THE GROWTH AND DEVELOPMENT OF TECHNICAL EDUCATION IN NIGERIA

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The problem of this study was to determine whether or not technical education has grown and developed in Nigeria.

The data used in this study were obtained from books, government documents of the United States, and from the Federal Institute of Industrial Research of Nigeria. Data and information were also secured from the Nigerian Federal Ministry of Information, Federal Ministry of Education, Mines and Powers, Federal Ministry of Commerce and Industry, and "The Report on the Commission on Post-School Certificate and Higher Education in Nigeria."

The study is divided into five divisions. The first presents an introduction to the study and includes statement of the problem, the purpose of the study, source of data and information, definition of terms, significance of the study, recent and related surveys, and organization of the study. The second division describes the present role and scope of technical education within the total educational system in Nigeria. The third division presents the role of the Nigerian government in promoting the growth and development of technical education in Nigeria. The fourth division presents the contributions of government and industry to technical education
in Nigeria, and the need of technical education to meet the
demands of industry. The fifth division presents the summary,
conclusions, and recommendations for consideration which the
Nigerian government might find useful in solving the manpower
problems.

Since the Nigerian people lack technical knowledge and
education, it seems that by training more technicians, Nigeria
will be able to solve the manpower problems and eliminate the
colonial prejudice toward working with one's hands.

The study supports the following recommendations:
(1) that more effort be given to curriculum improvement which
will include technical subjects in all Nigerian schools,
teacher training institutions, colleges and universities,
(2) that the educational system and curriculum in Nigerian
schools be changed from the British Colonial system to the
modern American system of education, (3) that the Nigerian
government and all State Governments enforce compulsory free
primary and secondary education, (4) that a commission be
designated by the Nigerian government to study the structure
and system of American education and offer suggestions and
recommendations to the Federal and State Ministries of Edu-
cation for consideration, and (5) that the Commission on
University Education establish a school of mines in some of
the Nigerian universities.
THE GROWTH AND DEVELOPMENT OF TECHNICAL EDUCATION IN NIGERIA

THESIS

Presented to the Graduate Council of the North Texas State University in Partial Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

By

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Denton, Texas

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CHAPTER I

INTRODUCTION

One of the problems facing Nigeria or any developing nation is that of making her educational system more relevant to her industrial development. To help solve this problem in Nigeria, there appears to be a need for industrial and technical education. In the sphere of technical knowledge and education, the people of Nigeria are sadly lacking, and it is unfortunately true that there are probably millions in the country who do not even appreciate the value of and need for industrial-technical education.¹ This is due in part to the British educational system which introduced a strong bias toward technical and industrial education, paying little attention to practical training and vocational education. On the other hand, many of the educated minority do realize the lack of technical education and great efforts are being made to remedy it.²

One of the questions facing the people of Nigeria is this: Should education in Nigeria today be general or narrowly related to the technical needs of industrialization? Power

²Ibid., p. 70.
plants, factories and technology are assuming great importance in all developing nations of the world.\(^3\) These are the basic necessities for industrialization. Therefore, it appears that Nigerian people should determine the role and scope of technical-vocational education in order to meet their industrial needs. It is essential for any industrial developing nation to create an increasing level of technical education for some of her citizens. The need of Nigerian people with respect to technical training is to train engineers, scientists, handicraftsmen, technicians, and industrial administrators.\(^4\) According to Harbison, Myers and others, educational institutions must become more functionally oriented to the training of skilled technicians, engineers, scientists, and industrial administrators.\(^5\) Industrialization requires an educational system which is functionally related to the skills and professions that are imperative to technology. Such an educational system should provide a program of specialization in different areas of technology and high-level manpower.

The main objective of preparatory programs for educating technicians is to impart scientific knowledge and to develop skills and attitudes required to enable technicians to perform professional jobs. The technicians must have a


\(^4\) Ibid., p. 117.

\(^5\) Ibid., p. 134.
comprehensive knowledge of the procedures, materials, device, techniques, equipment and processes used in industrial technology and acquire skill in the use of them. The attitude of the Colonial government was that the provision for technical education for Nigerians was neither necessary nor feasible. A survey conducted in 1942-1943 revealed the dilemma and the problem of a shortage of technicians to meet the needs for high-level manpower. Unless the Nigerian government remedies this shortage of technicians, the industrial and technical training development may be seriously retarded. A shortage of technicians and manpower can limit the capability of corporations to create new jobs. To be sure, growth in an advanced society depends on technological change. Yet it would be extremely difficult to predict what kind of education would bring about the biggest change...

Statement of the Problem

The problem of this study was to determine as to whether or not technical education has grown and developed in Nigeria.

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7 Ibid., p. 4.


Purpose of the Study

The purpose of this study was to provide detailed information as to whether or not technical education has grown and developed in Nigeria and to identify problems affecting its growth. The study will analyze information seeking answers to the following questions:

1. What is the place of technical education within the educational structure in Nigeria.

2. What is the role of the Nigerian government in order to improve the growth and development of technical education in all the twelve states in order to meet the high-level manpower needs and demands of industry?

3. What are the characteristics of Nigerian manufacturing industries and what are the contributions technical education can make to accelerate growth and development of manufacturing industries in Nigeria?

4. How can the natural resources be used to meet the need of Nigerian and overseas industries?

5. What are the present problems affecting the growth of industries, vocational-technical education and the current enrollment of students in government Trade Centers and Technical Colleges in Nigeria?

6. What suggestions and recommendations can be made for consideration by the Nigerian Federal Government for improving the problems of manpower and technical education in Nigeria.
Limitations of the Study

The study was limited to the growth and development of technical education in Nigeria and the problems affecting its growth and development.

Source of Data and Information

The data and information used in this study were obtained from books, government documents of the United States, and from the Federal Institute of Industrial Research of Nigeria. Data and information were also secured from the Nigerian Federal Ministry of Information, Federal Ministry of Education, Mines and Powers, Federal Ministry of Commerce and Industry, and "The Report on the Commission on Post-School Certificate and Higher Education in Nigeria."\(^{10}\)

Definition of Terms

**Technical Institute** is a school offering instruction in technology, usually above the high school level but not leading to a degree.\(^{11}\)

**Technology** is the science or systematic knowledge of industrial arts, particularly in manufacturing processes, such as refining, smelting, and weaving.\(^{12}\)

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\(^{12}\) Ibid., p. 413.
Industrial Arts is defined as an area of education that deals with socioeconomic problems and occupational opportunities, involving experience with materials, tools, and processes of materials to increase their value for human use.\textsuperscript{13}

Vocational Education refers to life experience, education and training that fits one to carry on a socially useful vocation. It refers to specific functional training for useful employment.\textsuperscript{14}

Industrial Arts Education is defined as a phase of practical arts education which emphasizes mechanical or manufacturing types of activities. It is the modern version of what was formerly called manual training, manual arts, and mechanical arts.\textsuperscript{15}

Vocational-Technical-Education is training that involves an appreciable body of known facts in science, mechanical arts and building occupations.\textsuperscript{16}

Technical Education is concerned with the body of knowledge organized in a planned sequence of classroom and laboratory experiences in preparing students for a cluster of jobs in a specialized field of technology.\textsuperscript{17}

\textsuperscript{13}Ibid., pp. 215-216.


\textsuperscript{15}Ibid., p. 395.

\textsuperscript{16}Ibid., p. 884.

