# The Extent of the Implementation of Introductory Technology Progammes in Secondary Schools in Enugu State

## [1]Ozioko, Agatha Nkechi and [2]Aruma, F.U

[1]Department of Educational Foundations University of Nigeria, Nsukka.
[2]Department of Educational Management Michael Okpara University, Umudike, Nigeria.
Email: agathaozioko@gmail.com

## ABSTRACT

This paper examines the extent of implementation of introductory technology programme in secondary schools in Enugu State. This is because for about twenty-one years of the programme, there seems to be lapses and problems that have hindered the accomplishment. Five research questions were formulated to guide the study. A 39-item research questionnaire was developed as cut-off point. The Z-test statistics were employed in testing the null-hypotheses. The result shows that the principals and teachers agree that the human resources for the implementation of the programme are made adequate and that the equipments, facilities, tools and materials were not available and or inadequate. They equally agree that the method and means of teaching the subject are poor, and so the objectives are far from being achieve. The analysis equally shows that principals and teachers encounter mirage of problems while trying to effectively implement the programme.

Keywords: Education, Introductory technology, Programme, College.

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

39

# INTRODUCTION

The systems of education which Nigeria inherited from our colonial master at the dawn of our independence in 1960 out-lived its usefulness by the mid 60's. It obviously failed to provide the suitable skills which the nation needed for the required manpower needs of the nation especially in the area of technology [1]. Besides, the grammar schools had turned out thousands of school leavers who could not find jobs in the public service. It increased unemployment problems, since our schools instead of helping to produce self-reliant school leavers have filled the society with white collar-job hunters.

A review of our education policy and curricular was therefore called for in order to correct the situation and fill the gap resulting from the inherited educational objectives. This of course would satisfy the manpower needs of the society. The 6-3-3-4 system of education was conceived as an adequate response to the crying need for an educational system that would be both functional and relevant to our national needs and aspirations. One of the greatest assets of the 6-3-3-4 educational system is the introduction of pre-vocational technical courses into the main stream of the national education system.

According to [2],

The overall national objectives of the 6-3-3-4 system shall be:

- Preparation for useful living within the society
- Preparation for higher education in specific terms, the
    o Secondary school should:

## Statement of Problem

The 6-3-3-4 educational programme was launched in September, 1982. For now, there are public out cries against the lack of adequate provision for workshop practices in the secondary school introductory technology courses. Also, it is still seen that the number of introductory technology teachers is inadequate both in quantity and quality, after about twenty-two years of the implementation of this educational programme, there seems to be lapses and problems that have rendered the accomplishment of its envisaged objectives impossible. Hence, this study is geared towards the extent of the implementation of the introductory technology programme at the secondary school level, so as to determine the extent it has achieved or failed to achieve the goals intended.

## Purpose of the Study

The purpose of the study is to evaluate the extent of implementation of introductory technology programme in secondary schools in Nsukka Local Government Area of Enugu State of Nigeria. Specifically, the study will ascertain:

- The adequacy of the human resources for the teaching of introductory technology in the secondary school in Nsukka Local Government Area of Enugu State.
- The adequacy of equipment, hand tools, materials for practical lessons and other necessary facilities are adequately available for the teaching of introductory technology in the schools.
- The predominant methods used in teaching introductory technology.
- Whether and to what extent the needs and aspirations of students are satisfied.
- Whether and to what extent the objectives of the programme have been achieved.
- The areas of difficulties in the implementation of the introductory technology programme.

## Significance of the Study

The findings of extent of the implementation of the introductory technology programme will be helpful to policy-makers in education, education administrators and planners, supervisors, principals and teachers who are involved in seeing our educational system help uplift Nigeria from a poor struggling third world country to an industrial nation.

## Scope of the study

The study will cover all the secondary schools in Nsukka Local Government Area of Enugu State. Enugu state has six educational zones: Agbani, Agwu, Enugu, Nsukka, Obollo-Afor and Udi zones. The content coverage is to evaluate the extent of the implementation of introductory technology programme in secondary schools in Nsukka Local Government Area of Enugu state.

