

# Motivation of Children Interest at Primary School Level to Enhance the Study of Automobile Technology in Africa

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## Abstract

Technology is the power of development in every nation. Automobile technology has improved the economy of many nations. A nation can only acquire good technology when the citizen has a good educational foundation and background. Good educational background can only be achieved when children are taught from their elementary stage of life. To carry out this study three research questions were raised to guide the study, also three hypotheses were formulated to check for level of significant at 0.05 significance level. Questionnaire was the main instrument used for the collection of data; data collected were analyzed based on the research questions and hypotheses used in the study. Findings and recommendations were made to suggest how pre- vocational education at the primary school level can be implemented to enhance the study of Automobile technology in developing Countries in Africa.

**Keywords:** Description of Education; Interest; Motivation and Performance

## 1. Introduction

Education is the bedrock, foundation and source of development for many nations. Without education there can be no development in technology of many nations. Education has helped to develop man's mental reasoning by making him to become creative. Education has made man to become enlightened to discover and explore beyond his imagination. Today, many developed nations like United State of America, Britain, France, Japan, Germany etc, are known to be great nations all because of good implementation of education that helped in the empowerment of their technology.

Education as a weapon of effective development has been discussed by many authors in the past. Author in [6], described education as an institution of many people involved with teaching and learning process for the purpose of acquiring knowledge and skill. Author in [13], describe education as a systematic process through which a child or an adult acquires knowledge, experience, skill and sound attitude. Education makes an individual to be civilized, refined, cultured and educated. Author in [5], describe education as means of

imparting and acquiring of knowledge through teaching and learning process. A good educational foundation begins from elementary school level where a child interest can be built up and motivated. A nation that has good educational foundation at the primary school level for its citizen's end up having good technological skills built into her citizens. Author in [3], stated that the growth of a country economy depend on the Automobile industries that they have. Automobile technology as a trade is taught at various level of education except at the primary school level. Technical colleges are the foundation level of teaching technical and vocational trade subjects in Africa. Automobile trade at the technical colleges in some African countries like Nigeria is titled Motor Vehicle Mechanics Work (MVMW). The study involves the acquisition of scientific knowledge in designing, selection of materials, construction, operation and maintenance of motor vehicle [Author, 2]. The purpose of establishing Motor Vehicle Mechanics Work (MVMW) at the technical colleges as a trade subject was to enhance graduate with skills of testing, diagnosing, servicing and repairing of any fault in a vehicle [Author, 12]. To acquire good skill as trainees at the technical college student most posses the following attributes such as interest, good problem solving ability, good vision, good communication skill, physical fitness and strength ability [Author, 9]. Africa as a continent lacks technological skills, many of the Automobiles used today in Africa none is manufactured in African continent. Hence this research work is focusing on how to introduce the study of pre-vocational education at the primary school level to groom and enhance pupil interest to motivate them in the study of Automobile technology at the primary school level. Pre-vocational education at the primary school level in Nigeria, Ghana and South Africa will be the prime focus of this study. Among all African countries Nigeria have the highest number of children who are out of school [Author, 8], this could be a problem that is militating against the study of Automobile technology in Nigeria that may be peculiar to other African countries.

Automobile technology in African continent can be developed by motivating pupil interest to enhance performance starting from primary school level which is the elementary stage of a child education development. Interest is described as the feeling of wanting to know or learn about something or someone [Author, 15]. Student interest can be triggered by certain environmental factors such as teacher's behavior, method of teaching and learning facilities. Author in [11], stated that interest can only be developed when a person is motivated to do something, hence Author in [4], and described motivation as the attribute that moves somebody to do or not to do something. Author in [10], stated that an individual, group of person or students can be motivated to work hard based on the following four factors, Interest, efficacy, attribute and achievement goals .At the primary school level these four attributes can be inculcated or built in to pupils during teaching process to arouse their interest in the study of Automobile trade which will help to build good technological skills in to children for good future job performance that will improve Automobile technology in the African continent. Good performance can be attained when interest is motivated; performance is the overall expected value of an employee's behavior for a period of time.

The purpose of this research is to build the interest of an African Child to enhance the development of Automobile technology in Africa. So many decades have passed African's still lack technological skills. Author in [14], reported that Education Trust fund (ETF) has recommended pre -vocational education at the primary and Secondary School level for general technological awareness, acquisition of technological skills in Nigeria. The Technical and Vocational Education Division (TVED) in Ghana Education Service (GES) advocated for

good implementation of pre-vocational and Technical Education in Ghana. The National Business and Technical Examination Board (NABTEB) in Republic of Benin regret the neglect of vocational and Technical education in the past years. Author in [1], stated that this neglect has affected the country technological advancement.

