



## Integration of Work-Based Learning (WBL) into Automobile Technology Education Curriculum for Nigerian Certificate in Education (Technical) in North-East Nigeria

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### ABSTRACT

*This study was carried out to effectively integrate Work-Based Learning (WBL) into the Automobile Technology Education curriculum in Nigeria Certificate in Education (Technical), in North East Nigeria. The study was guided by three (3) specific objectives and research questions with one hypothesis tested at a 0.05 significance level. A descriptive survey research design was adopted for the study. The population of the study comprises Automobile Technology Education Lecturers, Students, and Automobile Workshop Technologists Industry based Automobile Staff making a total of 172. The sample of the study was 140 respondents drawn through purposive and stratified random sampling. The instrument for the study was a structured questionnaire developed by the researchers according to the specific objective and research questions that guided the study. The instrument titled Automobile Technology Education Work-Based Learning Questionnaire is made up of 24 items, its scoring scale was meant to elicit respondents' opinions on acceptability, relevancy, and agreement on the inclusion of WBL in Automobile Technology Education Curriculum of NCE Technical. The instrument was validated by three experts from the Technology Education Department of Modibbo Adama University Yola and trial tested, to obtain a reliability coefficient of 0.75. The findings of the study revealed that; the seven WBL components are highly accepted and relevant for integration into Automobile Technology Education. Based on these findings the following recommendations were made among others: the NCCE Minimum Standard should be redesigned to prioritize WBL in Technical Education Programmes and Automobile Technology Education Programme Should Adopt industries designed curriculum instead of a curriculum designed by non-skilled persons or policymakers.*

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### INTRODUCTION

Skills and knowledge are the engines for economic growth and social

development of any nation, hence, the need to give the upcoming generation an all rounded Education that will in turn

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make them a skillful and reliable workforce in the society. Education is always related to variables such as purpose of the learner, the aim of the teacher as well as the technological problems of the society. According to the Center for Inter-American Center for Knowledge Development in vocational Training (2020), technology education is learning systems in which both soft and hard skills are develop within a joined-up, integrated development and delivery framework that seeks to improve livelihoods, promotes inclusion into the world of work and that support community and individual agency. Work-Based Learning (WBL) is an educational strategy that provides students with real-life work experiences where they can apply academic and technical skills and develop their employability (Zinth, 2018).

WBL has its own implications for Technical and Vocational, Education and Training (TVET) at both international and national levels; these is because it is symbolic in raising the visibility and relevance of Technical Education and skills development which also create a more prominent place for them on the global education policy agenda (Marope, Chakroun & Holmes, 2015). WBL has an important role to play in technological advancement through transfer of knowledge and skills. Rapid technological progress has had and continues to have significant implications for Technical Education. Therefore, understanding and anticipating these changes in technology has become crucial for designing a responsive WBL systems, and more broadly, effective skill policies. The flexibility to adapt the supply of skills to

the rapidly, and in some cases radically changing needs in sectors such as Automobile technology has become a central feature of WBL systems. Globally, the skills requirements and qualifications demanded for job entries are rising (Agbata, 2010). This reflects a need for not just a more knowledgeable and skilled workforce, but one that can adapt quickly to new emerging technologies in a cycle of continuous learning.

There are several models of WBL, a school may choose to use a single model or differentiate instruction by using multiple models depending on a student's pathway and career objectives. These Possible Models includes: Apprenticeship, Cooperative, Internship, School Based Enterprise, and Service Learning Based. WBL can also be classified into three broad ways, based on the following perspectives: Duration of assignment, Relation to course work and Stipend

1. Duration of assignment i.e. The work-based learning experience maybe of a duration of a few hours to 2/4 years,
2. Relation to course work i.e. Work-based learning is generally related to a specific subject taught at school or colleges of education and
3. Stipend i.e. WBL assignments may be paid or unpaid.