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

41

## Research Question

- How adequate are the human resources for the teaching of introductory technology in secondary schools in Nsukka Local Government Area of Enugu State?
- How adequate are the equipments, hand tools, facilities and materials for introductory technology practical in secondary schools?
- What are the methods and means of teaching introductory technology in secondary schools?
- To what extent have the objectives of introductory technology been achieved?
- What are the problems encountered in the implementation of the programme?

## Hypotheses

The following null hypotheses are formulated to guide the study at $p < 0.05$.

$H_{01}$: There will be no significant difference between the mean ratings of principals, and teachers on the availability or otherwise of human resources for the implementation of introductory technology syllabus.

$H_{02}$: There will be no significant difference in the mean ratings of the principals and teachers' opinion on the equipment, facilities and tools for introductory technology.

$H_{03}$: There will be no significant different in the mean ratings of principals and teachers as regards the methods of teaching introductory technology.

$H_{04}$: There will be no significant different in the mean ratings of principals and teachers' assessment of the extent of achievement of government objectives in introductory technology.

$H_{05}$: There will be no significant difference between the mean ratings of principals and teachers with regards to the problems being encountered by principals and teachers in the implementation of the introductory technology syllabus.

## Introductory Technology Programmes

Education in the modern world is gradually moving from teachers to learners' centeredness. That is, to say that efforts are being directed towards the active participation of the learner in the teaching-learning process. This is the reason why technologically advanced societies are to a large extent in control of the destiny of the world.

Over the years, there has been intermittent pressure for introducing elements of technology into the curriculum of secondary schools in Nigeria. This is because most radical changes in education usually occur at the secondary schools [3]. However, there are evidences that the pressure and desire for change has never been so systematic and consistent until the emergence of the National Policy on Education in 1977.

The concept of Introductory Technology is a new import into Nigerian education. The justification for its emergence into the scene can be found on section 6, sub-section 50 (III and IV) of the National Policy on Education (1981) which provides thus:

- At the early phase of the 6-3-3-4 education system, efforts must be made to inculcate an attitude of respect for an appreciation of the role of technology in society. To accomplish this, elementary technology will be exposed to using their hands in making, repairing and assembling things.
- Science and technology will continue to be taught in an integrated manner in schools to promote appreciation by students of the practical implementations of basic ideas.
  The government views on the implementation committee's blue print on the [2] came out more clearly on how and why the concept of Introductory Technology emerged in the Nigerian education scene.
  The curriculum of the junior secondary school which is Expected to be both pre-vocational and academic should Be devised so as to provide suitable educational opportunities Both to those for whom junior secondary will become terminal and for those who wills proceed to senior secondary education... (p. 11)

Then, the document went on to state that the curriculum should be structured thus: core subjects, vocational subjects, and pre-vocational subjects. According to the document, the pre-vocational subjects include woodwork, metal work, electronics, local crafts, home economics, and business studies.

The document further indicated that the pre-vocational courses will be taught under the generic title "Introductory technology" which encompasses the vocational subjects listed above. The term, introductory technology, therefore, referrers to an area of study as well as a subject among the pre-vocational subjects.

Introductory technology is that subject which gives the child greater opportunities for developing manipulative skills. As one of the pre-vocational subjects at junior secondary school level, it seems justifiably expensive because of its omni-bus nature and its broad objectives. The objectives include:

- To provide pre-vocational orientation for further training in technology.
- To provide basic technological literacy for everyday living and,
- To stimulate creativity (national policy on education – NPE 1981)

Introductory technology enables one to develop his capabilities through the acquisition of knowledge, skills, values and attitudes both for his own benefit and for the benefit of society. Introductory technology enables him function effectively in the society within the limits of his capabilities.

Introductory technology makes the learner get familiar with his environment and orients him properly into work habits towards technology.

The UNESCO International Conference on the Education and Training of Engineers and Technicians held at New Delhi in April 1976 recommended inter alia: that the UNESCO shall continue,

to encourage and assist member states especially the developing countries, to create in their education system a sward-bare for technology, and to particularly ensure that the tools of technology are used not only in the modern sector of the economy but are also available to modernize traditional productive activities especially in rural areas to promote the adequate exposure to technology components of all secondary school students, especially in developing countries so as to reduce technological illiteracy of all students .. (p. 18).

