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Maritime education and training in Nigeria, a proposal for improvement

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MARITIME EDUCATION AND TRAINING IN NIGERIA: A PROPOSAL FOR IMPROVEMENT

by

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Nigeria

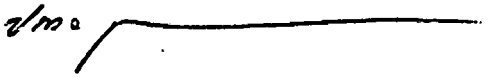
A paper submitted to the Faculty of the World Maritime University in partial satisfaction of the requirements for the award of a

MASTER OF SCIENCE DEGREE

in

MARITIME EDUCATION AND TRAINING (NAUTICAL).

The contents of this paper reflect my personal views and are not necessarily endorsed by the UNIVERSITY.

Signature: 

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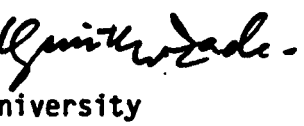
GUNTHER ZADE 
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This Paper is Dedicated To My Wife

Bridget

and

My Children.

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I would like to thank my family for everything.

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Preface:

The history of maritime education and training in Nigeria shows that major changes in the principles of education and training of ships officers last occured in the 1950s and early 1960s.

The principles are that:(1) any education and training for ship officers provided by the shipping industry should enable a trainee to attain nationally recognised educational qualifications in addition to his/her vocational training needed to obtain the statutory qualifications of a ships officer (Robinson, 1977, Seaman, 1984), and (2) the training should be at least to the standard of a technician as recommended by the Nigerian Shipping Act of 1962 (Mbanefo,1983).

This study is therefore necessitated by the fact that in the parts of the shipping act which deal with "competency of Masters and Crews", no mention was made of maritime education and training nor was there any provision for maritime education and training in the act except names of overseas countries where certificates of competency may be obtained.

In 1979, the Nautical College of Nigeria (now Maritime Academy of Nigeria), a division of the Federal Ministry of Transport was established without any specified training policy.

In view of the above, the purpose of this paper is to attempt to show how maritime education and training can be improved in Nigeria in accordance with I.M.O.

(International Maritime Organization) training standards for ship officers as specified in the STCW Convention 1978.

Chapter one (1) of this paper is the introduction and contains a brief history of maritime education and training in Nigeria up to the time that Nigeria began to send her ships officers for training to overseas countries, particularly,to India, United Kingdom, and other West European Countries. This chapter concludes with the establishment of the Maritime Academy of Nigeria at Oron in 1979.

Chapter two (2) describes the present maritime education and training structure in Nigeria. It mainly covers areas such as curriculum, admission requirements, etc.

Chapter three (3) deals with the present I.M.O. (International Maritime Organization) requirements for maritime education and training (STCW convention,etc).

Chapter four (4) compares the present maritime education and training structure of the Maritime Academy of Nigeria to the maritime education and training requirements of I.M.O conventions. This chapter also specifies the deficiencies that led to the sending of Nigerian cadets to Alexandria Maritime Transport Academy (AMTA), Egypt, in order to obtain their certificates of competency.

Chapter five (5) proposes a new or an improved maritime education and training scheme for Nigeria and measures to raise the standards of the academy.

Chapter six (6) explains the need for technical assi-

stance and co-operation which at the moment appears to be the only possible way by which the academy can raise the existing maritime education and training standards of the academy. This includes faculty exchange programs with other national universities for instance.

Chapter seven (7) makes the general summary and conclusions.

Table of Contents Page

Acknowledgements. i

Preface. ii

Chapter 1. Background History.

1.1 Introduction 1

1.2 History of Maritime Education and Training In Nigeria. 3

1.3 Summary. 10

Chapter 2. Maritime Education and Training In Nigeria.

2.1 Introduction. 12

2.2 Syllabi / Curricula 13

2.3 Education and Training Facilities. 17

2.4 Resources (manpower). 19

Chapter 3. I.M.O. Requirements For Maritime Education and Training.

3.1 General Subjects. 20

3.2 Professional Subjects (Nautical and Engineering). 21

3.3 Specialised / Familiarisation Courses. 28

Chapter 4. Comparison Between Present MET Standard In Nigeria and The MET Standard Required and Recommended By IMO.

4.1.1 General Subjects. 31

4.1.2 Professional Subjects. 32

4.2 Summary. 35

Chapter 5. Proposal For The Improvement of
Maritime Education and Training
In Nigeria.

5.1 Integrated education system. 38
5.2 Dual certificates for low level officers. 41
5.3 Upgrading maritime education and training. 43
5.4 Specialized and Familiarization Courses. 45

Chapter 6. Technical Assistance and
The Implementation of Maritime
Education and Training Programs
In Nigeria.

6.1 Introduction. 51
6.2 Manpower development. 54
6.3 Acquisition of Educational Infrastructures. 56

Chapter 7: Conclusions. 59

Bibliography. 67

Chapter 1.

Background History.

1.1 Introduction.

The history of early Nigerian merchant mariners like that of their European counterparts showed that they started seafaring with canoes and paddles, and later, they developed the use of oars and sails. They had no formal training on seamanship at that time.

They relied on experience and had no means to accurately determine or establish the position of their vessels or measure distance travelled. Like the Eskimos'that use inuit navigation methods (Irvin,1985), to find their directions, the Nigerian early merchant mariners in order to navigate and survive in a hostile environment such as the sea, developed a very high and sophiscated body of knowledge about their environment which made travel possible especially during bad weather.

History also showed that the early seafarers depended on wind and current to drift from one point to another. They ascribed considerable importance to the capacity of the individual for thought.

They believed that it is only through their exercise of inteligence, alertness, and some imagination can the simplest form of survival be possible. And they developed remarkable power of observation and visual retention to be able to quickly discern changes in weather conditions and the signs of wild life. Like

the Eskimos, they have a common observation that "the stupid do not survive" (Irvin,1985).

The development of steam ships changed the history of Navigation. From the moment that steam ships took over from sails, new disciplines for ship officers were required in order to man the ships and operate the machinery. In addition, the putting of radios onboard ships necessitated additional training and expertise in ship operations.