WBL demands that the students should be able to balance the requirements of being students and trainees while continuing to fulfill the roles for which they are engaged in a work (Helyer, 2015). The WBL suggests to all types of discovering that happen in a genuine workplace. Apprenticeships

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(formal and casual), entry level positions/traineeships and hands on preparing are the most well-known sorts of work-based learning (Stainsby & Bannigan, 2012). In most cases, work-based learning is a combined element of learning in the workplace with classroom-based learning. According to Yahya, Yusri and Rabiu, (2019), WBL requires close collaborations between the NCE (T) awarding institutions in Nigeria, the labour market, and the curriculum planners.

Technical Education, over the years has been misunderstood by some educators and the society at large; the society had been led to believe that technical Education is for those who are incapable of pursuing academic programmes sufficiently (Okuta & Dawah, 2014). Against this background, Automobile Technology has made slow progress from its earliest time to date. Several studies conducted have shown that, the products of these programmes lacked the basic skills needed to impact the necessary technical skills on their students and for gainful employment in today's automobile industries (Agbata, 2010). The curriculum was blamed for not being adequate and relevant to offer enough of the skills needed to meet the challenges that are involved in the maintenance of modern automobiles on Nigerian roads.

Technical and vocational education system in Nigeria is designed to produce competent craftsmen for the different sector of the economy who are expected after graduation to be able to test, diagnose, service and carryout repairs as specified in the national policy. Invariably, the present curriculum in these colleges of education that produces

these technical teachers at NCE Technical (T) Level does not provide room to achieve these goals and for that reason, Committees of the NPE (FRN, 2013) as cited in Audu, Aede and Inti (2014), observed that the present crops of teachers teaching Motor Vehicle Mechanics (MVM) in the technical colleges are grossly incompetent and incapable of imparting knowledge and skills efficiently and effectively to the learners. There is therefore great doubt as to the performance of MVM teachers, in terms of quality, for handling the subject in our various technical colleges. Some recent studies carried out in the area of teacher quality for the technical colleges and secondary schools in some states of the federation indicate negative disposition (Nduanya, 2018).

A research conducted by Aliyu et'al (2016), indicates that, the present framework of automobile technology education at NCE (T) Level, does not provide the automobile technology education NCE graduate with the necessary confidence of their pedagogical and practical skills. As a result, the automobile technology education students at NCE (T) Level after graduation will be in need of intensive training and retraining in pedagogical as well as practical skills to enable them to perform their professional responsibilities in their practice. While supporting this view, Audu, Aede and Inti (2014) agreed that, the pre-service training received by the students was found to be rickety and completely defective, this might not perfectly prepare them for effective job performance. The automobile students need to be retrained after graduation in order to update their knowledge, skills,

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and competencies with respect to pedagogical and practical skills to enable them to teach the learners efficiently and effectively, so that the learners can graduate as competent craftsmen, technicians, and technologist.

There is a very close relationship between youths' unemployment and national security. Unemployment in Northeast Nigeria poses many social, economic, political, and psychological consequences, which directly and indirectly impacts on national security. Some of the social consequences of the high level of youths' unemployment on national security are that, it encourages the development of street youths and urban urchins popularly known as area boys which is a culture that encourages criminal behavior (Chapman, 2019). According to Adebayo (2018), unemployment has also contributed to increasing feminization of poverty among young women, which has encouraged prostitution as a means of survival and leads to trafficking of young women across international borders with transnational security implications. Psychologically, the unemployed persons usually experience trauma, anger, frustration, low self-esteem, negative life satisfaction, unhappiness, and mental disorder including depression and acute stress. Other economic consequences of unemployment include fleeing of youths and able-bodied men from the country in search of better opportunities elsewhere, thereby reducing the labour force and manpower capacity in Northeast Nigeria (Adebayo, 2018). It is highly incontrovertible that youth unemployment is a major threat to national security in Nigeria. It is obvious

that the unemployed youths could perpetrate or could be engage in perpetrating violence and thus threatening the national security.