The importance of technology and consequently the contributions expected of introductory technology to nations consolidation and accelerated development can hardly be over-stressed. Technology, properly conceived and applied, do contribute phenomenally to economic development. According to [1], technology is a key to national autonomy and national status in the comity nation. For instance, there are many practical problems facing Nigeria as a nation and demanding urgent solutions. The problem of unemployment, lack of basic amenities like water, accommodation and electricity, problems related to communication and transportation system, health care services – all these us in face. And there is no single avenue through which more effective answers to these problems can be found other than that of technological development which foundation is supposed to be laid by introductory technology course. In contemporary life, it is technology which is having the most profound impact upon people.

Introductory technology is part and parcel of technological education which is composed of non-material innovations such as techniques, knowledge, experience, organizational forms, and planning. Every developing nation is faced with the problem of nurturing and rehabilitating its internal capacity to invent and to innovate. These innovations and rehabilitations of internal capacity can best be fostered through the educative process. Without properly planned and systematically applied technical education, the nation will depend perpetually on the importation of technological know-how, with the resultant perpetuation of mental colonialism. A nation's claim to independence would be a shame if she has to import all her machines and perennially recruit expatriates to design and establish her industries, repair the machines and construct her roads and bridges.

According to [1], opined that every modern nation that aspires for greatness should not only make technology education a part of general education, but should also create conditions which will make the technology aspects of the general education offerings to be perceived with equal respect and dignity as the academic subjects.

In this day age, the power of advanced technology per se is formidable. It changes things, it changes environment, it changes culture, it impacts on social, economic, political and even moral aspects of life.

## Design of the Study

The design for this study is descriptive survey, which aimed at evaluating the implementation of the introductory technology programme in secondary schools in Enugu State, Nigeria.

## Area of the Study

The study will be carried out in all the secondary schools in Nsukka Local Government of Enugu State. Enugu state has six educational zones, namely; Agbani, Agwu, Enugu, Nsukka, Obollo-Afor and Udi.

## Population of the Study

The study will involve all the secondary schools in Nsukka Local Government of Enugu State. There are two hundred and fifty (250) secondary Schools in Enugu State with 250 principals and twelve thousand and twenty-five teachers (12,025). These principals and teachers will constitute the population of the study.

## Instrument

Questionnaire will be used to elicit information from the principals and teachers. The questionnaire items are developed by the researcher, through extensive literature. The questionnaire will be title "Extent of the Implementation of Introductory Technology in Secondary Schools in Nsukka Local Government Area of Enugu State". It will comprise 38 items built in five clusters A, B, C, D and E, and relating to the five research questions. A four-point scale will be provided for the respondents to make their responses as follows: Strong Agree        – SA 4 points;  Agree              – A          3points; Disagree              – D          2 points; Strongly Disagree    – SD        1point.

## Reliability of the instrument

In order to ensure the internal consistency of the instrument, a trial test was carried, with five principals and thirty teachers in five secondary schools in Nsukka educational zone. Internal consistency reliability for each of the clusters was computed using Crombach Alpha (α). The computation yielded reliability index of 0.82.

Internal consistency reliability was considered appropriate because, it ensure the extent of homogeneity of the items in each cluster. The

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

46

Crombach Alpha (α) formula was used, because, it provides more stable measure of homogeneity.

## Administration of instrument

The questionnaire will be administered to the principals, and teachers. The direct delivery and retrieval technique will be used and explanations will be offered where necessary.

## Data Analysis

The research questions will be answered using the mean and standard deviation, while the five hypotheses will be tested using the Z-test statistics.

## Presentation of Data and Analysis

This deals with the data analysis of the data collected. The data analysis have been done with reference to five research questions developed to guide the researcher and the five hypotheses formulated to guide the study.

## Research Question 1

How adequate are the human resources for the teaching of introductory technology in secondary schools in Nsukka Local Government of Enugu State?

The data for answering the above research question are presented in table below.

