

TECHNICAL SKILLS IMPROVEMENT NEEDS OF AUTOMOBILE TECHNOLOGY TEACHER FOR ENTREPRENEURSHIP

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Abstract

The study sought to identify the technical skills improvement needs of automobile technology teachers for entrepreneurship. Structured questionnaire was used to collect data from the respondents. The population for this study consisted of 110 automobile teachers in Niger state. No sampling was use because of the relative small size of the population. Data were analyzed using mean and standard deviation. The findings revealed that automobile technology teachers in technical colleges need modern automobile technology skills for quality training of automobile students in technical colleges for occupation in automobile industry and productive self employment. Finally, the study identified the pedagogical and entrepreneurial skills needed by automobile technology teachers in the technical colleges in Niger state.

Introduction

The importance of equipping the youths with employable and profitable skills made the Nigerian Government to emphasize the implementation of technology in her education system. Technology in education systems, as Ogwo (2004), asserted has transformed education to be of technological nature. Agbionu (1991) pointed out that technology education means vocational preparation that indicates combination of education and training based directly on experience at work in the formal school system. In addition, Federal government of Nigeria (FGN 2004) stated that industrial education is that form of education that leads to the acquisition of practical and applied skills as well as basic scientific knowledge that will enable individuals to be self reliant and useful members of the society. The expected usefulness of the knowledge acquired by technology education recipients for self reliance, include ability to create jobs and to earn a living through the application of the acquired practical skills especially in automobile technology.

Technical skills are the ability to do something expertly and well in accordance to set standard or manufactures' instruction. According to Okeke (2002), to possess skills is to demonstrate the habit of acting, thinking and behaving in a specific activity in such a way that the process becomes natural to the individual through repetition or practices. More so, skills development and improvement is very important in harnessing a nation's natural resources. This is because skills acquisition and its improvement help in developing and advancing intrinsic potentials in individuals. In support of this, Osuala (2004) asserted that most technical skills training actually present great challenges to the learner by integrating practical work, theoretical knowledge, commonsense, observation ability and encouragement in an occupation. The development of technical skills is an important function of educational institution. Okoro (2001) stated that technical colleges are regarded as the principal vocational institution in Nigeria which is designed to

prepare the individual to acquire practical skills, knowledge, and attitude required of technicians at sub-professional level. He further stated that the technical colleges give full craftsman training intended to prepare students for entry into various occupation.

It is however disheartening to imagine that the present condition of technical teachers skills in automobile technology in technical colleges are at a low ebb. There is no exception of this statement in technical colleges in Niger states as their products lack the skills needed to diagnose faults and repair vehicles in the changing world of automobile as a result of technological advancement in automobile industry. The technological growth that brings sophisticated electronic and computer components in today's vehicles. To buttress the above observation, Okoro (2001), remarked that the products of technical institutions do not have the knowledge and skill that will enable them to take up the available jobs. The insufficient college training in terms of technical skills required of the various occupations in automobile trade has deprived or constituted the apparent failure of the college products to secure employment. Entrepreneurial skills deficiency according to Ogwo (2004), also implicated for the failure of some college products that might have ventured into self-employment. All the laxities and lack of modern automobile technology skills contribute to the engagement of a significant number of technical college graduates in the state now ride commercial motorcycles (Okada) for a living instead of practicing the trained automobile trades.

In addition, the erratic economic situation in the present day Nigeria with the resultant massive unemployment also testifies to the poor condition in which automobile technical skills in technical colleges are wallowing. However, if graduates from technical colleges in the state are to be self reliant and be useful in the area of fabrication, services, repair and extending operational life of automobile related technology in our society, the students of the colleges must be trained for the jobs in the changing

world of work in automobile industry. Meanwhile the training of the students can only be effective and meet the demand of today's automobile technology work when technical skills of teachers improved.

The need to shift from mere acquisition of knowledge of the operation of engines to studying performance characteristics of automobile technology teachers in technical colleges cannot be overemphasized. For instance, for a technical institution graduates, who are prepared to teach at technical colleges, to effectively stimulate the students into acquiring relevant skills to handle computerized and electronic equipment together with complexities in modern vehicles, must be efficiently and sophisticatedly trained. Therefore, for the technical college graduates to be well trained in automobile technology, their teachers must have possessed the needed relevant skills improvement for teaching the subject at the college level.

Statement of the problem

Every society needs efficient and well-trained workers. A well trained automobile worker will be able to design, fabricate and repair vehicle accurately. The design, fabrication and repair of automobile are to ensure that automobile are operated safely and its operational life is extended. National Policy on Education (NPE) (2004), has one of its major objectives, to provide training and impart the necessary skills leading to the production of craftsmen, advance craftsmen, technicians, and other middle level skilled personnel who will be enterprising and economically self reliant.