Industrial Education is defined as that phase of education pertaining to industry, including the study of industrial tools, and processes of industry.\(^\text{18}\)

General Education is broadly defined as education to meet the needs of individuals in human or community relationships.\(^\text{19}\)

A Technician is one who has learned the practical technical details and special techniques of an occupation in the field of mechanical science, technology and industry.\(^\text{20}\)

A Craftsman is one who possesses manual skills with knowledge to interpret technical drawings and perform calculations relating to craftsmanship.\(^\text{21}\)

Significance of the Study

The study was undertaken to determine whether or not technical education has grown and developed in Nigeria and the role of Nigerian government to improve the problems affecting the growth and development of technical education to meet the high-level manpower need in Nigeria.


\(^{19}\)Ibid., p. 4.


\(^{21}\)Ibid., p. 247.
Recent and Related Studies

Research revealed that in August 1970, Samuel Okoh made a study of education and the economic growth of Nigeria. This study was not directly related to the growth and development of technical education in Nigeria, but to the history and professional education in agriculture.

Okoh concluded that "to provide a balanced education that would boost economic and educational development, Nigeria needs a systematic coordination of educational planning and expenditure." 22

He stated that educational revolution requires money and knowledge and the United States has contributed to the growth and development of education in Nigeria. 23

Finally, Okoh concluded that general education has helped to produce intellectuals but not technicians and engineers. 24 Nigeria could learn from other developing countries of the world that technical education is the basic necessity for industrial development.

Organization of the Study

Chapter I is an introduction to the study and includes the statement of the problem, the purpose of the study, the


23 Ibid., p. 62. 24 Ibid., p. 34.
limitations of the study, source of data and information, definition of terms, significance of the study, recent and related study, and organization of the study. 

Chapter II will describe the present role and scope of technical education within the total educational system in Nigeria.

Chapter III will present the role of Nigerian Government in promoting the growth and development of technical education in Nigeria.

Chapter IV will identify and will present the contributions of technical education to the growth and development of manufacturing industries in Nigeria and the need of technical education in order to meet the demands of industry. This chapter will also present data and information concerning industry in Nigeria and the problems affecting the growth of industry and technical education.

Chapter V will include a summary, conclusions, and recommendations for consideration which the Nigerian government might find useful in solving the manpower problems.
CHAPTER II

TECHNICAL EDUCATION WITHIN THE EDUCATIONAL
SYSTEM IN NIGERIA

Technical education as used in this study refers to that body of knowledge organized in a planned sequence of classroom and laboratory experiences in preparing students for a cluster of jobs in a specialized field of technology.¹

A planned sequence of study and extensive knowledge in a field of specialization is required in technical education. The curriculum in technical education must be structured to provide a background of skills and knowledge to students which will enable them to advance with the developments in technology.²

According to Arnold, a curriculum of technical education should enable technicians to become capable of performing such duties as assisting in engineering functions, such as "designing, testing and modifying of products and processes, production planning, writing reports, preparing estimates, analyzing and diagnosing technical problems that involve independent decisions, and solving a wide range of technical problems."³

¹Lawrence W. Prakken, editor, Technician Education Yearbook, p. 105.
²Ibid., p. 105.
³Ibid., p. 106.
During the past ten years the type of education most sought in Nigeria has been academic general education leading to a good position in the civil service. This situation may have resulted in part from the British attitude that if an African makes a good clerk, he will never be able to become an engineer. At any rate there is an element of truth in this statement in Nigeria where the educational system has been designed to train more clerks and teachers.

Technical education which is critically needed to develop manpower for an independent Nigeria has been neglected. Recently, the rapid increase in job opportunities for technicians created a demand for technical education in Nigeria. On the other hand, two main factors have hampered the growth and development of technical education in Nigeria. These two factors were (1) the emphasis which the colonial administration placed on literary education and (2) the delay in accepting the need for nationally planned technical education, directed at providing skilled manpower.


The lack of respect for manual skills and technical education in Nigeria caused the Ashby Commission to offer the following recommendations:

1. The most effective way of correcting this lack of technical education and achievement in Nigeria would be an introduction of manual subjects in all primary and secondary high schools.

2. The commission also recommended that the courses for technicians should preferably be taken concurrently with industrial training.

3. That the Nigerian federal government should facilitate the cooperation between the technical institutes and advise the state government on their needs.

4. The Ashby Commission also recommended that the technical institutes and colleges should mainly be the responsibility of the state governments, but the federal government should be prepared to give grants-in-aid.

5. The commission recommended that programs leading to a Bachelor of Engineering degree be instituted at the university level which will be equivalent to professional engineering degree programs in other institutions in the United Kingdom.7

The Ashby Commission Report of 1960 has opened a developing era of education and manpower development in modern Nigeria. In a White Paper issued in 1961, the federal government accepted the report of the commission as a minimum basis for improving education in Nigeria for the next ten years.  

During the Ten-Year-Plan for the Development and Welfare of Nigeria, technical education was given a major place in the program. An expenditure of N73,600 pounds [$184,000] for technical education was budgeted. Later, a Colonial Development and Welfare grant of N401,000 pounds [$822,500] was given for the first five years of the Ten-Year-Plan. This was used to establish handicraft centers, trade centers and technical institutes with respective functions to train skilled craftsmen and technicians needed in Nigeria. One of the chief motives in launching the training plan was to help beat down the Colonial prejudice toward working with one's hands and to instill in every boy as part of his general education a respect for manual skills and technical achievement. On the other hand, it was believed the launching of

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10. Ibid., p. 242.

11. Ibid., p. 242.
the technical training would create a sense of appreciation for raising the low standards of craftsmanship in Nigeria.

Technical Education in the Elementary and Post-Primary Schools

Throughout the Federation of Nigeria, all the technical institutes and handicraft centers established have provided training in woodworking and metalworking to thousands of children in primary schools. These institutes and handicraft centers are not colleges; they are post-primary schools which serve as pre-vocational schools.

In 1962 Northern Nigeria transformed its craft schools from adjuncts of the primary school system into three-year post-primary pre-vocational schools which are similar to the secondary modern schools in Lagos and in the Western States.\textsuperscript{12} During the next two years, Eastern Nigeria expanded the number of its craft schools and "changed them into three year post-primary technical schools."\textsuperscript{13} All these developments were coordinated into a common three year curriculum, which in the third year provides for two arms: "one with an academic bias for those students who are suited to enter grammar schools and one with a technical bias for employment as an artisan or entrance into Trade Center."\textsuperscript{14} This curriculum enables students to enter high school for another

\textsuperscript{12}Ibid., p. 243. \textsuperscript{13}Ibid., p. 243. \textsuperscript{14}Ibid., p. 243.
five years and go back to a technical college for the completion of their course.

Concerning the primary school education, the Ashby Report also recommended that: "The bias of the present primary and secondary school curriculums toward literary and academic subjects should be corrected by introduction of practical and technical subjects."^15

Since the report of the Ashby Commission, many changes have occurred in the educational system in Nigeria. Enough children are completing the primary education curriculum to provide a flow of recruits for post-secondary education. In the Western and Eastern States of Nigeria, the primary education curriculum involves eight years for completion, and seven years are required in the Northern States. Those completing the primary school curriculum are qualified to enter vocational school and only those who complete the secondary school curriculum with a West African School Certificate or a General Certificate of Education can enter a technical college. The subjects taken at the primary school level provide the students with enough background in general education to enter vocational schools.