**Table 1: Mean ratings of principals, and teachers on the availability or otherwise of Human resources for the implementation of introductory technology programme.**

| S/N | Item | Mean | SD | D | Mean | SD | D |
|---|---|---|---|---|---|---|---|
| 1 | There are not enough introductory technology teachers for the subjects. | 3.28 | 0.58 | SA | 3.12 | 0.76 | SA |
| 2 | The teachers who teach introductory technology in my school are properly trained. | 3.32 | 0.58 | SA | 3.11 | 0.63 | SA |
| 3 | Most of the introductory technology teachers in my school are not permanent staff of the post primary school management board (PPSMB) | 2.44 | 0.96 | SA | 2.47 | 0.95 | D |
| 4 | The teachers of this subject have the certificate but | 3.27 | 0.64 | SA | 3.22 | 0.67 | SA |

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

47

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | lack back-up knowledge and skills. | | | | | | | |
| 5 | Introductory technology teachers are not always available to teach the subject. | 2.98 | 0.90 | A | 2.91 | 0.91 | A |
| 6 | The institutions established to train these teachers do not turn out well trained teachers. | 2.52 | 0.96 | A | 2.54 | 0.96 | A |
| 7 | Some areas of the subject are not taught, because of inadequacy of human resources. | 3.2 | 0.70 | SA | 3.02 | 0.77 | SA |
| | **CLUSTER MEAN** | **3.00** | **0.76** | | **2.9** | **0.82** | |

From the data presented above, all the principals and the teachers are of the opinion that there are certain problems that have hindered the effective teaching of introductory technology in secondary schools. All the seven items have mean scores above the cut-off mark of 2.50 on the four-point rating scale. All the cluster means of 3.00 (for principals), and 2.9 (for teachers), on a four-point rating scale are indicative of the fact that both the principals and the teachers, are of the opinion that there are inadequacy of human resources that has led to effective implementation of introductory technology in secondary schools.

## Hypothesis

There will be no significant difference in the mean ratinga of principals and teachers on the availability of human resources for the implementation of introductory technology programme.

### Table 2: Summary of Z-test for $H_{01}$

| Variables | Mean | SD | N | Prob. Level | DF | Z-cal | Z-table |
|---|---|---|---|---|---|---|---|
| **Adequacy of Material Resources** | | | | | | | |
| **Principals** | 3.00 | 9.76 | 120 | 0.05 | 478 | | |
| **Teachers** | 2.9 | 0.82 | 360 | 0.05 | 478 | 1.22 | 1.96 |

The table above shows a z-test analysis of the difference between the mean scores of principals and teachers. Looking at the table, we can see that the calculated z-value is 1.22 at 478 degrees of freedom and 0.05 level of significance. Since the educated z-value of 1.22 is less than the critical table value of 1.96, the null hypothesis is accepted. In otherwords, there is no significant difference between the opinions of principals and teachers with regards to inadequacy of human resources to the effective implementation of introductory technology programme.

**Research Question 2:**

How adequates are the equipment and materials for introductory technology practical in secondary schools?

To address this question, the questionnaire includes items that elicited information from principals and teachers on how adequate are the equipments and materials for the effective implementation of introductory technology programme.

Table 3

Mean ratings of principals and teachers on the Adequacy of materials used in teaching Introductory Technology.

| S/N | Item | Mean | SD | D | Mean | SD | D |
|-----|------|------|----|----|------|----|----|
| 8 | My school does not have introductory technology workshops. | 3.29 | 0.61 | SA | 3.25 | 0.9 | SA |
| 9 | The quality of the equipment and tools is poor. | 3.32 | 0.62 | SA | 3.24 | 0.70 | SA |
| 10 | In my school, the supplied equipments have not been installed. | 2.95 | 0.92 | A | 2.90 | 0.92 | A |
| 11 | There are cases of theft or loss of supplied equipment. | 3.21 | 8.73 | SA | 3.20 | 0.73 | SA |
| 12 | Some of the supplied equipment or materials are not relevant to introductory technology programme. | 3.02 | 0.87 | SA | 2.99 | 0.92 | A |
| 13 | Many of the installed equipment are not functioning. | 2.23 | 0.74 | D | 3.22 | 0.73 | SA |
| 14 | Most of the equipment have broken down. | 2.74 | 1.04 | A | 2.69 | 1.05 | A |
| 15 | Spare parts are not supplied with the equipment. | 3.38 | 0.50 | SA | 3.36 | 0.54 | SA |
| 16 | There are not enough books on the subjects. | 3.38 | 0.58 | SA | 3.36 | 0.54 | SA |
| 17 | Most of the tools are operated by electricity and most of the schools are not electrified. | 3.28 | 0.67 | SA | 3.25 | 0.71 | SA |
| | **CLUSTER MEAN** | **3.18** | **0.72** | | **3.15** | **0.76** | |

From the data shown above, principals and teachers are of the opinion that the extent of implementation of introductory technology programme has not been met, because of these enumerated causes. This is indicated by the mean scores of the different items. Out of these items that elicited their views, none has a mean score less than 3.70. infact, the cluster mean score of 3.18 (Principals) and 3.15 (Teachers) on a four-point-rating scale are sure indications that all the principals and teachers are of the opinion that materials, equipments and tools are unavailable and inadequate for the implementation of introductory technology programme.