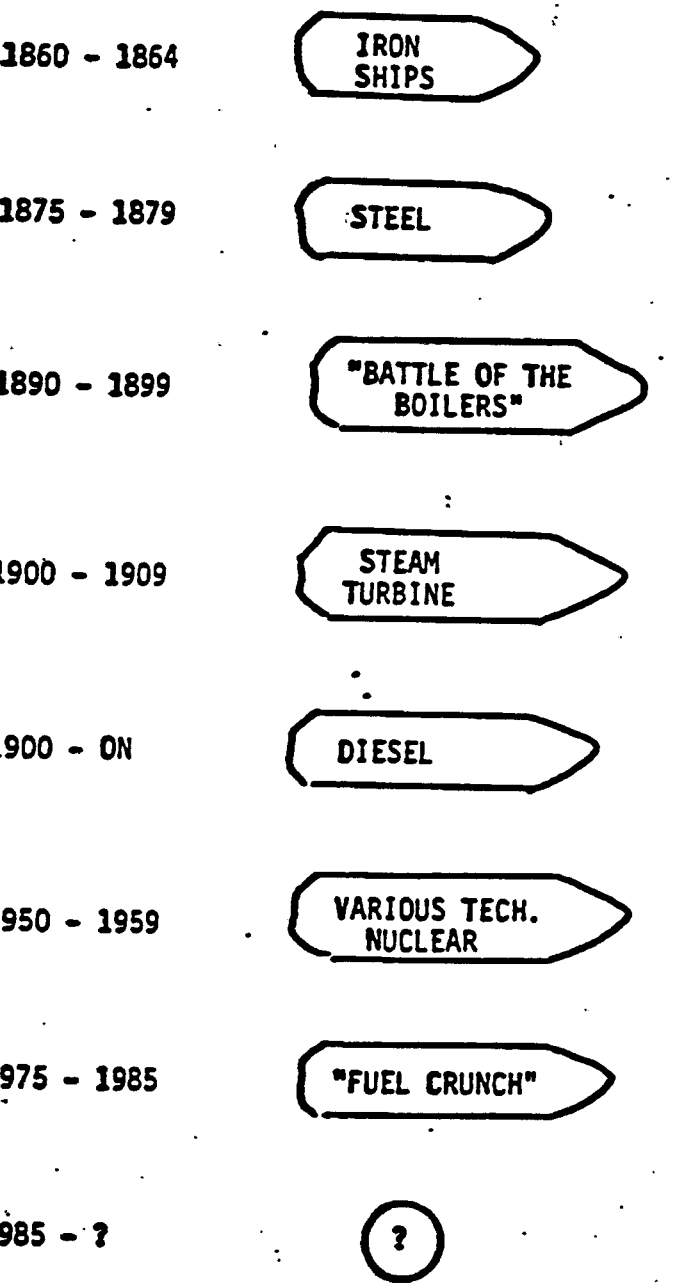
1.1.2 Instrument Navigation.

The development of machinery for ships propulsion brought about the introduction of the science of thermodynamics and metallurgy into seamanship, with the forerunners of the other sciences at the "door step", of which the latest is electronic navigation.

Also the triumph of mechanical power caused a division in operation and control of ships, i.e. engine and bridge. By the opening of the twentieth (20th) century ships speed and reliability was attained (Birt, 1971, Rinman and Brodefors, 1983).

The attainment of ships speed and reliability led to "the need for accurate navigation (Tim Severin, 1987). According to Serverin, the average speed of early century navigators was something of the order of 1.5-3.0 knots for long passages. And this gave enough time to adjust course. Today, some ships make 20-30 knots.

VESSEL EVOLUTION - MAJOR DEVELOPMENTS



Source: Soper, Technical Development of Shipping (WMU, 1987).

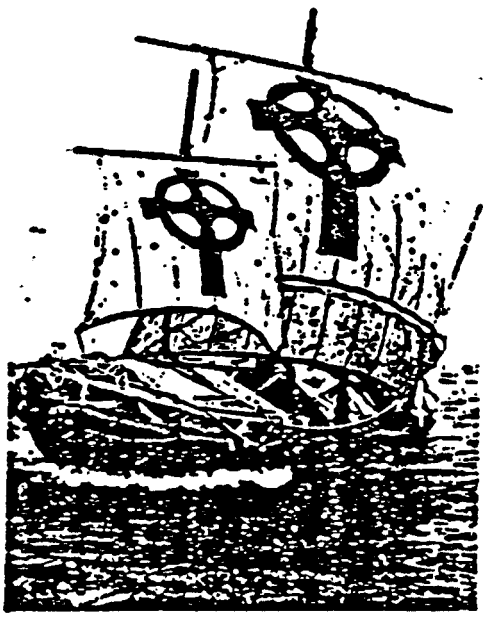


Fig. 1. Brendan at sea (photograph by Nathan Benn)

Fig. 2. Argo (photograph by John Egan)

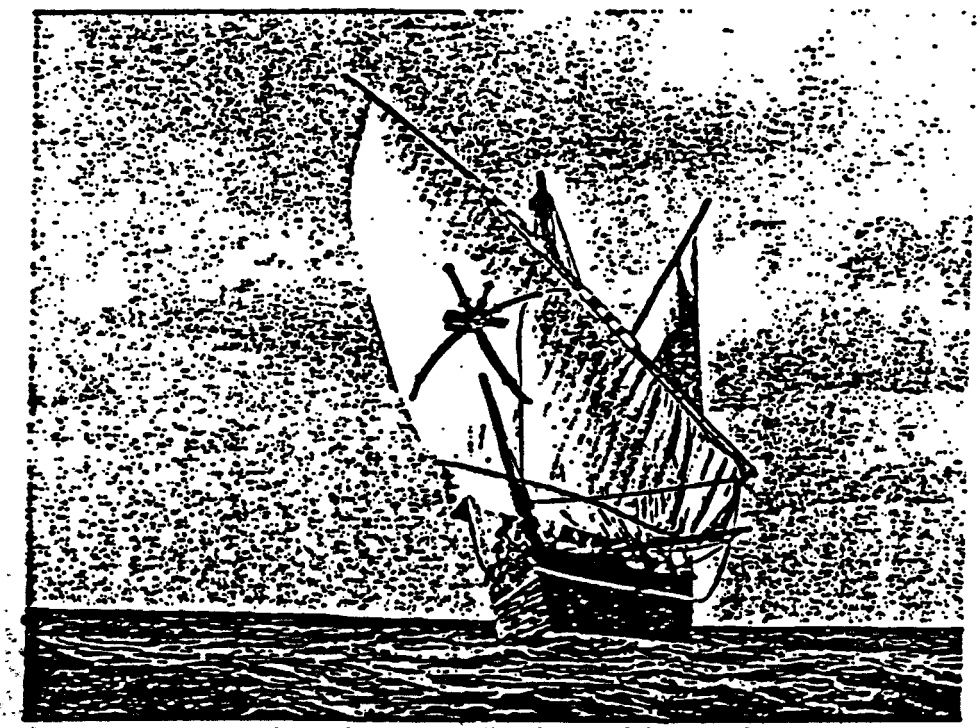


Fig. 3. Sohar under sail off Galle (photograph by Bruce Foster)

Source: Journal of Navigation, Vol.40, Jan. 1987, p.2

It is therefore no surprise that today, mariners are guided through the water by modern developments such as radar, radio, and electronic depth sounders (Maloney,1985).

1.2 History of Maritime Education and Training in Nigeria.

The introduction of electronic aids to navigation, and several other factors, including ships' technology, affected training requirements and qualifications of ship officers. Navigation accuracy is of primary importance in today's navigation.

Since the 1950s, the marine industries have noticed great changes in ship technology and the use of modern navigation instruments. The changes are not only in ship sizes but also in communication systems. The ships employed today have become so specialised that the highest skilled personel in shiphandling is needed to handle them.

Petersen (1983) noted that fifty years ago, a boy could go to the pier and find " a short handed shipping" that is willing to sign onboard anyone that seems strong enough and just run away to sea. This was exactly the way most Nigerians signed onboard foreign ships as apprentices, etc. (see Capt. Anarah's thesis-WMU, 1985).