Despite the importance of producing skilled and competent personnel for technological advancement, the teaching of automobile in technical institutions in Nigeria, generally appear not to have been impressive. Basu (1997) stated that most problems associated with teaching of automobile at technical education institutions hinge on manual skills possessed and the teacher's ability to teach. He further explained that these problems have given rise to inefficiency and inadaptability of technical education graduates in the world of modern automobile technology. Due to lack of modern automobile technology skills by automobile teachers in technical colleges the products of the institutions are being restricted in skillfulness, efficiency, proficiency and productivity. Hence, the rate at which unemployment is increasing is very alarming.

However if teachers keep their knowledge and skills up to date by periods of further experience within the world of work and could teach effectively, there is high probability that technical teachers and students will be familiar with, and acquire relevant skills for adaptability in, the world of modern automobile work, thereby becomes imperative to ascertain the skills possessed, and needed, by automobile teachers for improvement and effective delivery of their professional duties in technical colleges in Niger state.

Purpose of the study

The major purpose of the study is to determine the technical skill improvement needs of automobile technology teachers for entrepreneurship. Specifically the study will determine the;

1. Modern automobile technology skills needs of automobile technology teachers in the technical colleges for entrepreneurship in Niger state.
2. Pedagogical skills needed by automobile technology teachers to impart the modern automobile technology skills in technical colleges for entrepreneurship in Niger state.
3. Strategies for acquiring the required skills for improvement by automobile technology teachers in the technical colleges for entrepreneurship in Niger state.

Research Question

The following questions were formulated to guide the study.

1. What are the modern automobile technology skills needed by automobile technology teachers in the technical colleges for entrepreneurship in Niger state?
2. What are the pedagogical skills needed by automobile technology teachers to impart the modern automobile technology skills in technical colleges for entrepreneurship in Niger state?
3. What are the strategies for acquiring the required skills for improvement by automobile technology teachers in the technical for entrepreneurship in Niger state?

Methodology

This study was conducted using the survey research design. According to Ezeji (2004), a survey research design is one which involves the assessment of public opinion using collection of detailed descriptions of existing phenomena with the intent of using the data to justify current conditions and practices or to make better plans for improving phenomenal. The design is suitable for the study because it uses questionnaire to seek information from respondents. The study was conducted in all technical colleges offering automobile technology in Niger state. The population for the study comprised all the automobile-workers/teachers in technical colleges in Niger state.

The instrument used for data collection was questionnaire. The questionnaire was developed after review of available literature on automobile technology. The instrument was face-validated by five lecturers in Department of Vocational Teacher Education, University of Nigeria, Nsukka and Department of Industrial and Technology Education, Federal University of Technology, Minna. The reliability of the instrument was established using Cronbach's Alpha reliability technique. The result of the reliability coefficient was 0.98. The data collected were analyzed using mean and standard deviation to answer each of the three research

questions formulated for this study. However, the t-test was used for testing the null hypothesis at probability of 0.05 level of significance.

Result

Research Question 1

What are the modern automobile technology skills needed for improvement of automobile technology teachers in the technical colleges for entrepreneurship in Niger state?

Table 1 mean and standard deviation of response score of automobile technology teachers on modern automobile technology skills needed for improvement by automobile technology teachers in the technical colleges for entrepreneurship in Niger state.

| S/N | Items | X | SD | Remarks |
|---|--|------|------|---------|
| Technology skills on modern automobile technology (On-board computer System) | | | | |
| 1 | Read trouble codes on computer model system | 4.52 | 1.11 | needed |
| 2 | Examine and adjust computers on a running vehicle | 4.13 | 1.19 | needed |
| 3 | Diagnose and repair computer problems in computerized engines | 4.22 | 1.08 | needed |
| 4 | Use computer skill in modern vehicle in good operating condition | 4.18 | 0.91 | needed |
| 5 | Analyze the operation of computer system and liable problems (On-board) | 4.23 | 0.93 | needed |
| 6 | Access larger network and work on microprocessor in OBD | 3.57 | 1.30 | needed |
| 7 | Identify and use relays to execute computer commands that is interdependent of sensor (input), control unit and actuators (output) | 3.94 | 1.05 | needed |
| 8 | Carry out basic test and repair computer system using computer animation | 4.11 | 0.85 | needed |
| 9 | Scan and control computer problems in a computerized automobile system | 4.05 | 1.18 | needed |
| 10 | Inspect and diagnose leakages in vehicle engine under computer Control | 3.97 | 1.10 | needed |
| 11 | Troubleshoot vehicle problems using computer | 3.57 | 0.97 | needed |
| 12 | Analyze and correct faulty mechanism causing intermittent failure in vehicle | 3.75 | 0.99 | needed |

The analysis in table 1 above revealed that the automobile technology teachers needed all the 12 modern automobile technology skills for teaching new technology incorporated in modern automobile with mean range from 3.57 to 4.52.