Osakwe (2016) posited that, unemployment among the youths is responsible for all manner of social devices such as violence, crime, cultism and criminality. He specifically pointed out that majority of violent acts such as post-election crisis, and the Boko Haram insurgency in the Northeast part of Nigeria that threatening national security in Nigeria has been ascribed to youth unemployment. Owing to this background, like any other career driven sector or individual that needs to strive for improvement, Automobile Technology Education graduates of the colleges of education, besides teaching their subject contents, as technical teachers, also need skills to survive and be productive, therefore, they have to acquire relevant skills that will give them the edge to be employed, freedom to be self-employed and even an employer of labour themselves. In this way, they also will be contributing to the development of Nigeria's economy (Adebayo, 2018). Therefore this study is aimed at integrating Work-Based Learning into Automobile Technology Education curriculum in Nigeria Certificate in Education (Technical) in North East Nigeria. Specifically the study will determine the acceptability of WBL for effective integration into Automobile Technology Education curriculum of NCE (Technical), the most relevant WBL for integration into Automobile Technology Education curriculum of NCE (Technical) and how WBL prepares students for competency and employability if integrated into

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Automobile Technology Education curriculum of NCE (Technical).

### RESEARCH QUESTIONS

The following research questions were formulated to guide the study;

1. What is the level of acceptability of WBL for integration into Automobile Technology Education curriculum of NCE (T) in North-East Nigeria?
2. Which of the WBL components are relevant for integration into Automobile Technology Education curriculum of NCE (T) in North-East Nigeria?
3. Does WBL prepare Automobile Technology Education students for competency and employability when integrated into Automobile Technology Education curriculum of NCE (T) in North-East Nigeria?

### METHODOLOGY

Descriptive survey research design was used for the study; the design was considered appropriate as the variables of the study are to be studied in the way they occur naturally without manipulations. The area of the study is the North-East of Nigeria, while the population of the study comprised all 52 Automobile Technology Education Lecturers, 14 Automobile Technologists, 73 Automobile NCE III students in NCE (Technical) awarding institutions in the North-East of Nigeria, and 33 Industry Based Automobile staff drawn from public automobile workshops and industries within the North East of Nigeria, making a total population of 172. A simple random sampling techniques was used to select NCE (T) awarding institution from some states

while other institutions awarding NCE (T) from other states, automatically serves as the sampled school in their respective states, these institutions includes; 64 Automobile NCE III students from the various NCE (Technical) awarding institutions in the North East of Nigeria, 47 Automobile Technology Education Lecturers, and 11 Automobile workshop Technologists from the sampled schools, in the population was used as sample, due to its' manageable size, while a proportionate stratified random sampling techniques was used to select 18 Industrial Based automobile staff drawn from automobile workshops and industries in the North East of Nigeria, summing up a total sample of 140.

The instrument for the study was a structured Questionnaire developed by the researchers, titled: Automobile Technology Education Work-Based Learning Questionnaire (ATEWBLQ). The instrument is made up of 24 items, its scoring scale was meant to elicit respondents' opinion on acceptability, relevancy and agreement on the inclusion of WBL in Automobile Technology Education Curriculum of NCE Technical. The instrument has three rating scales with five points each, ranging from Highly Acceptable (HA) = 5, Acceptable (A) = 4 Undecided (UD) = 3 Unacceptable (UA) = 2 and Highly Unacceptable (HU) = 1; Highly Relevant (HR) = 5, Relevant (R) = 4 Undecided (UD) = 3, Less Relevant (LR) = 2, Not Relevant (NR) = 1, and Strongly Agree (SA) = 5, Agree (A) = 4, Undecided (UD) = 3, Disagree (DA) = 2, Strongly Disagree (SD) = 1.

The Instrument was validated by three experts from the Moddibo

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Adama University, Yola, and Federal College of Education (technical) Gombe. Split-half method was used to determine a reliability coefficient which is 0.75. The researchers visited the respondents directly and the respondents were given 2 weeks to respond and return the questionnaires to the research assistants in each of these institutions and organizations, the use of phone calls was also explored in contacting and reminding the research assistants in the various institutions and organizations. With the aid of these research assistants, the researchers were able collect all administered questionnaire. Data analysis was done using Statistical Package for Social Sciences (SPSS)

version 23. Mean and standard deviation was used to answer research questions. To answer the research questions, the mean was interpreted based on the scaling points of the instrument and the theory of true limit of number. All items with mean score equal to or greater than 3.50 were considered accepted, relevant and agreed but if otherwise will not be accepted, relevant or agreed.