Conclusively, education is the solid rock on which knowledge and skill is built upon. Education broadens man's knowledge, skill, social level and communication. Good technology relies on good knowledge and skills that brings about good performance on job in any industrial certain, hence many developed countries in the western world has technological improvement in their Automobile industries. When a worker is equipped with good knowledge and skills it brings about good production. A Good performance can only be achieved and demonstrated when interest is motivated in a worker from the elementary stage of a man.

### **1.1. Research Questions**

Three research questions were raised to guide the study.

- (1) How will the introduction of pre-vocational education at the Primary school level, help to enhance pupil interest?
- (2) How will the introduction of pr-vocational education at the Primary school level, help to teach pupil how to use basic tools in Automobile?
- (3) How will the introduction of pre-vocational education at the Primary School level, help to equip pupil with required skills in the study of Automobile?

### **1.2. Hypotheses**

Three null hypotheses were formulated and were tested at 0.05 level of significance

**Ho<sub>1</sub>** There is no significant difference between pre-vocational education at the Primary School level in Africa and the enhancement of Pupils interest.

**Ho<sub>2</sub>** There is no significant difference between pre-vocational education at the primary school level and pupil use of basic tools in Automobile.

**Ho<sub>3</sub>** There is no significant difference between pre-vocational education at the primary school level and pupil required skills in the study of Automobile.

## **2. Methodology**

### **2.1. Research Design**

The quasi- experimental research type of design was used in the study. This type of research design is the most valid approach used in solving many educational problems. It is also refer to as the most sophisticated research method for testing hypothesis. Author, [7] stated that this research design help in the control of extraneous

variables, variables that may influence dependent variables. The design helps in the manipulation of the independent variable to confirm the hypothesized relationship between the independent variables and the dependent variables. Pupils were selected from nine government approved primary schools in the three (3) different countries used in the study were pre-tested; after eight months of teaching they were post tested.

## ***2.2. Population of the Study***

All the government approved primary schools in Africa were used as the population of the study in relation to the introduction of pre-vocational educational training of children at the primary school level in Africa. A total population of five thousand four hundred pupils (5400) from the nine government approved primary schools in Africa was used in the study.

## ***2.3. Sampling Techniques***

The simple random sampling technique was used to select three (3) countries to represent the general population of all the countries in Africa in this study. The selected countries are: Nigeria, Ghana and South Africa.

## ***2.4. Sample Size***

A total number of nine (9) government approved primary schools, with a population of six hundred (600) in a school was used in the study. The total number of pupils that was used in this study is five thousand four hundred (5,400) pupils. Meaning in each of the country used in this research a total population of one thousand eight hundred (1,800) pupils was selected from the three schools selected in each country.

## ***2.5. Instrumentation***

The instrument used for data collection was questionnaire. The three questionnaires used for data collection in the study were designed based on the age and class level of the pupils. The three questionnaires are titled Pupil Interest, Basic Workshop Tools, and Skill Acquisition Level that was Labeled instrument A, B and C was used for data collection in the study. Two classes were made to use one questionnaire, primary 1&2 made use of instrument (A). Primary 3&4 made use of instrument (B). While primary 5&6 made use of instrument (C). The instrument was used in the three countries selected for the study after the reliability test of the instrument.

## ***2.6. Reliability and Validity of instrument***

The instrument was validated through content face validity, and person moment correlation coefficient ( $r$ ) was used to calculate the reliability of the instruments. The instruments were validated by three experts two from the department of Primary and Nursery Education in Faculty of Education University of Nigeria Nsukka, and the other expert from Measurement and Evaluation Faculty of Education in Ncruma University Ghana for cross examination and criticism to help for the reconstruction of the instrument. After the validation of the instrument by the three experts, the instrument was piloted using forty (40) pupils from one of the selected government

approved primary schools in Nigeria. The value of person (r) was 0.76 for instrument (A), 0.79 for instrument (B) and 0.74 for instrument (C). This shows that the instrument is very reliable.