**Table 4: Summary of Z-test for $H_{O2}$:**

| Variables | Mean | SD | N | Prob. Level | DF | Z-cal | Z-table |
|---|---|---|---|---|---|---|---|
| Availability and adequacy of equipments, facilities, tools and materials. | | | | | | | |
| Principals | 3.18 | 0.73 | 120 | 0.05 | 378 | 0.39 | 1.96 |
| Teachers | 3.15 | 0.75 | 360 | 0.05 | 378 | | |

The table above shows that the calculated z-value is 0.39 at 278 degrees of freedom and 0.05 level of significance. Since the calculated z-value of 0.39 is less than the critical table value of 1.96, the null hypothesis is accepted. In other words, there is no significance difference between the opinions of principals and teachers with regards to the availability and adequacy of equipments, facilities, tools and materials to the implementation of introductory technology programme.

## Research Question 3

What are the methods of teaching introductory technology in secondary schools? The data for answering the above research question are presented on the table 5 below.

**Table 5: Mean ratings of principals and teachers as regards the methods of teaching Introductory Technology**

| S/N | Item | Mean | SD | D | Mean | SD | D |
|---|---|---|---|---|---|---|---|
| 18 | The size of introductory technology building is not enough for practical classes. | 2.43 | 1.02 | SA | 2.40 | 1.02 | A |
| 19 | The workshop does not have enough workshop benches. | 2.72 | 1.02 | A | 2.72 | 1.01 | A |
| 20 | The workshop is not conducive for class practicals with regard to ventilation and lighting. | 2.79 | 0.99 | A | 2.80 | 0.99 | A |
| 21 | Teachers do not make use of instructional materials in teaching. | 2.71 | 0.49 | A | 2.66 | 1.05 | A |
| 22 | Students are not allowed to manipulate the instructional materials to facilitate understanding. | 3.35 | 0.56 | SA | 3.3 | 0.66 | SA |
| 23 | The students are not motivated and stimulated to learn by the use of instructional materials. | 3.31 | 0.62 | SA | 3.29 | 0.66 | SA |
| 24 | The teachers do not make use of local implements as improved tools during practicals. | 3.4 | 0.49 | SA | 3.35 | 0.58 | SA |
| 25 | Studentspracticals do not go beyond the teachers demonstration. | 3.4 | 0.49 | SA | 3.34 | 0.52 | SA |
| 26 | There are no trained workshop attendants. | 3.4 | 0.49 | SA | 3.39 | 0.50 | SA |

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

50

| 27 | The method of lesson delivery is mostly theoretical. | 3.14 | 0.49 | SA | 3.40 | 0.49 | SA |
|----|------------------------------------------------------|------|------|----|------|------|----|
|    | **CLUSTER MEAN**                                     | **3.09** | **0.67** | **SA** | **3.06** | **0.75** | **SA** |

From the data above, the principals and teachers agree that there is no special method of teaching introductory technology. This is indicated by the mean scores of the different items. Out of the ten items that elicited their views, none has a mean score less than 3.70. In fact, the cluster mean score of 3.09 (for the principals) and 3.06 for the teachers on a four-point rating scale are sure indications that all the principals and all the teachers are of the same view.

## Hypothesis 3

There will be no significant difference in the mean ratings of principals and teachers as regards the methods of teaching introductory technology.

