

# Impacts of Inadequate Provision of Technical Equipment on Sustainability of Technology Education in Tertiary Institutions in Rivers State

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**Abstract**: The study attempted to examined the impacts of inadequate provision of technical equipment on the sustainability of technology education in tertiary institutions in Rivers State. The study used the analytic survey design approach. Its population comprised all leturers and students of technology education in tertiary institutions in the state. It used the simple random sampling technique to select ten (10) technology education lecturers and twenty (20) technology education students making a total of thirty (30) respondents as the sample size. A - 15 – item questionnaire (*PTEQ*) was used as the instrument. It was validated by experts and was said to have gotten face validity and content validity. Afterwards, it was pilot – tested throughw hcih its reliability of 0.83 was established using cronbach alpha method. It was thus administered ont eh respondents for data collection. Three research questions and three hypotheses from the responses of respondents while the t-Test statistics was used to test the hypotheses at 0.05 level of probability. Results indicated inadequate provision of technical equipment has a gross negative impacts on the sustainability of technology education in tertiary institutions. It was thus, recommended that the Rivers State Government should as a matter of urgency, re-vatalize technology in tertiary institutions in the state through adequate funding amongst others.

Keywords: Technology Equipment, Provision of Technical Equipment, Sustainability of Technology Education.

### Introduction

Nigeria is one of the developing countries in the world and as such needs more to do with technology education which is sine-quo-non to sustainable development of our society. Indeed, technology education is very much needed at this point in time due to the growing and teeming population of the Nigerian youths who are passing out or graduating from tertiary institutions yearly. It is an aspect of educational endavours that prepares students for the world of works. It provides its graduates an opportunity to be skilled work men who can stand the test of time in terms of competence and quality as observed by Okeke (2015). According to Olaitan (2011), knowledge and skills capable of securing them paid enrolment with a view to setting up their own businesses or workshops in order to be self-employed while creating new innovations for job opportunities.

Again Okoye and Okwelle (2017) stressed that technical and vocational education (TVE) which is an aspect of technology education for the purpose of producing the right calibre of economic goals for our dear country. Of course, it is factual to state that it is one of the indices to ascertain a nation's fiscal expansion, advancement and self-sufficiency is the degree of the nations' improvement in occupational and technological education (Ogbonda & Wobi 2016). Similarly, the ability of a national like Nigeria to proactively pursue her quest for skilled personnel who are

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capable to redefine the nation's future depends wholly on her ability to be able to produce and manage both capital and human resources towards attainment of goals of the educational programmes as outlined in the national policy on education (FGN 2004). The FGN (2004) places much emphasis on the development of technical and vocational education as a means of enhancing education so as to train out graduates who are qualified in creating jobs for themselves and for the nation some of the goals of practical education as stressed by the National policy on education (FGN 2004) include the following;

- i) To provide the trained man-power in the applied sciences, technology and business particularly at craft, advance craft and technical level.
- ii) To provide the technical knowledge in agriculture, commercial and economic development.
- iii) To give training and impact the necessary skills to individuals who shall be self-reliant economically and enable the youths.

The above objectives can be eighty percent achieved only if the Nigerian nation invests much in the development of sound technology education. This implies that if Nigeria is to achieve her technological driven economy dream, technology education policy needs to be fully implemented and properly managed. Hence, there is the need to produce or graduate quality and skilled personnel who can compete perfectly within and globally. In a bid to implement the policy of technology education as well as exploring it to achieve its laudable objectives, there is the need to provide it with adequate equipment and tools since it is more of practical than theoretical. In essence, it means that its sustainability depends wholly on good functional machines, and other technical equipment.

The implication of the above assertion is that, no matter the quality and expertise of technology education teachers, of there is no enough instructional materials like lathe machines, drilling bits, cutters etc, it cannot be functional.

