emphasis for those specialization in automobile technology trades is the acquisition of skill required for auto body repairs (metal work), auto body spray (spray/painting work), auto engine repairs (maintenance work), auto electrician (auto electrical works), auto electronic (radio/air-condition work), auto tyre vulcanization (tyre mending/repairs work), and auto parts merchandise (auto spare parts sales) among others. Ability to do all these does not require anything other than manipulative skills and manual dexterity which can be achieved through practical skills. This warranted Okonjo-Iwuala (2013) [12] to opine that it has been well documented that Nigeria's technical institutions lack the tools and machinery to give students the skills employers' need and as a result the issue of youth unemployment seem to be skyrocketing because most of the graduates lack the skills needed to be employable that are often acquired from vocational schools. In the same vein, Okoye (2014) [13] stated that this could be the reason why many of the so-called "expatriate engineers, who are being paid huge sum of money in dollars to build infrastructure in Nigeria are graduates of technical and vocational colleges yet, most engineers and technologists of Nigerian institutions are labelled unemployable. Abuda (2015) [1] also opined that an average motor vehicle mechanic operating an enterprise lacked the requisite mechanical skills for auto body repairs (metal work), auto body spray (spray/painting work), auto engine repairs (maintenance work), auto electrician (auto electrical works), auto electronic (radio/air-condition work), auto tyre vulcanization (tyre mending/repairs work), and auto parts merchandise (auto spare parts sales) among others. This situation had adversely affected vehicle owners, parents and transportation system in Osun state metropolis based on declining maintenance operational standard, non-application of technical skills, poorly equipped workshop, non-functional motor vehicle enterprises in the area and high rate of unemployment among the graduated youths. It is against this backdrop therefore, that this study is undertaken to assess the effect of globalization on the 21st-century skills among automobile technology graduates in technical colleges in Osun State.

Research questions

The following research questions will be answered by the study

1. What are the emerging technical skills required by automobile technology graduates in repairing automobile engine (vehicle maintenance).
2. What are the emerging technical skills required by automobile technology graduates in repairing Braking System.
3. What are the factors affecting technical skills possess by Technical College graduates in Osun State

Research methods

The study adopted a descriptive survey design. Nworgu (2015) stated that a survey research design typically employs interview and questionnaire to determine the opinions, preferences, attitudes and perceptions of peoples about issues.The population of the study was 56 registered senior automobile technology artisans and technicians operating a mechanical and electrical workshop in Osun state. Osun state was chosen because of the fact that most of the populace are farmers and they make use of vehicles in conveying their goods and services from one place to the other. No sample was taken considering the small and manageable size of the population; hence the entire population was used. A structured questionnaire designed by the researcher and called emerging technical skills required by automobile technology and the factors that affect the effect of technical skills needs questionnaire was used to gather data for the study. These instruments was designed in accordance with the independent and dependent variables in the study.The items used a 5-point Likert scale of highly agreed, agreed, undecided, disagreed and highly disagreed, which were assigned numerical values of 5, 4, 3, 2, and 1 respectively. The instrument was subjected to face and content validation by two teachers of automobile technology in technical colleges in Lagos State and also one expert from one registered automobile technology company in Lagos State. These automobile experts assessed the quality and relevance of the items including clarity, appropriateness and sufficiency of the instrument. Their inputs, suggestions and corrections led to the final modification of the instrument for the study.The instrument was trial tested on 20 graduates of technical colleges automobile technology who have permit to work in Kwara state and this yielded a reliability co-efficiency of 0.87 using the Cronbach Alpha formula.

Fifty-six copies of the questionnaires were distributed to the registered artisans and technicians in Osun State. Fifty-six copies of the questionnaires were returned yielding a 100% return rate. The data were collected by administering the questionnaire directly on the respondents by the researchers and two research assistants. The data collected from this study were analyzed using mean and standard deviation in answering the research questions. Any item with a mean value of 3.50 and above was regarded as agreed while any item with a mean below 3.50 was regarded as not agreed.