Petersen however pointed out that today there are not many mariners; "who can remember scrambling aloft and working up in the rigging, or sewing sails aboard

squared riggers"(also see Birt, 1971)

Petersen further added that although graduation from high school is not a pre-requisite for seaman's papers, "every one agrees that you need a mathematical and mechanical aptitude if you want to get ahead nowadays, as well as some scientific and technical training".

Petersen reasoned that seafarers not only needed to know about winds and weather, hoisting of sails, and tying of knots, but that today, deck officers have to operate computerised equipment and space age "gadgets" as they work with satellite navigators, very high frequency (VHF) receivers, bridge consoles and automatic radar ploting aids (ARPA). In sum, Peterson added, "there is no room for illiterate men and women in the merchant marine".

It became evident that in order for any Nigerian seafarer to gain an effective employment as a ship's officer, he / she must have some basic knowledge of ship board operation. This has been the case since the 1950s.

The problems that have faced Nigeria since indepen dence has been the lack of trained and qualified manpower necessary to fully take charge of her maritime industries.

It is no secret that Nigeria does not at this moment have sufficient qualified manpower in the maritime industries. Both the Federal Ministry of Transport (FMOT), Nigerian Ports Authority (NPA) and the Nigerian National Shipping line (NNSL) and the other mari-

ne related industries lack the manpower needed to effectively solve the problems of the national shipping industries (Capt. Anarah, 1985).

For instance, today Nigeria is not able to fully utilize UNCTAD's code of 40-40-20 because of insufficient number of ships and lack of manpower.

It was no surprise that in 1968, the federal government of Nigeria decided to take necessary steps (in the right direction) in an attempt to alleviate some of the ugly situations that has faced the marine industries and the shipping lines in particular.

Immediately after the Nigeria civil war (1967-1969), the Nigerian government incorperated maritime education and training into the national manpower development plan.

However, not until 1979 was a maritime education and training institution (the Nautical College of Nigeria, Oron) established. Before this time, all or almost all Nigerian ship officers were trained in overseas countries such as India, and the United Kingdom. In addition nautical schools in some other overseas countries were approved for the training of Nigerian ship officers on senior navigation courses (Nigerian Shipping Act, regulation 45 (2) (c).

The Federal Government also approved overseas schools such as Auckland school of navigation (New Zealand), Nautical and Engineering college (Bombay), Hong Kong Polytechnic (Hong Kong), and some other maritime colleges in Australia as places where Nigerian ships'

officers can obtain their radar observers certificates in order to qualify for the remission of sea service under regulation seventeen (17) of the Nigerian shipping act of 1962. (also see Mbanefo, 1983).

For instance, Nigerian candidates for certificates of competency used to be reminded that the "United Kingdom" has established signal schools at London, Liverpool, Southshields, Glasgow, Hull, Southampton and Cardiff and that they could obtain instructions on signalling free of charge (ibid, p.370).

These primary and advance trainings on maritime education and training received by Nigerian ship officers, including those on specialised skills as technicians, enabled Nigerian ship officers to exercise technical judgement, show some understanding, by reference to general principles of the reasons for, and the purpose of their works, rather than ordinary reliance on solely established practices of their duties as ships officers (Seaman, 1984).

Such training programs proved sufficient for the ships officers to carry out their duties safely, obtain higher certificates, deal with developing technology and at the same time provided the ship officers the training they needed to help them to fulfill their functions as ships officers and their managerial functions.

It was evident to the federal government of Nigeria that Nigerian ships officers of the past, like their counterparts in other places, have proved their competence to other countries' statutory authorities but,

perhaps more successfully, they have also proved their ability to cope with changes except those in the advances of technology in ship design and equipment.

As mentioned earlier major changes in maritime education and training last occured in the 1950s (see introduction), and in early 1960s. Seaman (1984) argued that: "one who has acquired detailed knowledge

> and skills in one specialist field or knowledge and skill to a lesser degree in more than one specialist field, is required to exercise judgement in the sense of both diagnosis and appraisal, and an initiative in his work, and has an appreciation of the environment beyond the immediate limits of his duties.

With this view in mind, the federal government of Nigeria decided to look for navigators, engineers, communicators, trainers and managers, etc, as ships officers to man Nigerian ships and other marine related industries.

Eventually, the federal government agreed to look for technically skilled ships officers and managers capable of managing their offices at their respective levels of responsibility while retaining their basic technicians ability of being concious to changes in ship technology and instrumentation.

To achieve such skills, the federal government believed that there was need for a change of approach to

maritime education and training. The first approach was to examine the existing situation of maritime education and training, identify where there are needs to make changes and study how the changes could be achieved.

The first thing the federal government did was to look at the number of ships sailing under Nigerian flag, number of officers required to be trained at a given time, and who will provide the training, given the country's poor economic situations.

According to Capt.Anarah (1985),it was discovered that in the Nigerian National Shipping Line (NNSL) alone

> taking the present manning requirements per ship at four (4) deck officers, five (5) engineers officers, and one radio officer, with fifty percent (50%) leave reserve, two percent (2%) death cum retirement and twenty eight percent (28%) wastage, the additional requirement for officers can be taken at eighty percent (80%).

Capt. Anarah in his thesis showed that this manpower problem is not peculiar to the NNSL alone, it is also the same problems with Nigerian Ports Authority (NPA), Federal Ministry of Transport (FMOT), and other marine related industries in Nigeria.

Furthermore, Capt. Anarah also showed that the federal government of Nigeria found that the number of trainees that are required to be trained in order to be able to fill the country's manpower need in the near

future,(with the prediction that NNSL alone will acquire and maintain fifty (50) additional modern ships by the end of the decade; i.e. the year 2000); can be taken at eighty percent (80%).

According to Capt. Anarah, this means that the total number of required officers that should be available at any time to adequately man Nigerian ships would be 900 (nine hundred) officers; i.e. (50*10) + (80 % of 500), and an additional four hundred and fifty five (455) officers is required by the year two thousand (2000); (pp.25-28).

In Nigeria, the general view of most people is that the primary purpose of maritime education and training should desire to prepare future ships officers who would be able to perform specified jobs and specified employment functions that is essential to the manpower need of the country.

Education has always been regarded as an integral part of a nation's human resource (P.S.Vanchiswar, 1987-WMU lecture notes). In Nigeria, education is taken as one of the capital goods and as a "factor of production in the development process of the country". However it is only recently that Nigeria payed much attention to maritime education and training.

The question then was ; who will provide the training given that Nigeria has been suffering serious economic problems since the late 1970s. Also, with the coming into force in 1984 of the Standards of Training, Certification, and Watchkeeping for seafarers (STCW) convention, 1978, and the technical cooperation in trai-

ning facilties provided by the International Maritime Organization (IMO) under the convention, Nigerian ship owners will only wish to train ships officers for their own purposes as it is occuring in other places- Fiji for instance.

In light of these inevitable developments in the marine industry and changes in maritime technology, the Federal Government of Nigeria perhaps realised that it would be a more realistic economic consideration if there was at least one (1) national maritime college to provide maritime education and training for trainees / cadets, and is also able to provide the necessary education for the needed higher qualifications in other maritime fields and that such training should be concentrated / consolidated in that single establishment if it is able to provide all the basic training required by the nation's shipping industries in addition to the requirements needed for technicians to achieve a nationally recognised qualification.