**2.7. Administration of Instrument and Data Collection**

The instrument was taken to each of the selected schools by the researcher in the three different countries to administer to the pupils in their different classrooms for the instrument to be pre-tested first and after a period of eight (8) months in each of the countries, after exposing the pupils to the component and tools in Automobile used for the study by the classroom teacher as instructed by the researcher for seven months for 15 min of study three times in a week, after school before the instrument were post tested in the eight month. Data collected in the three countries after the administration of the instrument are shown in the three tables (a), (b), and (c).

**Table 1:** Table showing the raw data scores of respondents of pre-test and post test scores of the nine selected schools primary I and II in the three countries selected for the study Nigeria, Ghana and South Africa.

S/N	Pre-Test Score	Post-test Scores
1	500	1500
2	800	1200
3	400	1600
4	300	1700
5	380	1620
6	620	1380
7	590	1410
8	110	1890
9	270	1730
Total	3970	14030

**Table 2:** Table showing the raw data scores of respondents of pre-test and post-test scores of the nine selected schools, primary III and IV in the three countries selected for this study Nigeria, Ghana and South Africa.

S/N	Pre-Test Score	Post-test Scores
1	300	1700
2	820	1180
3	365	1635
4	1035	965
5	850	1150
6	190	1810
7	589	1411
8	601	1399
9	739	1261
Total	5489	12511

**Table 3:** Table showing the raw data scores of respondents of pre-test and post-test scores of the nine selected schools primary V and VI in the three countries selected for this study Nigeria, Ghana and South Africa.

S/N	Pre-Test Score	Post-test Scores
1	755	1245
2	481	1519
3	802	1198
4	250	1750
5	1050	950
6	322	1678
7	485	1515
8	600	1400
9	799	1201
Total	5544	12456

### 2.8. Data Analysis

Data collected were analyzed based on the research questions and hypotheses, using mean and standard deviation and t-test statistics to check for level of significant difference.

#### Research Question I

How will the introduction of pre-vocational education at the primary school level, help to enhance pupil interest?

The data used for the analysis of mean and t-test difference about the interest of pupils are shown on table 1.

**Table 4:** Group Statistics

Pretest = 1	N	Mean	Std. Deviation	Std. Error Mean
Posttest = 2				
2	9	1558.8889	209.37075	69.79025
1	9	441.111	209.37075	68.79025
Interest				

From table 4 titled group statistics the mean value of the post-test (1558.8889) is > greater than the mean value of the pre-test (441.1111). This shows that there was motivation of pupil interest after teaching and exposing them to vehicle parts. So therefore there is a significant difference.

**Hypothesis I (Ho<sub>1</sub>)**

There is no significant difference between pre-vocational education at the primary school level and the enhancement of pupil’s interest.

**Table 5: Independent Sample Test**

	Levene’s Test for Equality of variance		t-test for Equality of means						Remark	
	F	Sig	T	df	Sig (2-tailed)	Mean difference	Std. Error Difference	95% confidence interval of the differences		
								Lower		Upper
Equal variance assumed	.000	1.000	11.325	16	0.000	1117.777		908.5466	1327.008	Ho <sub>1</sub> rejected
Equal variance not assumed			5	16.000	0.0000	78	98.69832	9	87	

t-critical → 2.12

t-calculated → 11.32

From table 5 titled Independent Sample Test the t-cal. value 11.32 is > greater than t-crit. value 2.12 meaning that there is a significant difference. Conclusively it can be said that pupil interest were arouse when they were post tested after teaching them for a period of seven months by exposing them to parts of vehicle, because the level of response that answered yes after the post test was very high.

**Research Question II**

How will the introduction of pre-vocational education at the primary school level help to teach pupil on how to use basic tools in Automobile?

The data used for the analysis of mean and t-test difference about the use of tools are shown on table 2.

**Table (6):** Group Statistics

Pretest = 1	N	Mean	Std. Deviation	Std. Error Mean
Posttest = 2				
2	9	1390.1111	281.07225	93.69075
1	9	609.8889	281.07225	93.69075
Tools				

From the table 6 titled group statistics the mean value of the post-test score (1390.1111) is > greater than the mean value of the pre-test score (609.8889), meaning that there is a significant difference after teaching pupil by exposing them to basic workshop tools in Automobile workshop.

**Hypothesis II (H<sub>02</sub>)**

There is no significant difference between pre-vocational education at the primary school level and the use of basic tools in Automobile.