^16 Ibid., p. 179.

^17 Ibid., p. 180.
Throughout the Federation of Nigeria, the primary school curriculum consists of the subjects as shown in Table I.

**TABLE I**

SUBJECTS TAUGHT IN THE TAX-SUPPORTED SCHOOLS IN LAGOS, NIGERIA, BY NUMBER OF WEEKLY CLASS SESSIONS AND TOTAL TEACHING

<table>
<thead>
<tr>
<th>Subjects Taught in Classes 1 through 8 Grades</th>
<th>Number of Sessions Per Week</th>
<th>Total Minutes Per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Arithmetic &amp; Math.</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Language Activity</td>
<td>5</td>
<td>200</td>
</tr>
<tr>
<td>Physical Education</td>
<td>3</td>
<td>75</td>
</tr>
<tr>
<td>English &amp; Literature</td>
<td>6</td>
<td>180</td>
</tr>
<tr>
<td>Handiwork (Crafts)</td>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>Art</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>Poetry</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>History</td>
<td>2</td>
<td>65</td>
</tr>
<tr>
<td>Geography</td>
<td>2</td>
<td>65</td>
</tr>
</tbody>
</table>

As shown in Table I, crafts are taught twice a week in the elementary schools from standards [grades] one to eight. Needlework, sewing, and making fringes for raffia mats are included in crafts recommended for girls, and clay-modelings, paper folding and making of papier-mache objects are recommended for boys.19

19 Ibid., p. 287.
In 1964, Nigeria had less than twenty vocational schools and trade centers for the training of technicians from primary schools. Organizations such as the United Nations and the United States Agency for International Development (USAID) helped Nigeria to build vocational schools and provided them with instructors who specialized in vocational education. These vocational schools have provided the country with junior technicians, craftsmen, and industrial workers.

Technical Education in the High Schools and Commercial Schools

In the educational system of Nigeria, only those students who complete the secondary school curriculum and who pass the West African Certificate Examination or have a General Certificate of Education can enter a technical college or any college of technology.

The Report of the Commission on Post-School Certificate and Higher Education in Nigeria recommended that technical subjects should be included in the secondary school curriculum. The Commission also recommended the commercial

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secondary school curriculum should provide higher commercial education at the professional technical level. 22

Following the recommendation of the Commission, a number of commercial schools have been established in many parts of the country. There are other accredited institutions, supported by government funds, providing courses in typing, shorthand, bookkeeping, accounting and business English. 23 Special training in hygiene, cookery, needlework, home management, and child care is available to women in domestic science centers and secondary modern schools. 24

Technical Education in Colleges and Universities

Before the founding of the University College at Ibadan in 1947, Nigerians seeking higher education had to go abroad to study. 25 Yaba Higher College which was founded in 1930 did offer post-secondary courses leading to certificates in various subjects, but it was at best a junior college. The University of Ibadan was established and supported by federal funds, and grants degrees by special arrangement with the University of London. 26

22 Ibid., p. 394.
24 Ibid., p. 158.
26 Ibid., p. 154.
In October 1960, the University of Nigeria at Nsukka in the East Central State was established. This university was patterned after an American land-grant college. Michigan State University played a prominent role in the establishment of this second university and has continued close academic ties with it. Following the recommendation of the Ashby Commission, the Alexander Car-Saunders report recommended the establishment of the University of Northern Nigeria. This university was incorporated with the Nigerian College in Kano and the Institute of Administration. The University of Northern Nigeria, now Ahmadu Bello University, opened officially on October 4, 1962, and the Nigerian College of Arts, Science and Technology was closed in Zaria.

In taking over the College of Arts and Technology, the Ahmadu Bello University continues to provide and develop courses formerly provided by the college in civil, electrical and mechanical engineering, architecture, fine arts and education. To these have been added new departments of English, Geography, History, Botany, Chemistry, Mathematics and Zoology.

In 1962, the University of Lagos was established with departments of medicine, economics, commerce, business administration, law and biology. The College of Arts at Ibadan

27 Ibid., p. 153  
28 Ibid., p. 155.  
30 Ibid., p. 173.  
31 Ibid., p. 176.
in the Western State was converted into the University of Ife on June 30, 1962.\textsuperscript{32} The University of Ife was established with faculties for teaching engineering, sociology, art, agriculture, and general science.

The Federal Emergency Science School was established in Lagos for technicians and medical studies. Students who passed the West African Higher School Certificate Examination are qualified for admission by competitive examination.

Education in Technical College

The functions of technical institutes and colleges were more varied. Technical colleges provide courses for industrial workers and full-time training for students to meet the requirements of the "British Ordinary National Certificate Examination."\textsuperscript{33}

After the recommendations of the Elliot Commission on Higher Education in West Africa, Yaba College of Technology succeeded Yaba Higher College in 1947.\textsuperscript{34} In 1948, Yaba College of Technology was extended to include the secondary technical and commercial school curriculum, but the secondary technical and commercial courses will be separated completely from the college by 1972.\textsuperscript{35} The courses at the college

\textsuperscript{32}Ibid., p. 180.

\textsuperscript{33}Kilby, Industrialization in an Open Economy, p. 243.

\textsuperscript{34}Ibid., p. 245.

\textsuperscript{35}Yaba College of Technology, Prospectus (Lagos, Nigeria, 1971-1972), p. 5.
leading to the Ordinary Diploma in Civil Engineering and Building are shown in Table II.

TABLE II

COURSES LEADING TO THE ORDINARY DIPLOMA IN CIVIL ENGINEERING AND BUILDING

<table>
<thead>
<tr>
<th>Classes I and II</th>
<th>Subjects</th>
<th>No. of Hours per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Theory</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Surveying</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Building Construction</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Strength of Materials and Theory of Structures</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Technical Drawing</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Quantity Surveying</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Industrial Orientation</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Quantities and Specification</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Site Organisation</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Highway and Traffic Engineering</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Hydraulics</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

As shown in Table II, the courses leading to an Ordinary Diploma of the college form a suitable two-year academic training for those completing the secondary school program and wishing to become technicians in the civil engineering or building industries.\textsuperscript{37} Candidates for admission must also possess a West African School Certificate with a passing grade in the English language, physics, chemistry and mathematics.\textsuperscript{38}

\textsuperscript{36}Ibid., pp. 32-33 \hspace{1cm} \textsuperscript{37}Ibid., p. 32. \hspace{1cm} \textsuperscript{38}Ibid., p. 31.
The Yaba College of Technology also offers a three-year program leading to the Ordinary Diploma in Electrical Engineering. Table III shows the courses in the program leading to the Ordinary Diploma in Electrical Engineering.