According to Sarumi (2005) an education is said to be functional when it has to relate to the past, present and future of any society. In other words, a functional technology education is that which is capable to solve societal problems ina manner that is acceptable globally, especially in recent times as the world has become a global village technologically.

At this juncture, it is important o note that if our technology education would be relevant, then it must reflect graduates who are skilled and capable to operate and manoeer modern machines in our industries for optimum utility and for economic upliftment. To meet up the above conditions involves adequate provision of technical equipment such as lathe machines, welding machines, cutting machines, drilling machines and other technical tools. Once, this is done, it is hoped that technology education would be capable to produce skilled graduates who will be technically giants in their respective technical areas including information and communication technology (ICT) in order to enable them to compete globally as observed by Alade (2004). Undoubtedly technology education in our tertiary Institutions cannot produce the calibre of manpower necessary due to inadequate provision of technical equipment necessary for the smooth running of technology education programmes thereby producing graduates who become job seekers and not job-creators. It is against this background that this study intends to find out the impacts of inadequate provision of technical equipments to find out the impacts of inadequate provision of technical study intends to find out the impacts of inadequate provision of technical equipments to find out the impacts of inadequate provision of technical equipments to find out the impacts of inadequate provision of technical equipments to find out the impacts of inadequate provision of technical equipments to find out the impacts of inadequate provision of technical equipments to find out the impacts of inadequate provision of technical equipments to find out the impacts of inadequate provision of technical equipments of inadequate provision of technical equipments of indecuations in Rivers State.

#### **Statement of the Problems**

Nigeria being a developing country and moreso, in the process of developing her socio-economic base is still lacking adequate number of skilled workmen required for manpower for the industrial sector. Unfortunately, the technology education that was designed to train students in business and technical fields with a view to providing a driving fore for our existing industries, could not empower her graduates due to inadequate supply of technical equipment. Hence, it could not enhance the socio-economic development of the country.

Teaching of technical course requires practical experience which could be demonstrated thought he use of modern machines and other technical tools. Such machines and technical tools are vital for an enabling teaching/learning process of technology education in tertiary institutions. Regrettably lack of technical equipment such as modern lathe machines, modern milling machines, modern cutting tools are characterized in our tertiary institutions. As a result, technology education thus finds it cumbersome to meet up its laudable objectives as outlined in the National policy on Education (2004). To this end, it would be interesting that the findings of this study will proffer solution to the problem. It will do this by making recommendations that will be useful to policy makers on technology education.

#### **Purpose of the study**

The main purpose of this study is to adequately examine the impacts of inadequate provision of technical equipment on sustainability of technology education in tertiary institutions in Rivers State. In doing this, the study specifically was planned to:

- i) Ascertain the extent to which inadequate provision of modern machines affects the teaching/learning process of technology education in tertiary institutions.
- ii) Ascertain the extent to which inadequate provision of workshops affects the teaching/learning process of technology education in tertiary institution
- iii) Ascertain the extent to which non implementation of budgets by successive governments in Nigeria affects ability of technology education in Rivers State.

#### **Research questions**

The following research questions were raised to guide the study.

- i) What is the extent to which inadequate provision of technical machines affects the teaching/learning process of technology education adversely based on the mean perceptions of technology lecturers and students in tertiary institutions?
- ii) What is the extent to which lack of functional technical workshops affects adversely the teaching/learning process of technology education based on the perceptions of technology lecturers and students in tertiary institutions?
- iii) What is the extent to which non implementation of budgets by successive government sin Nigeria affects adversely the sustainability of technology education in tertiary institutions based on the mean perceptions of technology lectures and students.

#### Hypothesis:

The study postulated the following null hypothesis to guide the study:

- i) There is no significant difference between the mean perceptions of technology lecturers and students about the adverse effects of inadequate provision of technical machines on the teaching/learning process of technology education in tertiary institutions.
- ii) There is no significant difference between the mean perceptions of technology lecturers and students about adverse effects of inadequate provision of functional technical

workshops on the teaching/learning process of technology education in tertiary institutions.

iii) There is no significant difference between the mean about the mean perceptions of technology lecturers and students about the adverse effects of non implementation of budgets by successive government in Nigeria on sustainability of technology education in tertiary institutions.