### Table 6: Summary of Z-test for $H_{03}$

| Variables | Mean | SD | N | Prob. Level | DF | Z-cal | Z-table |
|-----------|------|----|----|-------------|----|-------|---------|
| **Methods and Means of teaching.** | | | | | | | |
| **Principals** | 3.09 | 0.67 | 120 | 0.05 | 470 | 0.412 | 1.96 |
| **Teachers** | 3.06 | 0.75 | 360 | 0.05 | 470 | | |

The table shows Z-test analysis of the difference between the mean scores of principals and teachers. The calculated z-value 0.412 at 478 degrees of freedom and 0.05 level of significance. Since the calculated z-value of 0.412 is less than the critical table value of 1.96, the null hypothesis is accepted. In short, there is no significant difference between the opinion of principals and teachers as regards the methods of teaching introductory technology programme.

## Research Question 4

To what extent have the objectives of introductory technology been achieved?

To answer this question, the questionnaire contained items that sought information from principals and teachers on the extent of achievement of objectives of introductory technology syllabus.

**Table 7:Mean ratings of principals and teachers' assessment on the extent of achievement of government objectives in introductory technology.**

| S/N | Item | Mean | SD | D | Mean | SD | D |
|-----|------|------|----|----|------|----|----|
| 28 | The introductory technology has helped to provide trained manpower at the sub-professional grade. | 2.43 | 1.02 | SA | 2.40 | 1.02 | A |
| 29 | The introductory technology has provided technological knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development. | 2.72 | 1.02 | A | 2.72 | 1.01 | A |
| 30 | The introductory technology lessons have given introduction to professional studies in engineering and other technologies. | 2.79 | 0.99 | A | 2.80 | 0.99 | A |
| 31 | Teachers do not make use of instructional materials in teaching. | 2.71 | 0.49 | A | 2.66 | 1.05 | A |
| | **CLUSTER MEAN** | **2.18** | **1.05** | **D** | **2.17** | **1.04** | **D** |

From the data obtained and presented in the above table, significant majority of principals and teachers are of the view that introductory technology has helped in industrial, commercial and agricultural development.

## Hypothesis 4

There will be no significant difference in the mean ratings of principals and teachers' assessment of the extent of achievement of government objective in introductory technology.

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

52

This table shows z-test analysis of the difference between the mean scores of principals and teachers' assessment on the extent of achievement of government objective in introductory technology.

### Table 8: Summary of Z-test for $H_{O4}$:

| Variables | Mean | SD | N | Prob. Level | DF | Z-cal | Z-table |
|---|---|---|---|---|---|---|---|
| Objectives and extent of achievement. | | | | | | | |
| Principals | 2.18 | 1.04 | 120 | 0.05 | 478 | 0.091 | 1.96 |
| Teachers | 2.17 | 1.04 | 360 | 0.05 | 478 | | |

The calculated z-value at 478 degree of freedom at 8.05 level of significance is o.091. this calculated value, that is o.091 is less than the critical table value of 1.96. in view of this, the null hypothesis is accepted, that is there is no significant difference in the mean ratings of principals' and teachers' assessment on the extent of achievement of government objective in introductory technology syllabus.

### Research Question 5

What are this problems being encountered in the implementation of the programme?

To answer this question, this questionnaire included items that elicited information showing the problems encountered by principals and teachers.

**Table9:** Mean ratings of principals and teachers with regards to the problems encountered by principals and teachers in the implementation of introductory technology syllabus.

| S/N | Item | Mean | SD | D | Mean | SD | D |
|---|---|---|---|---|---|---|---|
| 32 | The relevance of the subject is yet to be understood by the students. | 3.32 | 0.94 | SA | 3.27 | 0.65 | SA |
| 33 | The students have not appreciated the subject. | 3.33 | 0.54 | SA | 3.27 | 8.65 | SA |
| 34 | Introductory technology is seen by students as just one of the subjects in general education. | 3.32 | 0.94 | SA | 3.29 | 0.65 | SA |
| 35 | Students do not show interest or choose more science and technology related subjects. | 3.3 | 0.63 | SA | 3.25 | 0.72 | SA |
| 36 | The interest of the populace and hence the students | 3.32 | 0.49 | SA | 3.27 | 0.66 | SA |

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

53

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | have not been aroused and sustained. | | | | | | |
| 37 | The communities subject the principals and teachers anytime they suggest building and or equipping the introductory workshop. | 2.75 | 0.44 | SA | 2.72 | 1.02 | A |
| 38 | It cost the school a lot to hire good teachers from tertiary institutions. | 3.23 | 0.70 | SA | 3.22 | 0.72 | SA |
| 39 | Students are not willing to pay extra money to hire introductory technology teachers. | 3.25 | 0.70 | SA | 3.20 | 0.72 | SA |
| | **CLUSTER MEAN** | **3.23** | **0.65** | **SA** | **3.18** | **0.72** | **SA** |

From the data presented above, there are enough elicited information on the problems encountered by principals and teachers in teaching of introductory technology. This is indicated by the mean scores of the different items.