**TABLE III**

**COURSES LEADING TO THE ORDINARY DIPLOMA IN ELECTRICAL ENGINEERING**

<table>
<thead>
<tr>
<th>Classes 1 to 3 Subjects</th>
<th>No. of Hours per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory</td>
</tr>
<tr>
<td>Engineering Drawing</td>
<td>--</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>12</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>36</td>
</tr>
<tr>
<td>Electrical Workshop</td>
<td>36</td>
</tr>
<tr>
<td>Electrical Circuit Theory</td>
<td>36</td>
</tr>
<tr>
<td>Industrial Orientation</td>
<td>12</td>
</tr>
<tr>
<td>Workshop Technology</td>
<td>24</td>
</tr>
<tr>
<td>Basic Electronics</td>
<td>36</td>
</tr>
<tr>
<td>Power Production</td>
<td>24</td>
</tr>
<tr>
<td>Thermodynamics</td>
<td>12</td>
</tr>
<tr>
<td>Electric Engineering II</td>
<td>36</td>
</tr>
<tr>
<td>Engineering Drawing II</td>
<td>--</td>
</tr>
<tr>
<td>Industrial Orientation II</td>
<td>12</td>
</tr>
</tbody>
</table>

As shown in Table III, the courses leading to the Ordinary Diploma in Electrical Engineering were designed for a two-year academic training program. All candidates for the

\[^{39}\text{Ibid.}, \text{pp. 34-35.}\]
Diploma in Electrical Engineering must pass the City and Guilds Examination and be engaged by electrical engineering firms, and have a minimum of one year industrial experience in electrical engineering.

In the Department of Mechanical Engineering and Horology, candidates for admission must possess a West African School Certificate in applied mechanics, technical drawing and chemistry or physics. Table IV shows the courses required for the Higher Diploma in Mechanical Engineering.

**TABLE IV**

COURSES REQUIRED FOR THE HIGHER DIPLOMA IN MECHANICAL ENGINEERING

<table>
<thead>
<tr>
<th>Subjects</th>
<th>First Year Hours per Week</th>
<th>Second Year Hours per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Strength of Materials</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Engineering Drawing</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Plant-Service Engineering</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Applied Thermodynamics</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Applied Hydrology</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Manufacturing of Tools</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Mechanical Engineering II</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Horology I &amp; II</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

Other courses of study available at the college are art, printing, secretaryship, secretarial studies, and management.  


In 1958 there were thirty-four technical and vocational schools and colleges in Nigeria with an enrollment of 6,154 students. These technical colleges and trade centers are located in Yaba, Enugu, Sapele, Ijebu-Ode, Oshogbo, Owo, Oyo, Ilorin, Bukuru, Ibadan, Benin City, Jos, Kano, Kaduna, Maiduguri, and Port Harcourt.

The trade centers admit boys who have completed the primary school curriculum and train them in a variety of occupations, such as automobile mechanics, carpentry, welding, and masonry. The duration of the training varies from three years to five years. After the completion of the training program, the students receive the Certificate of the City and Guilds of London Institute provided they successfully pass a theoretical and practical examination. An intermediate certificate requires three years of training at a recognized trade center. The final certificate requires five years of training and two years of practical experience in industry.

All technical institutes offer both secondary and post-secondary technical programs which last for four years and are oriented to applied science and commercial subjects.

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The post-secondary curriculum includes engineering, architecture, printing and applied art. The technical colleges and trade centers are all financed by the federal government and state governments.

Classification of Technicians

The Nigerian National Manpower Board classified the high-level manpower into the following categories:

1. Senior Category: These persons are required to hold university degrees or professional technical qualifications.

2. Intermediate Category: These persons are required to have two years specialized training after the High School Certificate Examination. These are secretary-typists, laboratory technicians, foremen, industrial supervisors, and executive technical officers.

3. Other Category: These persons hold any technical certificate and diploma and have undergone full apprenticeship of craftsman in technical institutes or industry. These are mechanics, electricians, and plumbers. ⁴⁵

The Nigerian Manpower Board classified these technicians according to their technical education. Some of these technicians are capable of assisting engineers in engineering functions, such as testing, designing, analyzing, diagnosing technical problems and solving technical problems.

CHAPTER III

THE ROLE OF NIGERIAN GOVERNMENT IN THE
GROWTH AND DEVELOPMENT OF TECHNICAL
EDUCATION IN NIGERIA

The role of the Nigerian Government in educating highly skilled technicians is to promote and develop the establishment of high quality manpower programs in Nigeria.

In order to improve the supply of high-level manpower and the shortage in the area of intermediate technical training, the Ashby Report called for an annual flow of 2,500 students into the post secondary technical colleges in 1970 according to Liedholm.¹ The Government White Paper raised this number to 5,000 technicians. In 1965, the annual intake into technical colleges was less than 500 and output was less than 450.² The Nigerian National Manpower Board warned the government that the need for rapid development of technical colleges was the most critical problem of manpower development that the Nigerian government needed to solve. J. A. Yesufu, the leading manpower economist, recommended to the government in


²Ibid., p. 395.
1967 that "Nigeria needed thirty more full-fledged secondary technical institutes and ten more colleges of technology."\(^3\) The government officials and educators were aware of these serious problems and more attention was given to the reform of and the establishment of more technical schools in Nigeria. The universities were under pressure to review their curricula and programs in order to determine how to relate the curricula and the programs more closely to the needs of national manpower demands. For developing a substantial supply of technicians and high-level manpower, finance has been the major problem for the Nigerian government and some of the developing nations in Africa.

To finance technical education and manpower development programs, the Nigerian government launched the "First National Six-Year Development Program in 1962 to 1968."\(^4\) The Six-Year Development Program was presented to the Parliament on March 29, 1962, for approval. The program called for the improvement of shortcomings in agriculture, industrial and technical education.\(^5\)

The United States Government promised, subject to Congressional approval, grants and loans of $225,000,000 to be applied to agriculture, manpower development, and technical education in Nigeria.\(^6\) The grants and loans were approved in 1967.

\(^3\)The Nigeria Daily Times, October 2, 1970, p. 5.
\(^5\)Ibid., p. 11.
\(^6\)Ibid., p. 12.
The World Bank, the International Finance Corporation, the International Development Association, British Government, Canada, Israel, Japan, Italy, and West Germany were other sources of financial assistance.\(^7\)

Of the total of $274,700,000 which became available, $190,700,000 was used for the construction of the Kainji hydroelectric dam on the Niger River.\(^8\) This was the most expensive item of the plan. The power station at Kainji had four 70,000 kw generating units and these were later raised to 980,000 kw. By 1982, a second dam will be completed at Jebba, adding another 500,000 kw, which will produce about 1,730,000 kw.\(^9\) Because of the growing demand for electric power in Nigeria, the Electricity Corporation of Nigeria has invested $84,000,000 from its own funds during the six-year period to expand thermal facilities, including the provision of natural gas to Eastern Nigeria.\(^10\)

The Six-Year Development Plan also invested heavily in the education of trained manpower with special emphasis on producing more engineers, scientists, technicians, and craftsmen. Out of $81,800,000 available, $13,000,000 was spent on the expansion of the University at Ibadan, and

\(^7\)Ibid., pp. 12-13. \(^8\)Ibid., p. 11. 
\(^9\)Ibid., p. 11. \(^10\)Ibid., pp. 11-12.
$15,440,000 for the establishment of the University of Lagos. Also, $11,200,000 in Federal Government grants have been provided for the improvement of the regional universities.\textsuperscript{11}

An allocation of $4,370,000 was set aside for the building of more trade centers and technical colleges and $2,800,000 have been allocated for a training college for teachers to be established in Eastern Nigeria.\textsuperscript{12} The amount of $8,680,000 was available for use by the University of Nigeria at Nsukka to provide facilities for 2,100 students.\textsuperscript{13}

The amount of $1,450,000 was to be used for scholarships, and the training of students in overseas programs. Under the plan, $15,400,000 have been set aside for secondary-technical education and $4,760,000 for Ahmadu Bello University in Zaria, two secondary-commercial schools, and thirteen craft schools in the Northern States.\textsuperscript{14}

On November 1, 1970, Nigeria launched her Second National Development Plan for 1970 to 1975.\textsuperscript{15} The Second National Development Plan urged the government to "offer more and better technical education."\textsuperscript{16} Another significant feature

\textsuperscript{11}\textit{Ibid.}, p. 12.
\textsuperscript{13}\textit{Ibid.}, p. 13.
\textsuperscript{14}\textit{Ibid.}, p. 13.
\textsuperscript{16}\textit{Ibid.}, p. 147.
of the plan was the provision of funds to be used to encourage the growth of local industries. The plan estimates a net total expenditure of $2,340,000. Table V shows the amounts planned for the major areas.