#### Methodology

The study adopted the analytical survey designed. It is analytic in the sense that it will use parametric methods for testing hypotheses. The population of the study was made up of all lecturers and students of technology education in the study areas. A total of one hundred and fifty (150) respondents formed the population. This number comprised 50 lecturers and 100 students of technology education. The study cluster sampling technique to select 10 lecturers and 20 students of technology education making a total of 30 respondents as the sample size. The represents 20% of the population as shown in table 1

The instrument used for data collection for the study was a questionnaire (PTEQ). It was developed specifically for the study and was well structured to address the objectives of the study based on the related literature reviewed. It was a 15-item questionnaire. Each research question attracted 5items. Which were structurally designed for it. It adopted the 4-point Likert summation scale with the following options: strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2 and strongly Disagree (SD) = 1. The instrument was validated by two (2) experts in the technology education and two (2) experts in measurement and evaluation for scrutiny. It was first scrutinized by the experts of technology education followed by those in measurement and evaluation. Their corrections were reflected the final draft of the instrument while the instrument was adjuged to have content validated as well as face validity. The instrument was pilot-tested on 10 respondents of similar characteristics but not in the study area. Copies of the instrument were distributed to the 10 respondents who completed and returned them completely. Their responses were thus analyzed using cronbach Alpha method of establishing reliability index. The reliability coefficient  $(\Upsilon)$  gave 0.83 which was high enough for acceptability. The instrument for the study was personally administered by the research. The completed copies were retrieved from respondents two days later in order to give them enough time to respond to the items on the questionnaire. Retrieval was 100% from the respondents. The responses of respondents from the questionnaire (PTEQ) were based on the 4 point likert scale. Means and standard deviations were used to answer the research questions while the t-test statistics was used to test the hypothesis at 0.05 probability level. Decisions on the research questions were based on the criterion mean of 2.50. for example, means that were up to or above 2.50. were agreed for the corresponding item while the null hypotheses were rejected if the calculated t-ratio critical value. But if calculated t-ratio is less that the t-ratio critical value, reverse is the case.

#### Result

**Research question 1:** What is the extent to which inadequate provision of technical machines affects the teaching/learning process of technology based on the mean perceptions of technology lecturers and students in tertiary institutions in Rivers State?

Table 1: Extent Inaded	uate Provision	of Technical 1	Machines affeo	t Teaching/I	earning

S/N	ITEMS	Lecture	ers		Students		
		$X_1$	Sd	Remarks	$X_1$	Sd	Remarks
1	Inadequate provision of lathe						
	machines by Govts does not						
	influence the teaching/learning						
	of technology education.	2.40	0.90	disagree	2.43	100	Disagreed
2	Inadequate provision of lathe						
	machine by govts has negative						
	effects on the sustainability of						
2	technology education	3.60	0.96	Agree	3.44	0.86	Agreed
3	Provision of machineries for						
	tech. education is an aspect of						
	providing enabling environment	2 40	0.(2	A 1	2.50	0.00	A 1
	for the teaching/learning of	3.40	0.62	Agreed	3.50	0.88	Agreed
4	technology education						
4	inadequate provision of						
	advantion door not promote						
	technology education does not						
	promote technology education						
	programmes	3 50	0.85	Agreed	2 95	0.96	Agreed
5	Technical equipment in the	5.50	0.05	ngreeu	2.95	0.90	8
5	department of technology						
	education in many tertiary						
	institutions are obsolete	3.30	0.95	Agreed	3.46	0.98	Agreed
	Grand mean / sd	3.24	0.86	0	3.16	0.94	0

In table 1, it was revealed that all the respondents, that is both lecturers and students of technology in tertiary institutions agreed with all the items except item 1. This indicates that they all agreed that inadequate provision of technical machines affects the teaching and learning of technology education adversely in tertiary institutions. The extent to which both sets of respondents agreed with this fact is indicated in their grand mean 3.24 and 3.16 respectively which are above the criterion.