Research Question 2

What are the pedagogical skills needed by automobile technology teachers to impart the modern automobile technology skills in technical colleges for entrepreneurship in Niger state?

Table 2: Mean and standard deviation of response scores of automobile technology teachers on the pedagogical skills needed by automobile technology teachers to impart modern automobile technology skills in technical colleges for entrepreneurship in Niger state.

| S/N | Items | x | SD | Remarks |
|---|--|------|------|---------|
| Pedagogical skills on instructional planning | | | | |
| 1 | Examine the curriculum of the training programme module | 4.72 | 0.45 | Needed |
| 2 | Establish objectives of instruction | 4.26 | 1.07 | Needed |
| 3 | Determine content of instruction from a module unit | 4.55 | 0.50 | Needed |
| 4 | Specify instructional concepts in a learnable unit during the laboratory or classroom practice | 4.34 | 0.64 | Needed |
| 5. | Arrange selected instructional content in order of presentation | 4.40 | 0.49 | Needed |
| 6. | Identify appropriate and adequate learning experience for instruction | 4.46 | 0.50 | Needed |
| 7. | Select and adopt relevant methods for content delivery | 4.28 | 0.45 | Needed |
| 8. | Identify appropriate and learning experiences for instruction | 4.26 | 0.60 | Needed |
| 9. | Select and emphasis appropriate technique for instructional delivery | 4.43 | 0.50 | Needed |
| 10. | Identify and select appropriate technique for instructional Delivery | 4.26 | 0.60 | Needed |
| Pedagogical Skills on Instructional Implementation | | | | |
| 11 | Select and use relevant instructional method to link the previous experience with new lesson | 4.48 | 0.50 | Needed |
| 12. | Present selected objective of the instruction | 4.27 | 0.72 | Needed |
| 13. | Present selected content and arrange its delivery in sequential order | 4.14 | 0.64 | Needed |
| 14. | Use appropriate questioning technique to determine student behavior | 4.30 | 0.58 | Needed |
| 15. | Present selected learning materials at appropriate | 4.15 | 0.62 | Needed |
| 16. | Introduce learner's instructional activities at the appropriate time | 4.07 | 0.70 | Needed |
| 17. | Identify learners errors in the laboratory or classroom work practices | 4.15 | 0.62 | Needed |
| 18. | Adopt appropriate instruction assessment to be used. | 4.20 | 0.57 | Needed |
| 19. | Correct identified learners' error | 4.13 | 0.49 | Needed |
| 20. | Adjust and control instructional strategy in response to learners' feedback | 3.95 | 0.53 | Needed |
| Pedagogical Skills on Instructional Evaluation | | | | |
| 21. | Specify the instructional objectives to be evaluated | 4.40 | 0.61 | Needed |
| 22. | Select the evaluation strategies to be evaluated | 4.14 | 0.64 | Needed |
| 23. | Develop the evaluation to be used | 4.22 | 0.55 | Needed |
| 24. | Administer the technique (test or task) | 3.89 | 0.60 | Needed |
| 25. | Observe and supervise the learners performing the task/ test independently | 4.20 | 0.97 | Needed |
| 26. | Assess the learners performance | 4.43 | 0.50 | Needed |
| 27. | Provide justified feedback to learner on their performance in the test/task | 4.36 | 0.48 | Needed |

Table 2 above indicates that the respondents need all the 27 items on pedagogical skills for imparting modern skills on automobile technology teacher in technical colleges. The mean scores for each item are equal to or exceed 3.50.

Research Question 3

What are the strategies for acquiring the required skills for improvement by automobile technology teachers in technical colleges for entrepreneurship in Niger state?

Table 3: Mean and standard deviation of responses of the respondents on strategies for acquiring the required skills for improvement of automobile technology teachers in the technical college entrepreneurship in Niger state.