## Hypothesis 5:

There will be no significant difference between the mean ratings of principals and teachers with regards to the problems being encountered by principals and teachers in the implementation of introductory technology syllabus.

Table 10 below shows a z-test analysis of the different mean scores of principals and teachers in relation to the problems encountered in the teaching of introductory technology.

| Variables | Mean | SD | N | Prob. Level | DF | Z-cal | Z-table |
|---|---|---|---|---|---|---|---|
| **Problems encountered by principal and teachers.** | | | | | | | |
| **Principals** | 3.23 | 0.67 | 120 | 0.05 | 478 | 0.091 | 1.96 |
| **Teachers** | 3.18 | 0.72 | 360 | 0.05 | 478 | | |

The calculated z-value at 478 degree of freedom and 0.05 level of

significance is 0.091. Since the calculated value of 0.091 is less than the

critical table value of 1.96, the null hypothesis is accepted. This is to say

that there is no significant difference between the opinions of the

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

54

principals and those of the teachers regarding the problems encountered in the implementation of introductory technology syllabus.

**Discussions of Findings:**

With reference to research question of one of the studies which deals with adequacy of human resources for the implication of the introductory technology programme, the respondents agreed that there are not enough introductory technology teachers for the subject, that those teachers available are not properly trained, that the teachers lack the back-up knowledge and skills that the introductory technology teachers for the teachers are not always available, that institution set up to train these teachers do not turn out well-trained teachers, and that some areas of the subject are not taught because of inadequacy of the human resources. The respondents, however, disagreed with the notion that most of the introductory technology teachers are not permanent staff by the PPSMB.

These findings are not surprising, since the principals and the teachers are all involved in the implementation of the school curriculum. They are therefore, in the best position to know whether the human resources for introductory technology are available and adequate. Equally these findings are consistent with that of [4], who found out that the expected pre-vocational orientation in technology has been provided because of lack of technical manpower to take care of the different aspects of the programme. This is equally one of the findings of[5], who

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

55

found that introductory technology is not taught in the way it should, because of lack of teachers adequately trained to teach all aspects of the programme effectively. Equally [6], found out that among factors militating against the effective implementation of the introductory technology programme is non-employment of specialist teachers to handle the different technical subject areas that make-up introductory technology.

With reference to the second research question, it is the respondents' view that equipments, facilities, tools and materials are not adequately available. According to the principals and the teachers, most schools do not have introductory technology workshops, the quality of equipment and tools available is poor, some of the equipment have been lost to thieves, some materials or equipments supplied are not relevant to introductory technology subjects, most of the equipment have broken down spare parts are not available, there are not enough books on the subject, most of the tools are operated by electricity and most of the schools are not electrified.

These findings are consistent with those of [7], who found that the equipment are not supplied with spare parts, that some of the equipments are outdated, and that ther are no adequate books on introductory technology on practical guide and activities. Equally [5], found the few functioning available equipment are not sufficient for the large population of students in JSSI to JSS3.

Obviously, the importance of equipment in a course like introductory technology cannot be over-emphasized and, we shall be deceiving ourselves if we hope to achieve anything in introductory technology without equipments, tools, facilities and books.

With regards to the third research question, which dealt with methods and means of teaching, the principals and teachers are of the opinion that benches in the workshop are not enough, the workshop is not conducive for class practicals due to poor ventilation and poor lighting, teachers do not use instructional materials in teaching, students are not allowed to operate the equipment and tools, teachers do not use local improvised tools during practicals, there are no trained workshop attendants, the method of lesson delivery is mostly theoretical. However, the respondents do not use instructional materials in teaching, students are not allowed to operate the equipment and tools, teachers do not use local improvised tools during practicals, there are no trained workshop attendants, the method of lesson delivery is mostly theoretical. However, the respondents do not think that the size of introductory technology workshop is not enough for practicals.