## RESULTS

**Research Question 1.** What is the level of acceptability of WBL for integration into Automobile Technology Education curriculum of NCE (T) in North-East Nigeria?

**Table 1:** Mean and Standard Deviation of Acceptability of Work-Base Learning (WBL)

S/N	Items	N	S $\bar{x}$	L $\bar{x}$	T $\bar{x}$	I $\bar{x}$	G $\bar{x}$	SD	Remark
1	Apprenticeship influences students of automobile technology education to learn in a realistic environment and gets the opportunity to apply his or her knowledge in real-world scenarios	140	4.25	4.53	4.55	4.61	4.41	.729	Accepted
2	Job shadowing influences students of automobile technology education in getting familiar with the duties and responsibilities associates with the job.	140	4.05	4.19	4.36	4.44	4.17	.758	Accepted
3	Business/industry field trip incites the Automobile students with the latest technical advancements and business strategies of an enterprise	140	4.09	4.32	4.55	4.56	4.26	.792	Accepted

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4	Entrepreneurial experience influences the students of automobile technology education with positive attributes to business	140	4.27	4.17	4.73	4.44	4.29	.827	<b>Accepted</b>
5	Cooperative education influences automobile technology education students in gaining experience even without having access to state-of-art equipment required to transact the technical course practically in their colleges.	140	3.97	4.26	4.09	4.44	4.14	.807	<b>Accepted</b>
6	School-based enterprise influences automobile technology education students with learning experience that will give them the ability to manage the various aspects of automobile business	140	3.67	4.74	4.36	4.56	4.20	.815	<b>Accepted</b>
7	Service learning influences the Automobile technology education students with the right attitudes and skills by carrying out volunteer service related to automobile technology	140	3.89	4.81	4.82	4.72	4.38	.885	<b>Accepted</b>

$S\bar{x}$  = Mean Response of Students  $L\bar{x}$  = Mean Response of Lecturers  $T\bar{x}$  = Mean Response of Technologist  $I\bar{x}$  = Mean Response of Industry staffs  $SD$  = Standard Deviation  $G\bar{x}$  = Grand mean of response groups

The result from table 1, indicates that the responds mean of Students ranges from 3.67 to 4.25, the mean responds of Lecturers score is between 4.17 and 4.53, that of Technologists from

4.09 to 4.55, while that of the Industry based automobile staff ranges from 4.14 to 4.41. All these, were derived with an average standard deviation scores between 0.729 and 0.827. These results

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clearly established the fact that all of the seven Work-Based Learning (WBL) content areas are highly accepted for effective integration into Automobile Technology Education curriculum of NCE (T) in North-East Nigeria as

responses to all the stated items were accepted.

**Research Question 2.** Which of the WBL components are relevant for integration into Automobile Technology Education curriculum of NCE (T) in North-East Nigeria?

**Table 2:** Mean and Standard deviation of Relevant Work-Based Learning Components areas for Inclusion into NCE (T) Automobile Technology Education Curriculum

S/N	Items	N	S $\bar{x}$	L $\bar{x}$	T $\bar{x}$	I $\bar{x}$	G $\bar{x}$	SD	Remark
8	Apprenticeship or internship or mentorship	140	4.34	4.34	4.36	4.44	4.36	.866	Relevant
9	Job shadowing	140	3.98	4.43	4.45	4.00	4.17	.709	Relevant
10	Business/industry field trip	140	3.09	4.17	4.00	4.06	3.65	1.07	Relevant
11	Entrepreneurial experience	140	3.58	4.26	4.09	4.44	3.96	.920	Relevant
12	Cooperative education	140	4.00	4.17	4.45	4.39	4.14	.886	Relevant
13	School-based enterprise	140	3.72	4.30	4.09	4.17	4.00	.929	Relevant
14	Service learning	140	4.08	4.36	4.55	4.28	4.24	.810	Relevant

S  $\bar{x}$  = Mean Response of Students L  $\bar{x}$  = Mean Response of Lecturers T  $\bar{x}$  = Mean Response of Technologist I  $\bar{x}$  = Mean Response of Industry staffs SD = Standard Deviation G  $\bar{x}$  = Grand mean of response groups