1.3 Summary.

In sum, from evidence presented up to the present generation through history and the critical analysis of the changes in world affairs, particularly in shipping, the federal government of Nigeria realized that, given that Nigeria has the intention to expand her maritime activities until the year two thousand (2000), proper and adequate maritime education and training is a necessary element in the manpower planning of the country's economy.

It is one of the processes by which a considerable

number of Nigeria's human resources can be "transformed from mere numbers into productive society" (Capt. Anarah, 1985).

It will also give a great recognition to the benefits of a well oriented educational system in the life of the country and prescribes a more rational and systematic approach to solving Nigeria's problems of meeting the demands of the nation's fast growing shipping industry and related areas.

It was this great need for ships officers and technicians in other maritime related fields that encouraged the Federal Government of Nigeria to establish the Nautical College of Nigeria (NCN) (now Maritime Academy of Nigeria) at Oron in 1979.

Chapter 2.

Maritime Education and Training in Nigeria.

2.1 Introduction.

The idea to establish the maritime academy of Nigeria started in 1968. Later, the Federal Government of Nigeria signed a contract with the IMO to study Nigeria's plan to establish a maritime college.

The plan was approved and the Maritime Academy was established. The academy officially started in the year 1979. This was when the first group of cadets resumed their studies in the academy. Before this time Nigerian cadets studied overseas (see chapter 1).

The main objective of the academy is to train cadets for future careers at sea as ships officers, and to provide Nigeria's shipping industries and other maritime related fields with trained marine officers that are capable to academically, mentally, physically, and technically carry out any maritime duties.

At the moment, there are three main academic departments in the academy. They are; (1) general studies department, (2) marine engineering studies department and (3) nautical studies department.

Courses are given in four semsters within a two year period. The overall academic program of the academy is divided into four phases (fig.1). The first and the second phases of the academic program are given in

PROFILES OF PROGRAMMES - NAUTICAL STUDIES

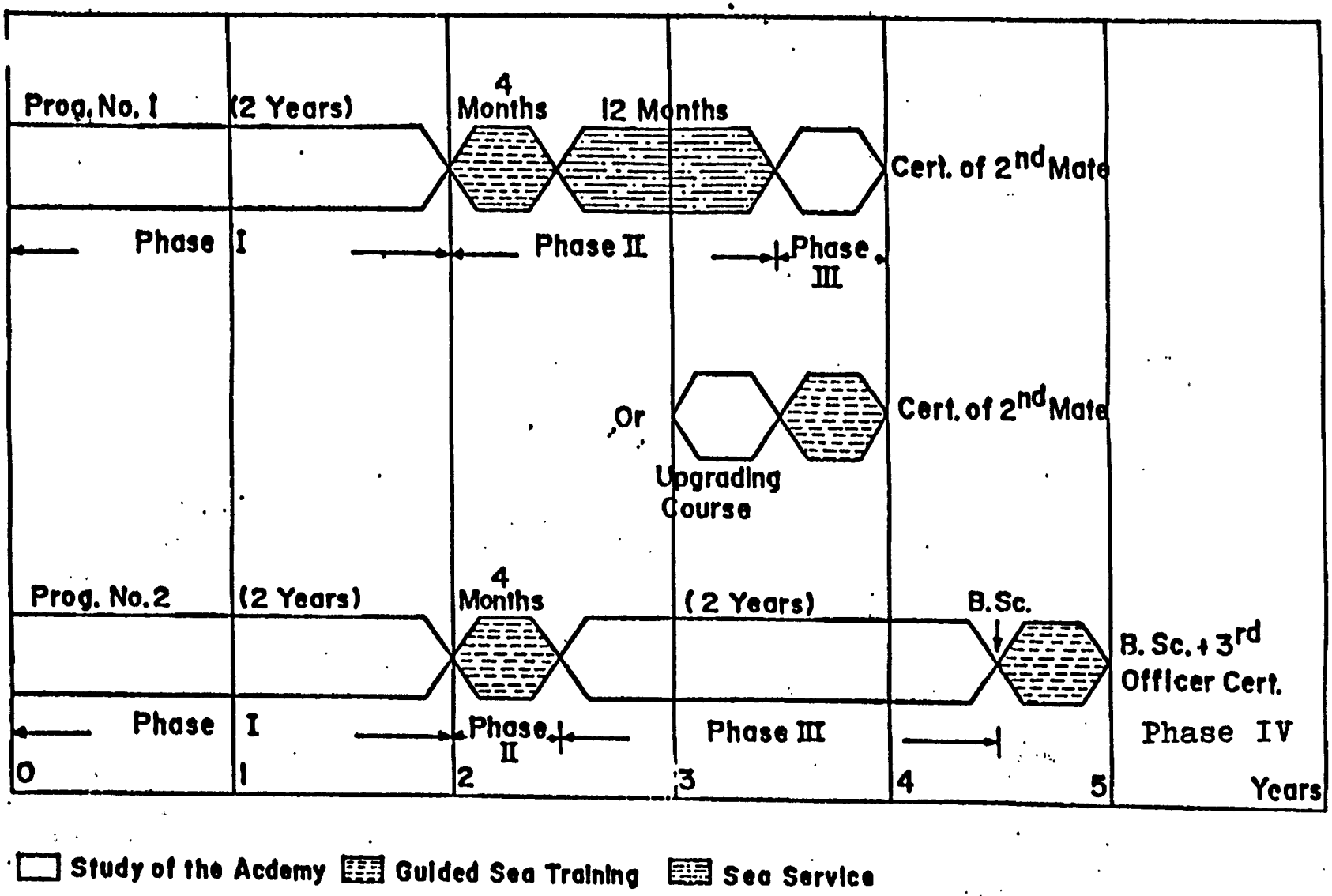


Fig. 1a.