The findings are expository. This is due to the fact that the findings have revealed that even in the methods and means of teaching introductory technology, that something is wrong. However, these findings are similar to what earlier researchers have observed. [8], found that problems associated with the study of introductory technology are

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

57

absence of demonstration and lack of drill or practice, and wrong teaching techniques. [6], made similar findings. According to her among factors militating against the effective implementation of introductory technology programme are:

- Emphasis on theory rather than practicals.

- Lack or absence of field trips to expose students to how various materials are produced and repaired.

- Non-involvement of local craftmen to demonstrate skills in some aspects of introductory technology.

- Lack of orientation of technical teachers on the use and operation of the machines.

- Non-allocation of enough time for practicals.

- Non-application of good teaching strategies suitable in the teaching of introductory technology such as field trips, demonstration project individualized method.

With regard to the fourth research question which dealt with the extent of achievement of the objectives of introductory technology programme, the respondents overwhemly agree that the objectives of the introductory technology programme is yet to be achieved. In other words, according to the respondents, the introductory technology has not helped to provide trained manpower at the sub-professional grade. The introductory technology has not provided technological knowledge and vocational skills necessary for agricultural, industrial, commercial

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

58

and economic development. The programme has not given introduction of professional studies in engineering and other technologies neither has the programme produced craftsmen, technicians and other skilled personnel. The opinions of the respondents confirm the findings of [4], that the expected pre-vocational orientation in technology has not been provided by the introductory technology programme. This is equally similar to the findings of [9], who found that, because of mixture of problems, the skills expected to be acquired are not acquired and the self-sustaining and self-relevance aims of the programme are not achieved. The truth of these findings is observable in the graduates of introductory technology programme who are just bookish, so that, they still resort to white-collar jobs and or subordinate employment.

Regarding the fifth research question, it is the opinion of the respondents that principals and teachers encounter mixture of problems in the implementation of the introductory technology programme. According to the respondents, the relevance of the subjects is yet to be understood by the students, the students have not appreciated the subjects, introductory technology subjects are seen by students as just among the subjects in general education, students do not show interest or choose more science and technology related subjects, the interest of the populace and hence the students have been aroused and sustained, the communities suspect the principals and teachers anytime they suggest building and or equipping the introductory technology workshop, it costs the school a lot to hire good teachers from tertiary institutions, and the students are not willing to pay extra money to hire good introductory technology teachers.

## REFERENCES

1. Okafor, F.C. (1988). National Teacher Education: A Research for Ideology. Enugu: Fourth Dimension Publishers.

2. Federal Republic of Nigeria (1981). National Policy on Education. Lagos, Federal Ministry of Information.

3. Eze, T.I. (1992). Introductory Technology. An Integrated Area of Study in  Nigerian Education in Anyakoha, E.U. and Oranu, R.N. (eds). VocationalTechnical Education and Manpower Development, Nsukka, Nigeria, Vocational Association, pp. 51-60.

4. Effiong, E.J. (1987). The Teaching of Introductory Technology in JSS in Cross      River State, Unpublished B.Sc. Project, Department of Vocational Education, UNN.

5. Okoro, D.M. (1993). The Teaching of Introductory Technology in Nigeria   Secondary Schools in Anyakoha, E.U. and Osuala, E.C. (eds). VocationalTechnical Education and Self-reliance. Nsukka: Nigerian, Vocational Journal, pp. 159-253.

6. Akanwa, A.I (1989). A Study of the Strategies for Effedtive Teaching of          Introductory Technology in JSS in Mbaitoli and Ikeduru LGAs, Unpublished B.Sc. Project, Department of Vocational Education, UNN.

7. Ogwo, B.A. (1996). Material Resources state for the Study of Introductory   Technology Practicals in Benue State.

8. Kalu, d. (1987). Problems Associated with the Study of Introductory Technology in Imo State Secondary Schools and the Ways of Improvement,Unpublished Project, Vocational Education Department, UNN.

9. Orakpogheno, e.r. (1991). Problems Encountered in the Teaching and Learning of Introductory Technology in JSS in Sapele, Okpe and Warri LGAs of Delta State, Unpublished Project, Department of Vocational Education, UNN.

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

61

IDOSR JOURNAL OF HUMANITIES AND SOCIAL SCIENCES 2(1): 39-62, 2017.

62