**Research question 2:** What is the extent to which lack of functional technical workshops affects the teaching/learning process of technology education in tertiary institutions in Rivers State.

S/N	ITEMS	Respon	ses by th	e lecturers	Stude	nts	
		$X_1$	Sd	Remarks	$X_1$	Sd	Remarks
6	Technical equipment in the						
	workshops of technology	2 72	1.00	Agreed	2 10	0.08	Agreed
7	There is need for providing	2.12	1.00	Agreed	5.10	0.98	Agreeu
,	modern machines for effective						
	teaching and learning of						
	technology education in						
0	tertiary institutions	3.60	0.87	Agreed	3.48	0.90	Agreed
ð	and learning of technology						
	education in tertiary						
	institutions are non-functional	3.55	0.76	Agreed	3.05	0.80	Agreed
9	There are functional						
	workshops provided for the						
	of technology education in						
	tertiary institutions	2.49	1.20	Agreed	2.51	0.89	Agreed
10	There are enough technical			U			U
	equipment provided in						
	workshops for technology						
	education in many tertiary						
	institutions out no maintenance	145	0.77	Agreed	1.95	0.99	Disagreed
	Grand mean / sd	2.76	0.92	Ø	2.82	0.91	

Table 2: Effects of lack of worshops on the teaching/learning

Field Data

From table 2, it is indicated that all the respondents agreed that technical equipment in many technology education workshops are becoming obsolates. They all agreed with items 7 and 8, but disagreed on item 10. That is to say that they did not agree that there are enough technical equipment provided in workshops for technology education and that the ones available do not have adequate maintenance. Again the lecturers disagreed with the education while the students agreed with 2.51 which is above the criterion mean of 2.50.

Their grand mean scores are 2.76 with a standard deviation of 0.92 for lecturers while the students got a grand mean of 2.82 with a standard deviation of 0.91. These grand mean values indicate the extent to which they agreed that lack of technical workshops affects the smooth teaching and learning of technology education in tertiary institutions.

**Research question 3:** What is the extent to which non implementation of budgets by successive government sin Nigeria affects adversely the sustainability of technology education in tertiary institutions based on the mean perceptions of technology lectures and students?

S/N	ITEMS	Responses by the lecturers			Students N= 20		
		N = 10	•				
		$\mathbf{X}_1$	$Sd_1$	Remarks	$X_3$	$Sd_s$	Remarks
11	Poor legislations have negative						
	effects on sustainable						
	development of technology						
	education in tertiary						
	institutions	3.56	0.97	Agreed	3.33	0.86	Agreed
12	Inadequate provision of						
	constant electricity in Nigeria						
	affects the teaching/learning						
	process of technology						
	education adversely	3.65	0.97	Agreed	3.48	0.76	Agreed
13	Technology education						
	sustainability in tertiary						
	institutions depends largely on						
	adequate provision of its						
	technical equipment.	3.65	0.78	Agreed	3.41	0.89	Agreed
14	Poor funding of technology						
	education by govts brings						
	about poor teaching/learning of						
	technology education in	2 50			<b>A</b> 44	0.00	
	Nigeria	3.58	0.78	Agreed	3.41	0.89	Agreed
15	Technology education can						
	survive if successive Govts of						
	Nigeria see technology						
	education as the only key for	2 70	0.05	. 1	2.50	0.00	A 1
	economic development	3.70	0.95	Agreed	3.58	0.66	Agreed
	Grand mean / sd	3.63	0.93		3.49	0.79	

Table 3: Ef	fects of non	budget im	nlementation	on technology	education	sustainability.
Table 5. El		Duuget III	picincintation	on teennology	cuucation	sustamanity.