PROFILES OF PROGRAMMES – MARINE ENGINEERING STUDIES

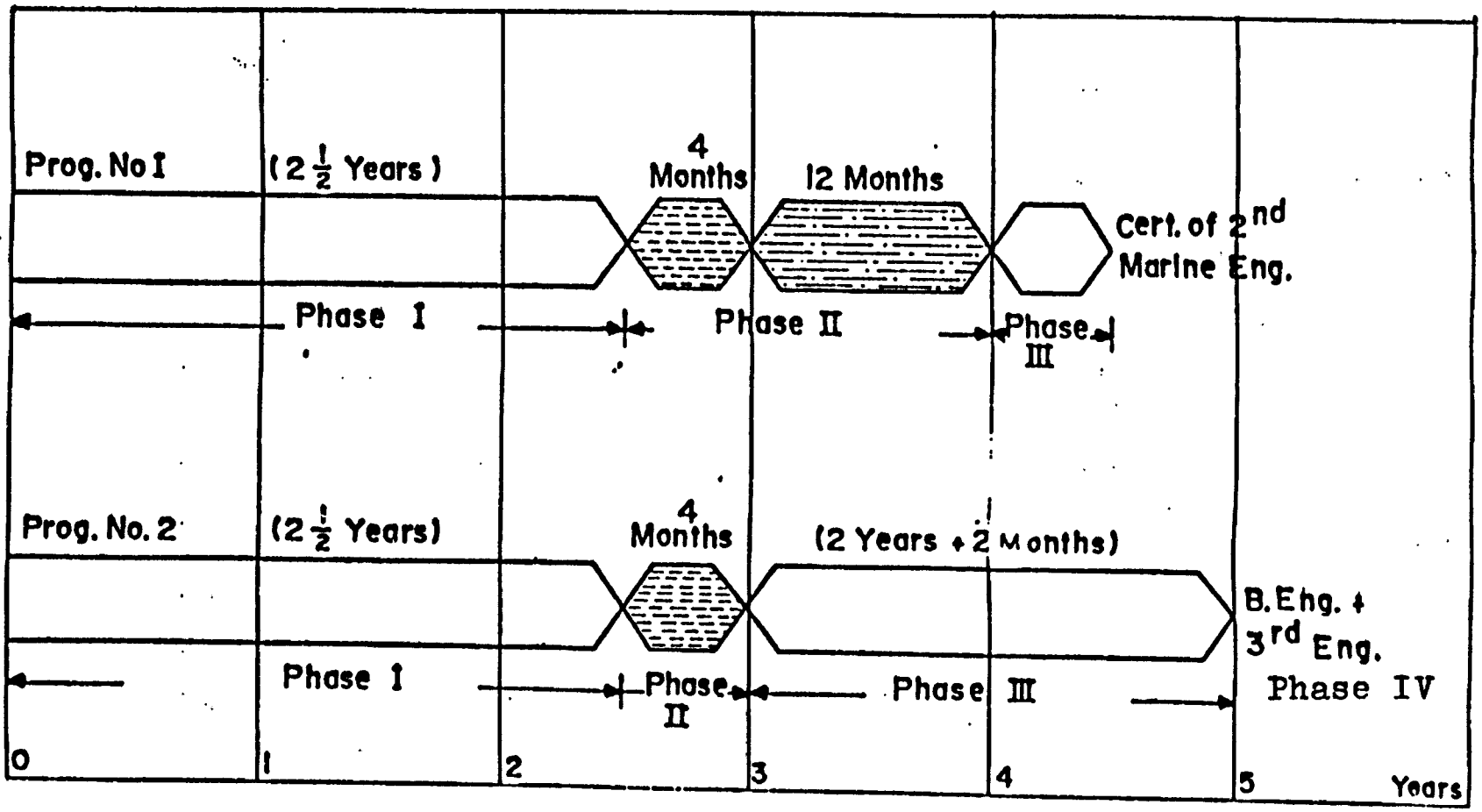


Fig. 1b

Nigeria while the third (3rd.) and fourth (4th.) phases of the academic program are given at the Alexandria Maritime Transport Academy (AMTA), in Egypt.

2.2 Syllabi / Curricula

The following courses are given at the academy in the various departments.

Course No.	Course Title	LC	LB	CR
A 131	English language 1	4	2	5
A 121	Mathematics 1	2	2	3
A 111	Physics 1	3	2	4
E 181	Introduction to Engineering	1	2	1
E 111	Engineering Drawing	0	4	2
N 111	Seamanship 1	1	2	2
T 111	Intr.to Marine Transport	2	0	2
P 101	Physical Education 1	0	1	1
L 101	Leadership 1	0	1	1
A 132	English Language 2	2	2	3
A 122	Mathematics 2	3	0	3
A 112	Physics 2	2	2	3
N 112	Seamanship 2	2	2	3
N 121	Ship Constr. and Stablity	3	0	3
N 131	Coastal Navigation 1	2	2	3
T 121	Econoimic Geography	2	0	2
P 102	Physical Education 2	0	1	1
L 102	Leadership 2	0	1	1
N 233	English Language 3	2	2	3
R 275	Basic Electronics	1	2	2
N 213	Seamanship 3	2	2	3
N 235	Coastal Navigation 2	2	2	3
N 241	Cargo Handling	3	0	3
N 261	Celestial Navigation 1	2	2	3
N 271	Nav.Aids and Instr. 1	2	2	3

P 203	Physical Education 3	0	1	1/2
L 203	Leadership 3	0	1	1/2
A 233N	English Language 4	2	2	3
E 284N	Elements of Mar.Eng.	1	2	2
N 233	Coastal Navigation	2	0	2
N 262	Celestial Navigation 2	1	2	2
N 272	Nav. Aids and Instr. 2	1	4	3
N 251	Communication and Sign.	2	2	4
N 281	Meteo. and Ocean. 1	3	2	3
N 291	Intro. to Marit. Law	3	0	3
P 204	Physical Education 4	0	1	1/2
L 204	Leadership 4	0	1	1/2
A 223E	Mathematics 3	2	2	3
E 213	Applied mechanics	2	2	3
E 221	Thermodynamics 1	3	2	4
E 261	Marine Instrumentation	1	2	2
E 252	Power Electronics	1	1	1
E 214	Machine Drawing	1	3	2
E 232	Workshop Technology 2	1	4	3
A 261E	Chemistry 1	1	2	2
A 114E	Engineering Physics 2	2	2	3
A 122E	Mathematics 2	2	0	2
E 141	Strenght of Materials 1	2	2	3
E 151	Electrical Eng.	3	2	4
E 222	Thermodynamics 2	1	2	2
E 215	Machine Design 1	1	3	3
E 216	Theory of Machine	1	1	1
E 253	Electrical Tech.	2	2	3
E 262	Marine Auto. Control	2	2	3
E 291	Steam Generators	2	0	2
E 271	Int. Combustion Eng.	3	2	4
E 201	Naval Architechture	2	1	2
E 342	Metallurgy	1	1	1
E 354	Electrical Tech. 3	0	3	1

E 363	Auto Control Pract.	0	2	1
E 382	Marine Eng. Practice	0	5	3
E 372	I.C. E. Practice	0	4	2
E 392	Steam Power Plant	2	0	2
E 323	Hydraulics	1	2	2
E 383	Marine Systems 1	2	2	3
P 305	Physical Education	0	1	1/2
L 305	Leadership	0	1	1/2

Key: LC = Lecture Class
LB = Lab. Class
CR = Credit Hour

* Three elementry mandatory courses are also given:
N 103 Fire-fighting (30 hours)
N 104 Survival at sea(30 hours)
N 106 First Aid (16 hours)

Phase Two is a programmed sea training. Mandatory courses such as fire fighting and survival at sea are completed at the Alexandria Maritime Transport Academy (AMTA) in Egypt. In addition Nigerian ships officers also obtain their certificates of competency (second mate) from Egypt. Nigeria at the moment does not have any authorised examination board that can examine and issue masters and mates certificates of competency to ships officers.

2.2.2 Admissions.

Maritime Academy of Nigeria allows entrance of cadets only once a year. The school year begins in September and ends in June. Intake of cadets is through the common entrance systems.

All eligible applicants for admission that have passed

their West African Examinations, (i.e equivalent of completion of high school) or the General Certificates Examinations (ordinary level), are tested for proficiency in mathematics, physics and English language.