The result in table 2 indicate the mean and standard deviation of responses to research question 2, students responds to the various items varies 3.09 to 4.34 and that of lecturers is between 4.17 and 4.43, while responses given to the items by technologists ranges from 4.00 to 4.55. The response given by industry based automobile staff is between 4.00 and 4.44 with a total average mean for all responses to items ranging from 3.65 to 4.24 with an average standard deviation between 0.709 and 1.07. therefore, all items stated in the research question were accepted, this

agrees with the fact that, all the seven listed Work-Based Learning (WBL) areas are considered relevant to be integrated into Automobile Technology Education curriculum in NCE (T) in North-East Nigeria.

**Research Question 3.** Does WBL prepare Automobile Technology Education students for competency and employability when integrated into Automobile Technology Education curriculum of NCE (T) in North-East Nigeria?





**Table 3:** Mean and Standard Deviation on the way Work-Based Learning Prepares Students for Competency

S/N	Items	N	S $\bar{x}$	L $\bar{x}$	T $\bar{x}$	I $\bar{x}$	G $\bar{x}$	SD	Remark
15	Inclusion of WBL in automobile technology education programme offers students with clear suggestions of quality of performance and standard required for them	140	4.41	4.43	4.45	4.11	4.38	.662	Agreed
16	Enforcing students to showcase acquisition of specific skills through assignment completion and assessment.	140	3.09	4.28	4.45	4.28	3.75	1.18	Agreed
17	Ensuring the students graduation from the department of automobile technology department is not only based on end of semester classroom examination but also through evidence of skill mastery for employability.	140	3.83	4.28	4.45	4.17	4.07	.828	Agreed
18	Ensuring that only WBL in automobile curriculum covering the demands of the industries are studied by automobile students.	140	3.67	4.38	4.09	4.39	4.04	.860	Agreed
19	By training and retraining of the automobile technology education lecturers to facilitate the adoption of the WBL in automobile technology education	140	3.80	4.21	4.09	4.17	4.01	.869	Agreed
20	Incorporating work place components to enable students to learn from automobile department in the institution and industry supervisors.	140	3.47	4.36	4.27	4.50	3.96	.985	Agreed

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21	Production of specific projects or products by the students as evidence of skill mastery.	140	3.77	4.32	4.36	4.17	4.05	.947	<b>Agreed</b>
22	Using innovative teaching methods, including small group learning, self-directed learning, and collaborative learning.	140	3.80	3.98	3.91	4.06	3.90	1.04	<b>Agreed</b>
23	Providing benchmark for ascertaining relevant employability skills mastery.	140	3.88	4.38	4.45	3.72	4.07	.887	<b>Agreed</b>
24	By fostering the connection between automobile technology education institutions and labor market	140	3.80	4.30	4.09	4.11	4.03	1.00	<b>Agreed</b>

$S\bar{x}$  = Mean Response of Students  $L\bar{x}$  = Mean Response of Lecturers  $T\bar{x}$  = Mean Response of Technologist  $I\bar{x}$  = Mean Response of Industry staffs **SD** = Standard Deviation  $G\bar{x}$  = Grand mean of response groups

Table shows that most of students mean responds were around 3.00 and above while the responses of both lecturers, technologists and industry based automobile staff were at 4.00 and above, however, these indicate a total acceptance to the research question with items 15 to 24 all been agreed with average mean scores of the various groups ranging from 3.75 to 4.38 at standard deviation between 0.662 and 1.18 which are all greater than the criteria mean of 3.00. This shows that the items are all accepted as the various ways Work-Based Learning (WBL) prepares students for competency and employability when integrated into Automobile Technology Education curriculum in NCE (T) in North-East Nigeria.

## FINDINGS

1. All the Work-Based Learning (WBL) components (i.e Apprenticeship or internship or mentorship, Job shadowing, Business/industry field trip, Entrepreneurial experience, Cooperative education, School-based enterprise and, Service learning) are highly accepted for effective integration into Automobile Technology Education curriculum in NCE (T) in North-East Nigeria,
2. All the WBL components; Apprenticeship or internship or mentorship, Job shadowing, Business/industry field trip, Entrepreneurial experience, Cooperative education, School-based enterprise and, Service learning are considered relevant to

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- be integrated into Automobile Technology Education curriculum of NCE (T) in North-East Nigeria.
3. Work-Based Learning (WBL) can prepare students for competency and employability when integrated into Automobile Technology Education curriculum in NCE (T) in North-East Nigeria.