From table 3, it was observed that all the respondent agreed with all the items: 11-15 with mean sores that are above the criterion means of 2.50. The grand mean score for lectures is 3.63 with a standard deviation of 0.93 while that of students is 3.49 with a standard deviation of 0.79. The implies that the extent to which both lecture and students of technology education agreed that non-implementation of budget by successive governments of Nigeria affects technology education are 3.63 and 3.49 respectively. Since these values are above the criterion mean of 2.50. it was agreed that non-implementation of budgets in Nigeria is a hindrance to the survival of technology education in tertiary institutions in Nigeria.

**Hypotheses 1:** There is no significant difference between the mean perceptions of technology lecturers and students about the adverse effects of inadequate provision of technical machines on the teaching/learning process of technology education in tertiary institutions. Table 4: T-test for effects of inadequate provision of technical machines on the teaching/learning

Source	N	Х	sd	df	S.E	t-cal	t-crit	Sig. level	Decision
Lecturers	10	3.24	0.86	28	0.34	0.24	2.05	0.05	Accepted
Students'	20	3.16	0.94						-

Table 4 indicated that the t-ratio calculated value of 0.24 is less than the t-ratio critical value of 2.05 at 28 degree of freedom and at significance on this basis the null hypothesis 1 is not rejected. This means that both lecturers and students did not differ significantly in their mean opinions about he adverse effects of inadequate provision of technical machines on the teaching/learning process of technology education in tertiary institutions.

**Hypothesis 2:** There is no significant difference between mean perception of technology lecturers and students about the adverse effects of inadequate provision of functional technical workshop on the teaching/learning process of technology education in tertiary institutions.

Table 2: t-test for effects of inadequate provision of functional technical workshop on the teaching/learning

Source	N	Х	sd	df	S.E	t-cal	t-crit	Sig. level	Decision
Lecturers Students'	10 20	2.76 2.82	0.92	28	0.36	0.17	2.05	0.05	Accepted
Students	20	2.02	0.71						

Field Data

From table 5, it was observed that the t-calculated value of 0.17 is less than the t-critical value of 2.05 at 0.05 level of significance and 28 degree of freedom. On this basis, the null hypothesis 2 is hereby not rejected. It thus follows that both lecturers and students did not differ in their opinions that inadequate provision of functional technical workshops affects adversely the teaching/learning process of technology education in tertiary institution.

Hypothesis 3: There is no significant difference between the mean perceptions of technology lecturers and students about the adverse effects of non implementation of budgets by successive governments in Nigeria on sustainability of technology education in tertiary institutions.

Source	Ν	Х	sd	df	S.E	t-cal	t-crit	Sig. level	Decision
Lecturers Students	10 20	3.63 3.49	0.93 0.79	28	0.34	0.41	2.05	0.05	Accepted

Table 6: t-Test on the effects of non implementation

Field Data

Table 6 indicated that the t-calculated value of 0.41 is less than the t-critical value of 2.05 at 0.05 level of significance and at 28 degree of freedom. On this note, the null hypothesis 3 is hereby not rejected. It thus follows that the lecturers and students of technology education did not differ in their opinions that governments in Nigeria adversely affects the sustainability of technology education in tertiary institutions.

#### **Discussion of findings**

Students

From Table 1 it was indicated that the mean response of lecturers is 3.24 with a standard deviation of 0.94. the implication of this, is that, since these mean values are greater than the criterion mean of 2.50, then it is confirmed that both sets of respondents agreed to a reasonable extent that inadequate provision of technical machines affects adversely the teaching and learning of technology education in tertiary institutions. This was confirmed in table 4 which was used to test the null hypothesis 1. In table 4, the t-calculated value of 0.24 is less than the t-table value of 2.05 at 0.05 level of significane and at 28 degree of freedom. Ont his note the null hypothesis 1 was not rejected. It was then confirmed that lectueres and students of technology education did not differ in their opinions about he adverse effects of lack of provision of technical machines on the teaching/learning process of technology education in tertiary institutions. This is in line with Okolocha (2012) which observed that lack of machines and other technical equipment has killed the vision of technology education in Nigeria.