**Table (7):** Independent Sample Test

	Levene's Test for Equality of variance		t-test for Equality of means							Remark  Ho <sub>2</sub> rejected
	F	Sig	T	Df	Sig (2-tailed)	Mean difference	Std. Error Difference	95% confidence interval of the differences		
								lower	Upper	
Equal variance	.000	1.000	5.889	16	0.000	780.22222	132.4987	499.3374	1061.106	
Tools assumed			5.889	16.000	0.0000	780.22222	132.4987	499.3374	1061.106	
Equal variance not assumed				0		2	3	6	98	

t-critical → 2.12

t-calculated → 11.32

From table 7 titled Independent Simple Test the value of t- cal (5.889) is > greater than the value of t- crit. (2.12). This shows that Ho<sub>2</sub> is rejected, meaning that there is a significant difference. Conclusively it can be said



that the pupil acquired skills that made them to be able to use the basic tools they were exposed to after the teaching for a period of seven months.

**Research Question III**

How will the introduction of pre-vocational education at the primary school level, help to equip pupil skill acquisition in Automobile ?

The data used for the analysis of mean and t-test difference about pupil skill acquisition in the field of automobile technology are shown in table 3.

**Table: Group Statistics**

	Pretest = 1	N	Mean	Std. Deviation	Std. Error Mean
	Posttest = 2				
	2	9	1384.0000	257.82649	85.94216
Skills	1	9	616.0000	257.82649	93.69075

From table 8 titled group statistics the mean value of the post test scores (1384.000) is >greater than the mean value of the pre-test scores (616.0000), meaning that there is a significant difference after teaching and exposing pupils to engine components.

**Hypothesis III**

There is no significant difference between pre-vocational education at the primary school level and pupil skill acquisition in Automobile.

**Table 9: Independent Sample Test**

Levene's Test for Equality of variance			t-test for Equality of means					Remark	
F	Sig	T	Df	Sig (2-tailed)	Mean difference	Std. Error Difference	95% confidence interval of the differences		
							Lower	Upper	
									Ho <sub>3</sub> rejected

Equal	.000	1.000	6.319	16	0.000	768.000	121.5405	510.3454	1025.65
variance						0	7	9	451
Tools			6.319	16.00	0.000	768.000	121.5405	510.3454	1025.65
assumed				0		0	7	9	451
Equal									
variance not									
assured									

t-critical → 2.12

t-calculated → 6.319

From table 9 Independent Sample Test the value of t-cal (6.319) is > greater than the value of t-crit. (2.12). This shows that  $H_0$  is rejected, meaning that there is a significant difference, conclusively it can be said that the pupil were able to demonstrate good skill after teaching them for a period of seven months.

### 3. Discussion of Findings

Findings of this study were based on the data collected and analyzed after administering of the questionnaire. Some of the findings are stated as follows:

1. Poor educational background was the cause of the backwardness of automobile technology in Africa.
2. Poor governance among leaders of African countries was one of the causes of automobile backwardness in Africa.
3. Poor method of teaching in primary schools, secondary schools, colleges of education, polytechnics and universities in Africa, could be the cause of Automobile backwardness in Africa.
4. The introduction of pre-vocational subjects at the primary school level helped to arouse pupil's interest and build in them confidence that will assist them in future development.
5. The teaching of pre-vocational subjects at the primary school level in Africa helped to expose pupils to practical working skill that brought about motivation.
6. Introduction of pre-vocational education at the primary school level in Africa will help to build good future working performance in people in the area of technology when given training from the primary school level.

### 4. Recommendation

Based on the analysis of data collected and findings that was discussed the following recommendations are made:

- 1 African leaders should implement educational policies from the western world to build up elementary education in Africa continent.
- 2 Pre-vocational training should be introduced at the primary school level in Africa to help improve automobile technology.

- 3 Primary school teachers should be allowed to go for further training in overseas. Sponsored by the government, agencies and private organizations for exchange of knowledge.
- 4 Government should offer scholarship to pupils at the primary school level to motivate the young once to study automobile technology in Africa.
- 5 Government should equipped schools with modern tools and equipment to encourage pupils at the primary school level in the study of automobile technology in Africa.
- 6 Competitions and exhibitions of fabricated items like local toys should be encouraged among children at the primary school level by government in African countries.
- 7 Curriculum should be designed and introduced at the primary school level to encourage the teaching of automobile technology in elementary school.
- 8 Pupils at the primary school level should be made to embark on field trip to visit automobile industries to motivate pupil's interest at the primary school level.

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