| S/N | Items | X | SD | Remarks |
|-----|--|------|------|-----------|
| 1. | Through industrial visit | 4.75 | 0.44 | Agreed |
| 2. | Work based learning in the form of on-the-job | 4.40 | 0.49 | Agreed |
| 3. | Training of ICT in the present diagnostic diagnosis | 4.52 | 0.44 | Agreed |
| 4. | Interaction with other professional colleagues in modern automobile technology | 4.43 | 0.73 | Agreed |
| 5. | Off-the-job training in which extensive practical experience new skills are acquire | 3.87 | 0.86 | Agreed |
| 6. | Consulting external experts | 4.24 | 0.83 | Agreed |
| 7. | Exhibition of new technologies in modern vehicle models | 4.25 | 0.44 | Agreed |
| 8. | Workshop training as a strategy for acquiring modern automobile technology skills | 4.33 | 0.73 | Agreed |
| 9. | Seminar as a strategy for acquiring modern automobile technology skills | 4.25 | 0.86 | Agreed |
| 10. | Team work as a strategy that can efficiency, proficiency and making skills natural to teachers | 4.21 | 0.83 | Agreed |
| 11. | Undertaking distance educational studies | 3.45 | 1.17 | Disagreed |
| 12. | Supervising students placement on SIWES | 4.07 | 0.79 | Agreed |
| 13. | Supervising relevant skills tasks | 4.20 | 0.57 | Agreed |
| 14. | Engage in project sessions, and engagement in laboratory Practical | 3.15 | 1.05 | Disagreed |
| 15. | Undertaken sabbaticals | 4.26 | 0.87 | Agreed |
| 16. | Undertaken information search. Such as libraries, reference Journals and manufacturers technical manuals | 4.13 | 1.02 | Agreed |

The data presented in table 3 shows that respondents agreed on 14 items agreed but disagreed on 2 items

Findings of the Study

1. Automobile technology teachers in technical colleges need modern automobile technology skills for quality training of automobile students in technical colleges for occupation in automobile industry and productive self employment. Some of the modern automobile technology skills needed are:
 - i. Assess larger networks and work on microprocessors in On-board diagnosis (OBD) computer system in modern vehicles.
 - ii. Identify and use relay to execute commands that is interdependent of sensors (input), control unit and actuators (output).
 - iii. Diagnostic and repair faults in the engine control unit with diagnostic scan tools and engine analyzer.
 - iv. Use a modern spark to verify voltage in the distributor.
 - v. Troubleshoot computerized transmission controller using light emitting diodes (LED) test lights.
2. The pedagogical skills needed by automobile technology teachers in the technical colleges in Niger state to enable them teach for entrepreneurship in their specialized occupation include:
 - i. Examine the curriculum of the training programme module.

- ii. Establish objective of instruction.
- iii. Select and use relevant instructional method of linking the previous experiences (old technology skills) with new lesson (new technology skills).
- iv. Assess learner's performance
- v. Provide justified feedback to learner on their performance in the test/task.

Discussion of Findings

The finding showed that, the respondents from the technical colleges in both Niger state disagreed with undertaking distance education studies and undertaking sabbaticals as strategies or avenue for acquiring the required skills for improvement by automobile technology teachers in the technical colleges in the states. Their disagreement on the two items might be traced to the fear of conceding their commitment to their dependants to go on distance education studies and sabbaticals. Secondly they might be considering their supplementary means of surviving that could be jeopardized. The two factors might hamper their decision to go on either distance education studies or sabbaticals. While 14 strategies among which include, industrial visit, on-the job learning, consulting of external experts were agreed with as means or avenue through which new modern automobile technology skills can be acquired. This is in line with the assertion of some authors like Darrah (1992) and Rosenshine (1996) among others that different ways in which the skills are acquired in cases involve those strategies that were agreed with the respondents in the technical colleges in Niger

state. The study further revealed the modern automobile technology skills needed for improvement by automobile teachers in technical colleges and the pedagogical skills needed for imparting modern automobile technology skills by automobile technology teachers.

Conclusion

Based on the findings of this study, the following conclusions were drawn:

Automobile technology teachers training background lack the quality in terms of technology skills required, which most of them do not sufficiently possessed. This in turn leads to shallow and manual skills with which they train students in technical colleges. Automobile technology teacher's lack of knowledge about emerging complex skills in automobile industry resulted from traditional act of drawing curriculum from libraries rather than from industrial work setting. This contributes immensely to their failure to include contemporary practice of the work environment in their teaching. Exposition of automobile technology teacher to various modern automobile technology skills required in accomplishing a task on modern automobile technology will be of great assistance to their improvement. More so, constant practice of pedagogical skills needed to impart such modern automobile technology skills will elevate the teacher to be a fully qualified automobile teacher and as well

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teach well and effectively in the technical colleges. Nigeria like other countries of the world is developing through challenges and finding solution, the quality of vocational education has to be effective in instructional delivery; this call for efficient preparation of the implementer of the curriculum.

Recommendations

The following recommendations were made on the basis of the findings of this study;

1. Technical teachers or whoever ought to teach technical subjects, like automobile technology in any of the technical institution should undergo intensive training under craftsmen technical teacher's education studies up to bachelor of education degree (B.Ed) technical from a reputable and recognized university
2. Extensive training should be organized for automobile technology teachers in the technical colleges in the two states to keep them abreast with the contemporary practice and update their skills in automobile work.
3. The government of Niger state should encourage automobile technology teachers by giving them incentives and financial support to go on re-training courses or programmers.
4. The management of automobile industries and in-house personnel should be co-opted to consolidate teachers teaching with actual work experience.

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