Result

Research Question 1

What are the emerging technical skills required by automobile technology graduates in repairing automobile engine (vehicle maintenance)?

Table 1

S N	Item Description	X	SD	Remarks
1.	Skills in maintaining leading-edge comprehension of automobile diagnostic technology and digital manuals.	3.96	0.92	Agreed
2.	Skills in performing routine service inspections, placing special focus on maintenance and repair.	3.98	0.91	Agreed
3.	Skills to inspect vehicle engines and mechanical and electrical components to diagnose problems.	3.52	1.20	Agreed
4.	Exceptionally well-versed skills in repairing and replacing broken or dysfunctional parts and also fixing of leakage issues.	3.95	0.74	Agreed
5.	Proficient in identifying mechanical problems, by making good use of computerized diagnostic equipment.	4.45	0.75	Agreed
6.	Proven ability to test parts and systems to ensure that they are in good working conditions.	4.35	0.78	Agreed
7.	Effectively disassembles and assembles automobile parts in order to repair or replace them.	4.69	0.45	Agreed
8.	Proven ability to use testing equipment and tools to ensure that repair and maintenance work procedure are properly carried out.	4.24	0.77	Agreed
9.	Proficiency in handling complex malfunctions, by employing complete and profound comprehension of managing troubleshooting activities.	4.22	0.76	Agreed
10.	Competent in explaining repair and maintenance needs to customers, aimed at helping them understand the importance of both.	4.21	0.76	Agreed

Table 1 showed that all the 10 items on the emerging technical skills required by automobile technology graduates in repairing automobile engine (vehicle maintenance), had their mean values ranged from 3.52 to 4.69 which were above the cutoff point of 3.50. The standard deviation indicates that the responses do not vary widely from the mean.

Research question 2

What are the emerging technical skills required by automobile technology graduates in repairing Braking System?

Table 2

S N	Item Description	X	SD	Remarks
1.	Skills in Servicing automatic braking system correctly	3.80	1.09	Agreed
2.	Skills in carrying out preventive maintenance in the braking system.	4.14	0.74	Agreed
3.	Skills to recognize a defective Anti-lock Braking System (ABS) warning light.	4.20	0.79	Agreed
4.	Skills in carrying out repair of the drum and disc brake.	4.67	0.87	Agreed
5.	Skills in carrying out repair of the master cylinder.	4.57	0.55	Agreed
6.	Skills in repairing and changing brake pad.	4.51	0.55	Agreed
7.	Skills in repairing hydraulic brake pumps.	4.47	0.66	Agreed
8.	Skills in repairing and changing brake calipers.	4.55	0.51	Agreed
9.	Skills in changing and knowing when to change brake shoes.	4.14	1.12	Agreed
10.	Skills in repairing hydraulic braking system.	4.32	0.78	Agreed

Table 2 showed that all the 10 items on the emerging technical skills required by automobile technology graduates in repairing automobile braking system had their mean values ranged from 3.80 to 4.67 which were above the cutoff point of 3.50. The standard deviation indicates that the responses do not vary widely from the mean.

Research question 3

What are the factors affecting technical skills possess by Technical College graduates in Osun State?

Table 3

S/N	Item Description	X	SD	Remarks
1.	Inadequate funding of Technical and Vocational Education.	3.86	1.00	Agreed
2.	Inadequate facilities.	3.75	1.18	Agreed
3.	Brain Drain.	3.77	1.08	Agreed
4.	Mismatch between acquired skills and market needs.	3.87	1.18	Agreed
5.	Negative public attitudes and perceptions regarding technical and vocational education and training.	3.95	0.74	Agreed
6.	Poor Procurement Systems and Bureaucracy	2.03	0.07	Disagreed
7.	Lack of State of The Art Technology and Workshops.	4.12	0.77	Agreed
8.	Absence of Synergies with Industry.	3.94	0.75	Agreed
9.	Poor Research and Innovation Orientation	3.74	1.36	Agreed
10.	Erratic power supply in the workshop.	4.06	1.18	Agreed

Table 3 showed that 9 items on the factors affecting technical skills possess by Technical College graduates in Osun State had their mean values ranged from 3.74 to 4.06 which were above the cutoff point of 3.50. While item 6 on the list falls below. The standard deviation indicates that the responses do not vary widely from the mean.