The common entrance test is to help the academy determine individual standards of the incoming cadets and their individual abilities to comprehend higher subjects / studies because advance courses in the academy include navigation, engineering and other technical subjects that require basic knowledge of English, physics and mathematics.

Another purpose of the common entrance examination is to ensure that all individuals that enter the maritime industries through the Maritime Academy of Nigeria have nearly the same initial level of general education.

In this way the cadets can progress in their studies according to their individual demonstrated intellectual ability while at the same time making use of any other individual knowledge they may have acquired in their lives.

Most people believe that the common entry systems have some limitations. D.J.Heaslip (1984), for example, argues that it is not all persons that can or wish to aspire to the highest levels of qualifications and posts of responsibility.

He however added that those who are most likely to achieve the highest class of certificates of competency, absorb the technical knowledge required, and be

able to deploy the resources available to them onboard ships (in a manner acceptable to the "cannons" of good management) are those who enter the maritime industries with good educational qualifications rather than those persons that have little or no education.

Gage and Berliner (1984), in support of Heaslip, explained that a good education system is the system that can offer intending students who cannot join such schemes because of lack of good academic credentials the opportunities to overcome their academic handicaps and progress as far as they are capable and at whatever speed that is appropriate for them.

2.3 Education and Training Facilities.

2.3.1 Education.

As stated earlier in this paper, Nigerian cadets spend two academic years (either as an engineering cadet or nautical studies cadet) in the academy. One academic year is nine (9) months. At the end of each academic year, the cadets are assigned to merchant ships for their practical sea training.

After the cadets have completed their two years of studies at the academy, they are assigned to merchant ships for eighteen (18) months sea training. The cadets that successfully complete their sea training, i.e the 18 months, are sent to Alexandria Maritime Transport Academy for six months in order for them to complete their mandatory courses (fire fighting, sea survival, and radar observers certificate courses); and any other course(s) necessary to prepare them for

the certificates of competency examinations.

2.3.2 Training Facilities.

The main training facility available to the teaching staff members of the Maritime Academy of Nigeria is the chalk board. Individual teaching staff members may however provide himself / herself with any other training material he /she considers useful.

Also, the main practical training equipment available in the academy is the training boat M.V.Orion. The M.V.Orion has all necessary navigation equipments onboard. The engineering cadets make use of the engine room for their own practical training. However the main engine workshop training is given to the cadets outside the academy. i.e. in industries.

We all know that today, to adequately train cadets that will become future ships officers capable to man mordern ships, the teaching staff should take advantage of present day technology in maritime education and training facilities.

Today, the technology of maritime education and training facilities include video tapes, films, microfiche, calculators, micro-computers, electronic simulators, and modern engineering workshops.

All these training facilities provide students with hand-on experience. Unfortunately, the Maritime Academy of Nigeria has none of these training facilities.

2.4. Manpower.

In the Maritime Academy of Nigeria, the number of teaching staff at the moment is fifteen (15). The distribution of the teaching staff members are as follows: (1) Nautical studies department:

- 1 principal lecturer
- 2 senior lecturers
- 2 lecturers
- 3 instructors

(2) Marine engineering department:

- 3 senior lecturers
- 3 instructors

(3) Department of general studies:

- 1 Senior lecturer
- 2 lecturers.

Chapter 3.

IMO Requirements For Maritime Education and Training.

3.1.1 Introduction.

The minimum standards and requirements of the IMO STCW 1978 convention which deals with standards of maritime education and training are expressed in terms of regulations and the appendices to them. The regulations are mandatory on all parties to the STCW convention. Nigeria is a party to the STCW convention of April 1978.

The mandatory regulations of the STCW, and their appendices are contained in six (6) chapters as follows:

(1) General provisions
(2) Deck departments
(3) Engine departments
(4) Radio departments
(5) Special requirements for tankers
and (6) Proficiency in survival craft.

3.1.2 General Subjects.

The IMO requirements on maritime education and training standards are divided into two main areas. The areas are (1) theoretical and (2) practical. In order for any maritime education and training institution to meet these requirements, that institution's study program must be a combination of academic and practi-

cal elements. The training program must also be carried out in a proper manner and integrated with an appropriate element of supervised sea training.

According to the IMO maritime and education training requirements, the main general (non-professional) subjects are:

- elementary physics,
- elementary chemistry,
- english language.

These subjects are required by all ship officers that are involved with either chemical tankers, gas tankers, or oil tankers. Also all ship officers that are involved with cargo handling and equipment are required to be trained on these three subjects.

3.2 Professional Subjects:

3.2.1 Nautical Department.

The mandatory professional subjects required by the IMO for all deck officers are contained in eight (8) regulations, and where applicable the appendices to them.

The eight (8) regulations are as follows:

Reg. 11/1 Basic principles to be observed in keeping a navigational watch.

Reg. 11/2 Mandatory minimum requirements for certification of Masters and Chief Mates of ships of 200 gross tons or more.

Reg. 11/3 Mandatory minimum requirements for certification of officers incharge of a Navigatio-

nal watch on ships of 200 gross tons or more.

Reg. 11/4 Minimum knowledge required for certification of officers incharge of a Navigational watch on ships of 200 gross tons or more.

Reg. 11/5 Mandatory requirements to ensure the continued proficiency and updating of knowledge for Masters and Deck officers.

Reg. 11/6 Mandatory minimum requirements for Ratings forming part of a Navigational Watch

Reg. 11/7 Basic principles to be observed in keeping a watch in port. And,

Reg. 11/8 Mandatory minimum requirements for a watch in Port on ships carrying Hazardous cargo.

Source: Capt. Moat and Mr. Hodge (1984).

It is evident from the IMO regulations that the main areas of theoretical and practical requirements that should be covered by any well planned maritime education and training curriculum are:

Watch arrangements
Fitness for duty
Navigation
Navigational equipment
Navigational duties and responsibilities
Protection of the marine enviroment
Navigation and position determination
Fire prevention.

The summary of the IMO required maritime education and training syllabus can be seen by looking at the list of IMO Assembly resolutions. The resolutions are as follows:

A.89(iv)	Training of seafarers.
A.124(v)	Recommendation on crew training.
A.181(vi)	Instructions on survival in liferafts.
A.188(vi)	Training of Masters, officers and crew.
A.216(vii)	Instructions for action in survival craft.
A.285(viii)	Recommendations on basic principles and operational guidance relating to navigational watchkeeping.
A.286(viii)	Recommendation on the training and qualifications of officers and crews of ships carrying hazardous or noxious chemicals in bulk.
A.311(viii)	Safety of maritime navigation.
A.337(ix)	Recommendation on principles and operational guidance for deck officers in charge of a watch in port.
A.380(x)	Standard marine navigational vocabulary.
A.473(xi)	Training of crews in fire-fighting.
A.438(xi)	Training and qualifications of persons in charge of medical care aboard ships.
A.433(xi)	Decisions of the ship Master with regard to maritime safety and marine enviroment protection.
A.481(xii)	Principles of safe manning.
A.482(xii)	Training in the use of automatic radar plotting aids (ARPA).
A.483(xii)	Training in radar observation and plotting.