### TABLE V

PLANNED EXPENDITURES FOR SECOND NATIONAL DEVELOPMENT PLAN FOR 1970-1975

<table>
<thead>
<tr>
<th>Major Areas to be Developed</th>
<th>COST</th>
<th>Percentage of Total Planned Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N million</td>
<td>U.S. $ million</td>
</tr>
<tr>
<td>Transportation</td>
<td>246.6</td>
<td>$738.2</td>
</tr>
<tr>
<td>Education</td>
<td>139.9</td>
<td>419.7</td>
</tr>
<tr>
<td>Agriculture &amp; Forestry</td>
<td>132.7</td>
<td>407.1</td>
</tr>
<tr>
<td>Defense and Security</td>
<td>96.4</td>
<td>289.2</td>
</tr>
<tr>
<td>Industry</td>
<td>86.1</td>
<td>215.2</td>
</tr>
<tr>
<td>Health</td>
<td>53.8</td>
<td>161.4</td>
</tr>
<tr>
<td>Fuel and Power</td>
<td>45.3</td>
<td>125.9</td>
</tr>
<tr>
<td>Communication</td>
<td>42.6</td>
<td>127.8</td>
</tr>
</tbody>
</table>

As shown in Table V, of N139.9 million pounds [$419,700,000] have been allocated "for the expansion of government primary and secondary schools in all of the states, and to improve technical education and teacher training facilities."\(^{18}\)


\(^{18}\)Ibid., p. 155.
It should be recognized that the provision of these facilities will not be completely beneficial to the society if relatively few children take advantage of them either because the parents cannot afford to send their children to school or because some parents continue to disregard the benefits of education. Ekundare made the following observation concerning the educational program:

If the economy cannot take on the full financial weight of free education at all levels, free and compulsory education up to the secondary level will move the country nearer to the main objectives of an egalitarian society and a land of bright and full opportunities for all citizens.¹⁹

The public disorder of 1966 and the Nigerian-Biafran Civil War of 1967-1970 caused all activities of the government to promote the development of free compulsory education to disintegrate. After the civil war, the Federation of Nigeria was divided into twelve states and each state was made responsible for planning the financial administration, principles and policies for free compulsory education.²⁰

The National Reconstruction and Development Plan of 1970-1974 committed the administration of the Federal Military Government to give financial assistance to the needy states in order to enable them to play an effective role in the development of technical education in their states.²¹

¹⁹Ibid., pp. 155-156.  
²⁰Ibid., p. 149.  
During the post-war national reconstruction and development of Nigeria, the federal government will build "eight more technical-comprehensive secondary schools in eight other states which have none at present."22 The Federal Military Government will also continue to assist in the expansion of primary and secondary schools in the educationally backward areas of the country and "the National Universities Commission will develop universities to satisfy the pressing high-level manpower requirement of the nation."23

The Role of the State Governments In the Growth and Development of Technical Education in Nigeria

In 1971, Kano State formulated a four-year education-development plan estimated to cost 17.4 million pounds or $54.2 million.24 The plan will place emphasis on primary school education, teacher training programs, and technical training.25 In Kano, the people are commercially minded and eager for industrialization. For this reason, the government attaches great importance to technical training and commercial education for the people of Kano.26

22 Ibid., p. 9.  
23 Ibid., p. 9.  
25 Ibid., p. 25.  
26 Ibid., p. 31.
The Government Technical School at Kano has been provided with financial aid by The Ford Foundation of America and this aid will help about 1,000 students to obtain various kinds of technical and commercial training.27

Kwara has started a program of "Fabricating Engineering at the Government Technical Training School at Ilorin, while evening classes were organized for General Certificate of Education and vocational courses for craftsmen."28

In the Mid-Western State, "the government places much emphasis on sound education, especially in the fields of science and technology."29 Eke made the following observation concerning the educational program:

In order to provide the necessary manpower resources, the Government has recently announced the establishment of an Institute of Technology in Benin. The Institute will offer degree and diploma courses in all fields of science, engineering and medicine. To ensure the continued development of arts and crafts, the government established a Mid-West Crafts Shop and Crafts School at Benin.30

In many parts of Nigeria, craftsmen have formed co-operative unions to promote the development of crafts and technical education.

27 Ibid., pp. 31-32.


30 Ibid., p. 56.
Mid-Western State has spent N4,803,610 pounds [$10,410,830] to improve general and technical education and the curricula of the primary and secondary schools in an attempt to meet the manpower needs in the state. During the fiscal year of 1971, seven schools were under construction, fourteen schools had been completed, and fifteen new secondary grammar schools had been established in the rural areas in various divisions of the state.31

North Central State has built a new technical school at Kaduna and also proposes to build two new secondary schools during the year in order to cope with the increased inflow of students from the primary schools.32

The government of North-Eastern State has established three craft schools which offer courses in woodwork, metalwork, and bricklaying in addition to ordinary secondary school subjects.33 It is also proposed to open a new craft school at Mubi and a technical training school at Maiduguri. The technical school will recruit students who complete the curriculum of craft schools and prepare them for the City and Guilds Craftsmen's Certificate Examination.34

31Ibid., pp. 58-59.
34Ibid., pp. 77-78.
In North-Western State, steps are also being taken to broaden the scope of the secondary education system by introducing technical subjects. The craft schools at Sokoto and Bida have been upgraded and offer courses in academic, commercial, and technical subjects. Through the generosity of the Ford Foundation of America, North-Western State has improved the vocational education programs at Minna and Sokoto for Northern State citizens.

The government of River State has decided to open two new trade schools, an advanced teacher training college and the College of Technology at Port-Harcourt.

In South-Eastern State, the Civil War has affected the growth and development of technical education and education in general. There seems to be an urgent need to train technicians, engineers, surveyors, town planners, architects, and other high level professional personnel. To meet this need, the government of South-Eastern State launched a scholarship program in 1971.

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38 Ibid., pp. 104-105.
The government of South-Eastern State has established Polytechnic Institute, which is multi-purposed and includes the Advanced Teachers College, School of Agriculture, and College of Science and Technology. It is, therefore, the responsibility of each state to finance the development of technical-vocational education in order to meet the needed manpower development in Nigeria.

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39 Ibid., p. 105.
CHAPTER IV

THE CONTRIBUTION OF GOVERNMENT AND INDUSTRY
TO TECHNICAL EDUCATION IN NIGERIA

Promoting growth and development of manufacturing industries was an important part of the Nigerian Ten-Year-Development Program. In order to establish industries and for them to effectively function, it was basic to create a sufficient demand for manufactured goods.¹

To foster the growth of industrial development in Nigeria, the government established the "Department of Commerce and Industry to give useful help to private industrial enterprises on problems of industrial technology and management."² Another contribution of the Department of Commerce and Industry to the development of industry in Nigeria was the establishment of training centers for preparing Nigerian craftsmen.³ Not until 1950 did the

¹Kilby, Industrialization in an Open Economy, p. 26.
government begin to take active interest in encouraging new manufacturing industry. This period was also the era in which the colonial power was transferred to Nigerians who were anxious to promote rapid industrial development.