## DISCUSSION

Findings of this study is in agreement with Rabi, Yusri & Yahya (2019) who opined that, Work-based learning in technical and vocational education and training (TVET) is a separate pedagogy that strengthens the delivery of vocational education and training, and requires students to maintain balance in being a student and a trainee, that was supported by Okon (2011), that WBL is an experiential learning programme which uses the workplace as an essential constituent of the curriculum. In addition, it is also in agreement with Mohammed & Ismail (2018), who stated that, WBL offers the students the chances to increase different aptitudes upon introduction to the thorough academic exercises with hands-on vocation development experiences.

The findings is also in agreement with Bartlett (2018), Who stated that all Mechanisms that formally recognize workplace learning are important because they facilitate skills portability, worker mobility, attractive study path which will also generate benefits for vulnerable young people, the unemployed and added that many reintegration/re-training programmes already use WBL to offer participants from these target groups a route back

into formal education or to facilitate their transition to employment. This was supported by Hamilton & Agens (2018) that, Work-based learning models should include the following: Apprenticeship or internship or mentorship, Job shadowing, Business/industry field trip, Entrepreneurial experience, Cooperative education, School-based enterprise and Service learning.

The result of the current study is in agreement with Brodie and Irving (2017) pedagogical approach, the philosophical framework for the TVET system in Nigeria and other developing nations aspiring to develop their TVET system to adapt which is as follows; Focus strictly on the skills the TVET students should be able to acquire; Offer flexible modular based system, which will enable students to obtain modules that lead to certification the industries require; Connect with the industries to identify, verify and make public the competencies acquired by the students; Assesses TVET students based on specific competencies and industries standard rather than curricular or classroom teaching assessment; Teaching and learning programme should be designed to assist the students to acquire specific skill adequately; Take knowledge and attitudes into account when assessing students' competencies, and its primary source of evidence should be on the students' practical performances and not classroom performances; Offer students opportunities to progress through the teaching and learning process at their own pace rather than course completion, which do not guarantee students acquisition of knowledge, skills, and

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competence; Provide adequate training periods for learning concrete skills than abstract learning as seen in some of the courses developed for teaching in TVET institutions and Integrate only relevant theories with skill practice.

## CONCLUSION

Considering the global trends in technology, the Automobile Technology Education curriculum should emphasize and put into actual practice, Knowledge, Skills, and Competency and these is achievable through Work-Based Learning (WBL). This is because, WBL focuses on a close collaborations between the Automobile technology education department, the labour market, and the curriculum planner, it is an experiential learning programme which uses the workplace as an essential constituent of the curriculum and, also gives organized learning experiences to the students through the community-oriented endeavours of the workplace (ventures or the industry) and the Technical Vocational, Education and Training establishments. Therefore as a matter of urgency, the management of Colleges of Education in the North-East region, the National Commission for Colleges of Education (NCCE) and the federal government should consider integrating all of the following WBL components i.e. Apprenticeship or internship or mentorship, Job shadowing, Business/industry field trip, Entrepreneurial experience, Cooperative education, School-based enterprise and, Service learning into Automobile Technology Education curriculum in the Nigeria Colleges of Education as they are all relevant and highly influential because, it prepares students for

employment, increases students' motivation, develops their self-confidence, prepare them for competence.

## RECOMMENDATIONS

The following recommendations were made based on the findings of the study;

1. Automobile department should adopt industries designed curriculum instead of curriculums that are designed by non-skilled persons or policy makers
2. The NCCE minimum standard should be redesigned to prioritize WBL in Technical Education programmes
3. Departments of Automobile technology education need to adopt the use diverse methodology and apply different instructional tools to help in facilitating learning that will last for a long period.
4. The federal government should provide relevant training opportunities to support Automobile technology education lecturers and technologists with the necessary skills to operate WBL programs.

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