A.484(xii)	Basic principles to be observed in keeping a navigational watch on board fishing vessels.
A.485(xii)	Training, qualifications and operational procedures for maritime pilots other than deep-sea pilots.
A.488(xii)	Use of the standard marine navigational vocabulary.
A.537(xiii)	Training of officers and ratings responsible for cargo handling on ships carrying dangerous and hazardous substances in solid form in bulk or in parkaged form.
A.538(iii)	Maritime safety training of personel on mobile offshore units.
A.539(xiii)	Certification of skippers and officers in charge of a navigational watch on fishing vessels of 24 meters in lenght and over.

Source: G.R.Hodge (1984) in Trans I Mar E (C), Vol.96, Paper 16C-13; p.75.

3.2.1(i) Sea Training.

IMO maritime education and training syllabi require that sea training be considered as an integral part of maritime education and training curriculum. The sea training curriculum should comprise of Navigation, Radio-navigation, Astronomical navigation, Communication, Cargo-handling, Rules of the road and Ship-handling.

Capt.Moat and Mr.Hodge (1984), explained that:

> the sea training program should be seen as an extension of the program of the land based training center. And for this reason, it is important that there be an effective and close co-ordination and cooperation between the personnel aboard the ship and the training center ashore.

Capt.Moat and Mr.Hodge concluded that "it is crucial that a properly structured and organized maritime education and training program of activities be followed since sea training provides the cadets with on-the-job training and hand-on-experience".

3.2.2 Engine Department.

According to the IMO course requirements for maritime education and training, the main areas covered by the IMO required curriculum (theoretical and practical) are:

(a) For the machinery installation and other ancillary equipment and systems:

- Safe operational practices.
- Detection of malfuctions.
- Location of faults.
- Action to prevent damage.
- Procedures and techniques to carry out repair.
- Organization for maintenance and repair.
- Preventive and planned maintenance.

(b) Operating principles and practices for:

Propulsion machinery, diesel or steam or gas turbines.

Auxiliary diesel engines.

Auxiliary steam systems (including boilers and equipment).

Pumps and pumping systems.

Steering systems.

Cargo handling and deck machinery.

Electrical machinery and equipment.

Refrigeration and air conditioning machinery equipment.

(c) Safe and efficient operation of plant:

Fuel technology.

Lubrication technology.

Indutrial chemistry.

Instrumentation.

Control engineering.

Automation.

(d) Pollution control:

Control of centrifuges and disposal of sludges and residues.

Control and disposal of bilge fluids.

Use of oily water separators and their control and maintenance.

Monitorial equipment for overboard discharges.

Control and tranfers of bunker fuel.

Control and disposal of solid wastes from machinery spaces.

Control of gaseous discharges from machinery.

(e) Damage control:The procedures and actions which must be taken for the protection of life and the minimizing of damage to the ship and its cargo:

The equipment and systems to deal with ingress of water (flooding) - emergency systems.
The importance of subdivision of the hull.
The effects of bilging on stability.
Procedures for correcting a list which is due to flooding.
and Effect on stability of fire-fighting water.

3.2.2(i) Engineering Workshop.

Ship officers in the engine department are required to have practical training on marine engineering workshop practices. The syllabus for the course should include but not limited to the followings:

Use of hand tools.
Use of machine tools.
Fabrication.
Marine plant and system maintenance.
Overhaul methods and techniques.
Safety practices.
Prevention and planned maintenance.
etc.

Like sea training, engineering workshop practices also provide engineer cadets with hand-on-experience. Each activity of the training should be carried out through a number of supervisions and validated by a senior officer in charge of the training.

The summary of the mandatory requirements of the engine department curriculum prescribed by IMO are contained in six (6) requlations and the appendices to them. The requlations are as follows:

Reg.111/1 Basic principles to be observed in keeping an engineering watch.

Reg.111/2 Mandatory minimum requirements for certification of chief and Second Engineer officers of ships powered by main propulsion machinery of 3000 kw or more

Reg.111/3 Mandatory minimum requirements for certification of Chief and Second Engineer Officers of ships powered by main propulsion machinery between 750 kw and 3000 kw propulsion power.

Reg.111/4 Minimum mandatory requirements for certification of Engineer officers in charge of a watch in a trditionally manned Engine Room or Desgnated Duty Engineer Officers in a periodically Unmanned Engine Room where the propulsion power is 750 or more.

Reg.111/5 Mandatory minimum requirements to ensure the continued proficiency and updating of knowledge for Engineer Officers.

Reg.111/6 Mandatory minimum requirements for ratings forming part of an Engine Room Watch.

3.3 Specialised and familiarization Courses.

The IMO recommended standards of maritime education and training syllabus designed for the training of ships officers (who are) involved or associated with chemical, gas, or oil tankers associated with certain hazards such as marine pollution, explosion and fire include training on safety procedures in order to avoid marine accidents.

Accidents on these specialized ships may be due to a variety of causes and include lack of knowledge and ability of ship personel to take the right action

during emergency.

It is therefore necessary that ships officers who are to have specific duties, and resposibilities in connexion with cargo and cargo equipment on oil tankers complete an appropriate shore based fire-fighting course (STCW 1978, chapter 4); and

(a) an appropriate period of supervised shipboard service in order to acquire adequate knowledge of safe operational practices; or

(b) an approved oil tanker familiarization course which includes basic safety and pollution prevention precautions and procedures, lay outs of different types of oil tankers, types of cargo, their hazards and their handling equipment, general operational sequence and oil tanker terminology.

(c) must have relevant experience appropriate to their duties on oil tankers; and

(d) complete a specialized training program appropriate to their duties, including oil tanker safety , fire safety measures and systems, pollution prevention and control, operational practice and obligation under apllicable laws and regulations. (Samir Mankabady,1986, pp. 188-189).

The IMO standards of maritime education and training require that all crew members receive basic safety introduction training about the hazards and precoutions associated with their vessels if carrying dangerous cargoes.

The topics to be covered include:

- Health hazard and precaution;
- Safety equipment and its use;
- Familiarization with emergency procedures;
- General description of ship type and its cargo handling equipment; and fire-fighting (Mankabady, 1986, pp.188-189).

Chapter 4.

Comparison Between Present Standard of Maritime Education and Training In Nigeria and The Standards of Maritime Education and Training Required and Recommended By The International Maritime Organization (IMO).

This chapter compares the STCW minimum requirements for maritime education and training to the present maritime education and training syllabus of the Maritime Academy of Nigeria (the only maritime education and training institution) in order to determine whether the training standard of the academy meets the IMO STCW standards of training, certification, and watchkeeping.

I have chosen to present the comparison in table form to make it easy to understand.

4.1.1 General Subjects.

IMO approved model course standard for maritime education and training.	Present MET standard in Nigeria.
Physics.	Yes.
Chemistry.	Yes.
English.	Yes.
Thermodynamics.	Yes.
Mechanics.	Yes.
Maritime Law.	Yes.
Medical Health Care (first aid).	Yes

4.1.2 Professional Subjects.

IMO Approved Model Course Standard For Maritime Education And Training.	Present MET Standard In Nigeria.
Navigation.	Yes.
Navigation Instrument and Systems.	Yes.
Navigation and Position determination.	Yes.
Control theory and automation	Yes.
Radar.	Yes.
Compasses (Gyro and Magnetic).	Yes.
Meteorology and Oceanography.	Yes.
Ship manoeuvering and handling.	Yes.
Ship stability and constr. including damage control.	Yes.
Cargo handling and stowage.	Yes.
Handling of dangerous cargoes.	No.
Fire prevention and fire fighting.	Yes.
Electrical installation.	Yes.
Pollution prevention.	No. only mentioned.
Propulsion systems.	Yes.
Communications (including radio telephony.	Yes.
Auxiliary systems.	Yes.