The state governments of Nigeria took over the services of local industries and the operation of training programs to provide technical assistance to local industries. The state governments also assumed the responsibility for promoting and financing the establishment of new industries in their regions.

According to Helleiner, the federal government was the governing body which was responsible for the establishment of large industries in Nigeria.

Before any industry could obtain any financial aid from the Federal Government, the industry must be beneficial to Nigeria and the financial assistance would be to the interest of the public.

However, due to the lack of industrial and technical knowledge, the pioneer industrial development program was slow and the first "pioneer industries" were established in 1955. From

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5 Ibid., p. 312.
6 Ibid., p. 315.
7 Ibid., p. 313.
8 Ibid., p. 114.
9 Ibid., p. 315.
1955 through 1962, fifty-three industries were declared as "pioneer" industries. The public authorities took direct and indirect measures to promote the establishment of manufacturing industries. Some of the indirect measures included the provision for social infrastructures to guarantee private investors against nationalization, and freedom for the foreigners regarding the sale of their assets and repatriation of profits.\textsuperscript{10} The direct measures were grouped into three categories: "fiscal incentives, support activities, and direct public investment in the manufacturing industries."\textsuperscript{11}

Another development initiated by the government to assist the growth of industrialization was the establishment of the Department of Trade.\textsuperscript{12} The Department of Trade was established to give industrial advice to industrial cooperative societies and administrators of local trade and industries. Local Development Boards were set up by the Department of Trade to finance local industrial development.\textsuperscript{13}

In addition to the establishment of the Department of Trade and Local Boards, "a ten-year development plan of

\textsuperscript{10}\textsuperscript{11}\textsuperscript{12}\textsuperscript{13}
technical education which cost about N1,500,000 pounds [$4,500,000] has been put into operation to ensure an adequate supply of artisans, commercial workers, and technicians."\textsuperscript{14}

A close study of the various items of expenditure revealed that a sum of "$36,000,000 is spent on British technical personnel in the form of salaries for the industrial development of Nigeria."\textsuperscript{15}

**Technical Education to Meet the Demands Of Nigerian Industries**

After the establishment of the Department of Trade, Commerce and Industry, technical fields continued to expand in many directions, particularly in the "petroleum industry, and the need for skilled technicians was very great."\textsuperscript{16}

In order for technical education to meet the demands of Nigerian industries there are "three avenues through which the industry usually trains its Nigerian employees. They are: scholarships, in-house-training-programs, and on-the-job-training."\textsuperscript{17} Industry offers scholarships to students for course work at universities and technical colleges, and establishes in-house-training-programs. Shell-BP's Company

\textsuperscript{14} Ibid., p. 171. \textsuperscript{15} Ibid., p. 170.


\textsuperscript{17} Ibid., p. 85.
Training School at Port Harcourt trained over 200 school-leavers as skilled craftsmen in 1970-1971. On-the-job-training is conducted by special departmental trainers whose major function is to train workers on-the-job. If there is a lack of skilled manpower, it is doubtful the petroleum industry will be able to function.

Aside from the petroleum industry, research has opened up many new fields of industry which have created great demands for technicians. The N3 million pounds [$9,000,000] textile industry established at Ado-Editi by the Western State government had its greatest growth during 1965 to 1971.

Nigeria’s program to educate technicians continues to grow and its growth is accompanied by challenges and rapid expansion of manufacturing industries throughout the Federation of Nigeria. The rapid growth of industry places demands on the capability of public education to meet the need of industry. All vocational and technical institutes have been called to help meet the demands of each new growing phase of industry. The educational system as a whole

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18 Ibid., p. 85.  
19 Ibid., pp. 85-86.  
21 Pearson, Petroleum and the Nigerian Economy, p. 49.  
22 Ibid., p. 253.
has tried to meet the demands of industry for the technicians on every level.  

The divisions of some four year colleges and universities offer courses for technicians, and many high schools offer programs directed toward the preparation of technicians for work in industry.  Many small and private technical training schools have opened up throughout the country. A large number of these were qualified to train students, but unfortunately, a great number of them were not qualified to provide effective training for technicians. According to Brooking, this led to many investigations at federal and state level, and many of the non-qualified private technical schools were forced to close down. Of all major occupations requiring special training, technical occupation increased about 80% during 1965 to 1971.

Characteristics of Nigerian Industries

During the early colonial days in Nigeria, the sawmill and plywood factories were the largest industrial establishments at Sapele and employed about 3,000 people. The timber and plywood industry at Sapele was established by the African

23 Ibid., p. 50.
25 Ibid., p. 5.
26 Ibid., p. 2.
Timber and Plywood (Nigeria) Ltd. in 1948. Later in 1949, the Nigerian government initiated an extensive industrial development project. Nigerian Local and Regional Development Boards were established to promote the establishment of manufacturing industries. Privately owned manufacturing industries were encouraged by technical assistance and government loans available through the Local and Regional Development Boards.

In 1956, the first industrial estates were opened throughout the Federation of Nigeria. The Lagos area was designated primarily for the construction of industrial estates. The major centers along the coast are Port Harcourt, Ibadan, Sokoto, Benin City, Kano, Kaduna, Jos, Enugu, Maiduguri, and Calabar.

The government is not the sole controller of industrial projects in Nigeria. But it is, on the other hand, often investing considerable sums of money in them. Whenever government money is invested, management and organization is the concern of the Government.

28 Ibid., p. 27.
29 Ibid., p. 29.
31 C. C. Onyemelukwe, Problems of Industrial Planning and Management in Nigeria, p. 315.
33 Ibid., p. 233.
In 1959, the government established the Central Bank of Nigeria and the Industrial Development Bank. These two banks were established to assist with the growth and development of manufacturing industries in Nigeria. The Industrial Development Bank draws investments from Nigeria and other outside sources and use these as loan capital for the establishment of new industries in Nigeria. The Central Bank of Nigeria is the institution primarily concerned with the industrial and technical development of Nigeria.

In 1959, Turner and Newall of England and Eternit of Belgium, formed a partnership with the Western Nigeria Development Corporation and established a factory at Ikeja for the production of flat and corrugated iron sheets. At the same time, Turner and Newall also established tire manufacturing factories at Kaduna, and five paint factories were built by the Imperial Chemical Industries and International Paints.

The Department of Commerce and Industry, a government owned corporation, established the Nigerian Textile Industry

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34 Ibid., p. 234.  
36 Ibid., p. 234.  
37 Kilby, Industrialization in an Open Economy, p. 75.  
38 Ibid., p. 78.
to promote the growth of Nigerian industrial development. 39

About N380,000 pounds [$1,140,000] were used to establish seven
textile industries in many states. 40 In 1950, the Textile
Research and Advisory Center was established to conduct
research on cloth, types of equipment and plant design. 41
Later, a Mechanical Training Center was established for the
training of skilled textile workers and supervisors.