Discussion of the Result

The findings in table 1 identified 10 items on the emerging technical skills required by automobile technology graduates in repairing automobile engine (vehicle maintenance) which were: Skills in maintaining leading-edge comprehension of automobile diagnostic technology and digital manuals and

Skills in performing routine service inspections, placing special focus on maintenance and repair among others. This is in agreement with Thomas (2013) [17] who stated that greater proportion of the graduates of apprenticeship programme who established motor vehicle mechanic enterprises are unable to service the carburettor, fuel lift pump, fuel pipes, and cannot use modern tools and equipment to diagnose and trouble car engines. This can be attributed to their been unskilled in their respective area of specification considering the low-quality instruction, teaching and training received while on the training. This is also in agreement with Nduononwi (2015) [8] who that there is need to adjust TVET curriculum/programme in Order to train for the needs of contemporary society and competitive existence globally.

The findings in table 2 identified the 10 emerging technical skills required by automobile technology graduates in repairing Braking System which are: Skills in servicing automatic braking system correctly and Skills in carrying out preventive maintenance in the braking system among others. This is in agreement with Udogu (2015) [18] who stated that the mechanical technical skills that are needed in maintaining and servicing modern motor vehicle braking system includes: Recording and printing diagnostic trouble codes, Performing visual inspection of wheel speed sensor and cables, Identifying defective wheel speed sensor, Checking wheel speed sensor and the pulse ring and Carrying out speed sensor signal testing among others.

The findings in table 3 identified 9 factors affecting technical skills possess by Technical College graduates in Osun State among which are: Inadequate funding of Technical and Vocational Education, Brain drain, and Mismatch between acquired skills and market needs among other. This is in agreement with Nduononwi and Akpan (2017) [17], in Atsumbe (2002) [2] who attributed the trend of unemployment and underemployment to the mismatch between skills demand in the workplace and those provided by the schools. This is also in agreement with Inyiagu (2014) [7] who stated that the challenges facing technical and vocational education in Nigeria are Integration of Education and Workplace, Uncertainty and Anxiety, Trends of Globalization of Trade and Labour Markets, and Challenges of Information and Communication Technology among others.

Conclusion

Based on the findings of the study, 10 emerging technical skills required by automobile technology graduates in repairing automobile engine (vehicle maintenance) and braking system were agreed upon by the registered senior automobile technology artisans and technicians. While 9 factors affecting technical skills possess by technical college graduates in Osun State were also agreed by the senior technicians and artisans. This is because the inability of technical college graduates to service the modern automobile in the country and also fits into the modern industry due to mismatch of skills between what they acquired while in school with what is obtainable in the industry possess challenge to the government and the instructors who were involved in the training of automobile technology graduates from technical college. This issues should be addressed by assessing the 21st-century skills possess by this graduates so that they will not only fits into the modern industry but also be job creators in automobile industry.

Recommendations

Based on the findings of the study, the following recommendations were made which include that:

- Modern equipment/tools found in the industries should be made available for the teaching of skills in the school workshop.
- The Government should provide a takeoff grant to every apprentice that completes stipulated training to acquire skills in motor vehicle trade in Osun State.
- The identified skills should be packed and inculcated into the curriculum of Automobile technology in technical college in Osun State.
- There should be provision for constant power supply to the school shop for practical work.
- Federal Government of Nigeria, Automobile manufacturers and industries should collaborate with educational institutions to organize skill improvement training programmes for technical teachers on the identified knowledge and emerging technology skills.

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