Table 2 indicated that all the respondents were on the same page about the negative influence of lack of functional technical workshops on the teaching/learning process of technology education in tertiary institutions. The mean response of lecturers in this regard was 2.76 with a standard deviation of 0.92 while the students had theirs as 2.82 with a standard deviation of 0.91.

This was supported by the analysis in table 5 which was used to test hypothesis 2. In table 5, the t-calculated value of 0.17 is less than the t-table value of 2.05 at 0.05 level of significane and at 28 degree of freedom. On this note, the null hypothesis 2 was not rejected, which means that both lecturers and students did not differ in their opinions about the adverse effects of lack of functional technical workshops on the teaching/learning process of technology education in tertiary institutions. This is supported by the observation of Dike 2006 which states that paying lip-services to those things that mater as far as enabling environment for the smooth take off technology education has driven Nigeria off the path-way of technological advancement.

From table 3, it was indicated that all the respondents agreed with all the items. The mean of lecturers is 3.63 with a standard deviation of 0.93 while the students had their mean response as 3.49 with a standard deviation of 0.79. These mean responses are above the criterion mean of 2.50.

This implies that all the respondents agree to a great extent that non implementation of budgets by successive governments in Nigeria is also responsible for lack of sustainable development of technology education in tertiary institutions in Nigeria.

It supported by the revelation in table 6 which was used to test null hypothesis 3. In table 6, the tratio calculated value of 0.41 is less than the t-ratio table value of 2.05 at 0.05 level of significance and at 28 degree of freedom. On this note, the null hypothesis 3 was not rejected. It thus follows that both lectures and students of technology education did not differ in their opinions about the adverse effects of non implementation of budgets on the sustainability of technology education in tertiary institutions in Rivers State in particular and in Nigeria in general. This is also supported by the view of Tilak in Okolocha (2012) which observed that governments at the three-tier levels have failed to support technology education by not providing the necessary funds for the smooth running of technology education. Hence, the aims and objectives of this laudable programme is defeated.

The findings of this study revealed that government at all levels in Nigeria have forgetten issues relating to technology education in Nigeria. In fact, little or no attention is given this laudable programme due to inadequate provision of essential materials of its smooth running. Also, poor funding of the programme continue to dwarf the programme in Nigeria.

#### Conclusion

The findings of the study indicated that governments at the three-tier levels ascribed a non – challante attitude to the sustainable development of technology education by not adequately funding it inspite of the huge amount of money attached to education budget yearly. Such lippronouncement without practicability had affected the sustainable development of technology education programme very inactive making its laudable objectives defeated.

The above is hinge on the fat that, when adequate funds are not provided for technology education, then, how can it meet up its objectives? Again, how can adequate provision of technical equipment be met?. While attempting to proffer answers to the above questions, it should be noted that the findings of the study revealed that inadequate provision of technical equipment for technology education is responsible for poor sustainable development of technology education in tertiary institutions in Rivers State.

#### Recommendations

Based on the findings of the study, the following were recommended;

- 1. Rivers State government should as mater of urgency re-vitalize technology education its own tertiary institutions through adequate funding.
- 2. Rivers State government should as a matter of urgency, provide adequate funds for the smooth teaching and learning interphase of technology education in tertiary institutions in Rivers State.
- 3. Rivers State government should ensure that modern functional technical workshops are built for effective teaching and learning of technology education in tertiary institutions in the state.
- 4. Rivers State government should endeavour to provide an enabling learning environment for technology education in its own tertiary institutions

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