Another important development in Nigeria was the
establishment of the Nigerian Security Printing and Minting
Limited. 42 The establishment was a joint enterprise between
Thomas De La Rue Ltd. of United Kingdom and the Nigerian
Federal Government. 43 Nigeria thus became the first country
in Africa to produce all of its own currency and security
printing.

According to Stapleton, it is unfortunate that Nigeria
is not a car manufacturing country. However, there are
many assembly plants for motor vehicles in the country. The
United African Company is assembling Bedford vans and trucks
at Port Harcourt, and Bewac assembles Land-Rovers in Lagos. 44

The Japanese established some manufacturing industry in

39 Ibid., p. 311. 40 Ibid., p. 312.
41 Ibid., p. 311.
43 Ibid., p. 234. 44 Ibid., p. 227.
Nigeria in 1970 to produce agricultural machinery and equipment.  

The Nigerian Milk Company produces milk at Ikeja, the Fermentation Industries produce schnapps, gin, vodka, whiskey, and brandy and six breweries and bottling manufacturing industries produce beer, pepsi-cola, coca-cola and other soft drinks.

As previously stated, the regional and federal governments have taken an active role in promoting industrial development in Nigeria. Under the industrial development program, the regional and federal governments invited foreign investors to establish new manufacturing industries in Nigeria. In 1961, the Aluminium Ltd. of Canada (Alcan) and Charles Pfizer established a 1.3 million pounds [$3,900,000] capacity rolling and finishing mill to produce coils, sheet aluminium and corrugated iron sheets. This investment was part of the company's policy to establish new and additional operations in underdeveloped areas as a means toward holding its share of the world's market.

46 Ibid., pp. 227-228.  
48 Kilby, Industrialization in an Open Economy, p. 68.  
49 Ibid., p. 75.  
50 Ibid., pp. 75-76.
Since the Nigerian Civil War, the new industrial policy of the federal government has emphasized promoting the development of native manpower and raising the proportion of native ownership of industrial investments. The federal government will endeavor to create more employment opportunities for technicians during 1970-74 through the Nigerian National Development Plan.

Conservation of National Resources to Meet The Needs of Nigerian Industries

Nigeria is potentially rich in mineral resources, such as "petroleum oil, limestone, coal, tin, columbite, gold and silver, lead-zinc, gypsum, glass sands, clays, asbestos, graphite, iron ore, and zirocon." The minerals in Nigeria are the property of the state and mining of any minerals is governed by the Minerals Act (Cap. 121) and the Military Decree No. 51 of 1969 Military Order of Nigeria.

In order to protect the natural resources needed by Nigerian industries, the federal government established the Ministry of Mines and Power which controls the mining of minerals. Minerals may only be mined under the explicit

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51 Ibid., p. 76.
54 Ibid., p. 12.
55 Ibid., p. 12.
terms of a mining lease granted by the Ministry of Mines and Power.\textsuperscript{56} The Mines Division of the Federal Ministry of Mines and Powers controls the School of Mines at Jos which provides technical training for able students to become mine workers and managers.\textsuperscript{57}

The extensive deposits of limestone throughout the country have resulted in the establishment of six cement factories in Nigeria. These factories are located at Calabar in the South Eastern State, Ewekoro in the Western State, Lagos Cement Works, Sokoto in the North Western State, Ukpilla in the Mid-Western State and at Nkalagu in the East Central State.\textsuperscript{58} The Nkalagu cement factory closed down during the Nigeria-Biafra Civil War, but is expected to resume production before the end of 1972.\textsuperscript{59}

Large deposits of crude petroleum have been discovered in Nigeria. These deposits have made it possible for the government to establish a N10.5 million pounds [\$31,500,000] capacity petroleum refinery at Eleesa-Eleme in the River State.\textsuperscript{60}

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{56}Ibid., p. 12.
\item \textsuperscript{57}Kilby, \textit{Industrialization in an Open Economy}, pp. 108-109.
\item \textsuperscript{60}Ibid., p. 23.
\end{enumerate}
\end{footnotesize}
There are seven international oil companies in Nigeria and nine Nigerian oil companies. Table VI lists the petroleum exploring and producing companies holding Nigerian concessions and oil mining licenses.

**TABLE VI**

**INTERNATIONAL OIL COMPANIES IN NIGERIA**

<table>
<thead>
<tr>
<th>Name of Company</th>
<th>Country of Original Incorporation</th>
<th>Location in Nigeria</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Asiatic Oil Co.</td>
<td>U.S.A.</td>
<td>River State</td>
</tr>
<tr>
<td>Texas Overseas Petroleum Ltd.</td>
<td>U.S.A.</td>
<td>River State</td>
</tr>
<tr>
<td>Union Oil Company of California</td>
<td>U.S.A.</td>
<td>Lagos State</td>
</tr>
<tr>
<td>Tennessee Gas Company</td>
<td>U.S.A.</td>
<td>Mid-West State</td>
</tr>
<tr>
<td>Mobil Oil Company</td>
<td>U.S.A.</td>
<td>South East State</td>
</tr>
<tr>
<td>Sinclair International Oil Company</td>
<td>U.S.A.</td>
<td>River State</td>
</tr>
<tr>
<td>British Petroleum Company</td>
<td>British Gov.</td>
<td>Western State</td>
</tr>
</tbody>
</table>

All of the seven international oil companies operating in Nigeria have supplied technical assistance and management to the growth of petroleum industries in Nigeria. The foreign international oil companies have made agreements with Nigeria to purchase 30 percent of its capital share every year.

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61Ibid., p. 24.
63Ibid., pp. 16-17.
64Ibid., p. 14.
The nine Nigerian oil companies are: Nigeria Agip Oil Company Ltd., Gulf Oil Company (Nigeria) Ltd., Mobil Producing Nigeria, Phillips Oil Company (Nigeria) Ltd., Safrap (Nigeria) Ltd., Shell-BP, Petroleum Development Company of Nigeria Ltd., Genneco Oil Coy of Nigeria, Delta Oil Company, and Union Oil Nigeria. Nigeria ranks as the thirteenth largest oil producer in the world and third in Africa.\(^5\)

The main deposits of tin and columbite in Nigeria are located in the Plateau, Bauchi, Zaria, Kano, and Oyo Provinces. These minerals are used for the production of ferro-columbium alloys used in the manufacturing of special steels for turbine engines and nuclear reactors.\(^6\) Nigeria is a member of the International Tin Council.

The only iron ore deposit in Nigeria is located at Agbaja near the junction of the Niger and Benue Rivers. Plans have been worked out by the federal government for the establishment of an iron and steel industry in this area to utilize these resources.\(^7\)

Lead and zinc are located in the East Central State and also in Bauchi Province. The mining of lead and zinc has been declared a pioneer industry by the federal government.\(^8\)

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\(^6\) Ibid., p. 13.
\(^7\) Ibid., p. 14.
\(^8\) Ibid., p. 14.
A small amount of gold is found in the areas of Niger and Zaria; however, the major sources of gold are in the Ilesha and Oyo areas. Stone is also found in most parts of the country and it is extensively used in the country for the building of houses, roads, dam foundations and ballast in rail transportation.  

Nigeria is the only country in West Africa that produces a large amount of coal. At the present the output of coal in Nigeria is sufficient to meet all local demands with a reasonable quantity available for export. The main coal mines are in Enugu in the East-Central State and Okabba in Kwara State. The Nigerian Coal Corporation is a government statutory body which is responsible for the mining of coal in Nigeria. The main consumers of coal are the Nigerian Railway Corporation, the Electricity Corporation of Nigeria, the Nigerian Ports Authority, and the cement factories.

Lignite is found extensively in Nigeria, but it is not yet being mined. The federal government will participate in the exploration and mining of mineral resources during 1970 to 1974 in accordance with the National Development Plan.  

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Some of the mineral deposits are sufficient to meet the need of Nigerian industries, but some are not. Perhaps the main reason which accounts for the low utilization of some of these mineral deposits in industrial processes is the low level of applied industrial research work conducted in the country. It is the responsibility of the federal government and the Federal Institute of Industrial Research to establish schools of mines in some of the Nigerian universities to conduct and promote extensive research on how to best utilize the natural resources to meet the need of Nigerian industries.

Problems Affecting Industrial and Vocational Technical Education in Nigeria

There are numbers of reasons for the problems affecting industrial and vocational technical education in Nigeria. Onyemelukwe stated as follows: "in the midst of an apparent surplus of general labour, Nigeria is finding it difficult to recruit adequate numbers of technicians, scientists, engineers and other skilled personnel."
Another factor that hampered the development of industrial and vocational technical education was the emphasis which the colonial administration placed on literary education, paying little attention to practical training and vocational education. Even though plans for expanded technical training have been announced in Nigeria, it appears that the right people may not be available in sufficient numbers to receive such technical training. This is largely due to the lack of public respect for manual skills and technical achievement.

Failure on the part of the Nigerian people to see the need for nationally planned technical education designed to provide skilled manpower is a problem that affects industrial and vocational education. Unfortunately, the solution usually offered to this problem does not appear to be adequate. Because of the lack of Nigerian public respect for manual skills and technical training, the Ashby Report offered the following suggestions:

We strongly believe that the most effective way of correcting this [lack of respect for manual skills] would be to introduce a manual subject as an obligatory ingredient of all primary and secondary schooling; not as a vocational training, but because such subjects have educational value which entitles them to a place in a general education. We would

74Stapleton, The Wealth of Nigeria, p. 70.
75Onyemelukwe, Problems of Industrial Planning, p. 287.
76Kilby, Industrialization in an Open Economy, p. 257.
like, moreover, to see technical streams in some secondary schools leading to a School Certificate examination which includes technical subjects.\textsuperscript{77}

The aforementioned suggestion would probably improve the situation, but it does not necessarily get to the root of the problem affecting industrial and vocational technical education in Nigeria. According to Onyemelukwe, some of the Nigerian educators in the public service took compulsory subjects in motor mechanics, woodworking and carpentry during their secondary school days, but yet that did not change their views about the technologists nor attract them into a technological career.\textsuperscript{78}

The only solution is to make the technological field attractive to the public and give technicians the highest positions in the public service which will entice others into technological careers.\textsuperscript{79}

It is now accepted that manpower planning is an integral part of the development planning, and that education, which is an important branch of manpower development, has to be planned.\textsuperscript{80} To solve the problems affecting industrial and vocational technical education in a developing Nigeria, Nigeria should make her educational system and curricula more relevant to her industrial-technical needs.

\textsuperscript{78} Onyemelukwe, Problems of Industrial Planning, p. 288.
\textsuperscript{79} Ibid., p. 289.
\textsuperscript{80} Ibid., p. 289.
CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to provide detailed information as to whether or not technical education has grown and developed in Nigeria.

The study was organized as follows: Chapter I includes an introduction to the study, statement of the problem, purpose of the study, limitations of the study, source of data, significance of the study, related study, organization of the study and definition of terms. Chapter II describes the role and scope of technical education within the educational system in Nigeria. Chapter III presents the role of the Nigerian Government in improving the growth and development of technical education to meet the high-level manpower need in Nigeria. Chapter IV identifies the contributions of technical education toward the growth and development of manufacturing industries in Nigeria, and the need for technical education to meet the demands of industry. Chapter V contains a summary, conclusions, and recommendations for consideration, by which the Nigerian government could help to solve the manpower problems.
Financing a technical education and manpower development program has always been a problem. To help solve the problem, the Nigerian government launched the first "National Six-Year Development Program in 1962-1968."\(^1\) The Plan called for improvement on shortcomings in agriculture, industrial and technical education.\(^2\) Subject to Congressional approval, the United States government promised grants and loans of $225,000,000 to be applied to agriculture, manpower development and technical education in Nigeria.\(^3\) The grants and loans were approved in 1967. The World Bank, the International Finance Development Association, British, Canada, Israel, Japan, Italy, and West Germany are other likely sources of financial assistance.\(^4\)

On November 1, 1970, Nigeria launched the Second National Development Plan from 1970 to 1975.\(^5\) The Plan urged the government to offer more and better technical education and to encourage the growth of local industrial development.

After the Nigerian-Biafran War, the National Reconstruction and Development Plan for 1970 to 1974 was launched by

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\(^1\) Dohert, "Nigeria Six-Year Development Plan," p. 10.
\(^2\) Ibid., p. 11
\(^3\) Ibid., p. 12.
the Federal Military Government. The Federal Military Government gave financial assistance to the needy states, and plans to build eight technical secondary schools in eight other states which have none at the present.

In order for technical education to meet the demands of Nigerian industries, all vocational and technical colleges were called upon by the government to review their curricula and programs with the objective of directly relating them as soon as possible toward the preparation of technicians.

Conclusions

Since the Nigerian people lack technical knowledge and education, it appears that they should determine the role and scope of technical education in their country because technical education is imperative to the industrial and technological development of Nigeria.

The needs of the Nigerian people with respect to technical training is to train engineers, handicraftsmen, technicians and industrial administrators. "... educational institutions must become more functionally oriented

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7 Ibid., pp. 5-6.


to the training of skilled technicians, engineers and administrators.\textsuperscript{10} The educational system should provide a program of specialization in different areas of technology and high-level manpower. Such programs would help solve the problems affecting industrial and technical education in Nigeria.

Another solution to the problems affecting the growth and development of technical education in Nigeria is to make the technological field attractive to the public and to give technicians the highest positions in the public service in order to encourage others into a technological career.\textsuperscript{11} Manpower planning is an integral part of development planning and education, which is an important branch of manpower development, and has to be planned.\textsuperscript{12}

Finally, it seems that by training more technicians, Nigeria will be able to solve manpower problems and beat down the Colonial prejudice toward working with one's hands and have respect for manual skills and technical achievement.\textsuperscript{13}


\textsuperscript{11}Onyemelukwe, Problems of Industrial Planning in Nigeria, p. 288.

\textsuperscript{12}Ibid., p. 288.

\textsuperscript{13}Peter Kibly, Industrialization in an Open Economy: Nigeria, p. 242.
Recommendations

Based on the findings and research of this study, the following recommendations are made:

1. It is recommended that more effort be given to curriculum improvement which will include technical subjects in all Nigerian schools, teacher training institutions, colleges and universities.

2. It is recommended that the educational system and curriculum in Nigerian schools be changed from the British Colonial system to the modern American system of education.

3. It is recommended that the Nigerian Federal Government, and all State Governments enforce compulsory free primary and secondary education.

4. It is recommended that a commission be designated by the Nigerian Government to study the structure and system of American education and offer suggestions and recommendations to the Federal and State Ministries of Education for consideration.

5. In order to achieve effective utilization of natural resources, it is recommended that the Commission on University Education establish a school of mines in some of the Nigerian universities.
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