Life-saving.	Yes.
Search and Rescue.	No.
Radar simulator training.	No.
Rules of the road (COLREG.)	Yes
Passage planning.	No.
Automatic pilot systems.	Yes.
Automatic Radar Plotting Aids (ARPA).	No.
Electronic technology.	Yes.
Electronic Navigation aids.	Yes.
Seamanship.	Yes.
Sea Training and Engineering Workshop.	Yes.

*. Yes means course is recommended and required by the IMO-Norwegian course model and is given at the Maritime Academy of Nigeria.

*. No means course is recommended and required by the IMO-Norwegian course model but not given at the Maritime Academy of Nigeria.

From the tables, one can notice that the maritime education and training syllabus of the Maritime Academy of Nigeria is deficient compared to that which is recommended and required by the IMO (STCW, 1978).

The reason for the deficiency in the syllabus (MET in Nigeria) is due to lack of sufficient number of teaching staff and training facilities.(see chapter 11).
Another reason for the said deficiency is that most members of the teaching staff do not have the proper qualification (academic and / or professional) necessary for them to teach those courses. For example, simulator training course, automation and pollution control.

The deficiency in our (MET in Nigeria) curriculum even becomes more obvious if we are to accept the definition of curriculum as defined by Downey and Kelly in 1984. Downey and Kelly in Theory and Practice of Education defined curriculum as "the range of subjects on a school's programs or even sometimes the content that is taught within any one of those subjects".

Downey and Kelly concluded that the term curriculum denotes time-tables, prospectus, and syllabi referring to the " totality of the provisions that any school tries to make for her students".

It is noteworthy to mention that before Downey and Kelly, John Kerr (1968) had earlier defined curriculum as :"all the learning which is planned and guided by the school whether carried on in groups or individually, inside or outside the school" (p.16).

I must state here that we the teaching staff members of the Maritime Academy of Nigeria are aware of the existing deficiencies in our maritime education and training curriculum.

According to OECD project report (1976), teaching is considered an intentional job. And in order for any teacher to be able to teach, the teacher himself must have a good knowledge of his subject(s), be properly qualified and experienced.(also see Peters-WMU lecture notes on how to teach, 1988.).

The OECD report concluded that teachers should see themselves as "INNOVATORS". For this reason, we can say that teachers who are involved in maritime education and

training should be properly qualified in order to at least be able to state the intention(s) of the subject(s) being taught.

For instance, in the Soviet Union, maritime education and training commences prior to marine school level. School children are required to actively participate in "adopt a ship" program, and the teachers are required to have good knowledge of their subjects in order to properly explain to the children the intention of the program (Lt. Comdr. D.M.Long, 1986, p.30)

According to the OECD (1976) project report:

> if teachers are to participate in educational innovation, they need to be equipped and supported with appropriate professional training facilities at both the pre-service and inservice stages.

And that teachers must identify and learn fundamental professional skills in order to be able to teach. Supporting the OECD (1976) project report, Professors Glenn Turner, Desmond Nuttal and Phillip Cliff (1985) added that (i) a teacher cannot teach what he does not know and (ii) a teacher needs to have sufficient knowledge on how to teach.

4.2 Summary.

Taken the ordinary dictionary meaning of education and training, to educate or train a ships officer means to bring the ships officer to a desired standard of performance or behavior through instruction and practice, teach and accustom the ships officer to do things to a standard of physical efficiency through exercise and / or provide

schooling for the ships officer based on experience. (Oxford dictionary, 1984 ed.)

The main necessary maritime education and training resources that we need at the Maritime Academy of Nigeria to bring our training programs to the standards recommended and required by the IMO (STCW convention) are (i) proper teaching staff and (ii) mordern training facilities such as simulators.

I.C. Miller (1984) stated that:

> now that the simulators honey moon is over,serious considerations should be given by safety administrations to the inclusion of ship simulations as an essential item in nautical training syllabuses before many of those useful tools are lost to the maritime fraternity for no good reason other than that on their own they do not constitute a profitable business entity. Simulators are no longer a novelty. They are a training tool and, like any other training tool, should be used to maximum advantage.(In Trans I.Mar. E. (C) vol. 96, paper 16c-6 p.32)

Although the IMO (STCW convention) standards of maritime education and training does not guarantee any standard of maritime education and training whatsoever but merely indicates courses that are to be studied by ships officers, and leave each State to set its own examination standards,(Capt.R.E.Allen,1984), Prof.J.H.Mulders (in a seminar paper presented to heads of maritime training institutions at the World Maritime University,

Sweden,1984), adviced that maritime education and training institutions make proper use of navigational instruments because:

> today's students, not only are they navigators of tomorrow, but they are also the pilots, the captains, the members of harbour authorities, the heads of nautical departments in shipping companies and many other maritime related funtionaries of the days after tomorrow.
> (Sept. 1984, paper no.18).

I as a member of the teaching staff of the Maritime Academy of Nigeria believe that with proper number of qualified teaching staff (and training facilities), Nigerian standard of maritime education and training can be raised to meet the STCW requirements, and probably equal any set standard elsewhere.

On judging from the past performances of our cadets at the Alexandria Maritime Transport Academy where they sit for their certificates of competency examinations, our cadets have many times proven that they can and are able to meet any set standards necessary to become ships officers.

Chapter 5.

Proposal For The Improvement of Maritime Education and Training In Nigeria:

5.1 Integrated Education Systems.

It is generally known that most maritime colleges world-wide, in addition to their primary roles of training seafarers, also serve the purpose of training those who desire to broaden their knowledge or advance their skills in other maritime related areas, fishery for example.

In addition, most maritime colleges provide seafarers with expanded knowledge because recently most ships officers' jobs which require high technical skills also involve expanded responsibilities.

Due to the above said reasons, a number of countries (mostly in Asia, Europe and the Pacific Islands) have revised their maritime education and training schemes for ratings as well as officers in order to support manning innovations of their national fleet.

For example, Japan and the Phillipines revised their national maritime training and certification schemes for their ship officers in order to bring their maritime education and training programs into accord with the international convention on the standards of training, certification and watch keeping for seafarers, and also to support the trends of semi-integrated officers and non--certified officers-bridge watchstanders (see the report of the proceedings of seminar on seafarers training and certification Tokyo, Japan, 1983, pp. 9-143).

For the same reason, it is necessary that Nigeria makes substantial change in its system of training of its seafarers, (particularly ratings), from the old traditional methods of training by integrating maritime education and training into the national education systems of higher learning. The reason being that a reduction in the number of ships crew on-board ships will lead to an increase (higher standards) in required skills and qualifications of ship officers and may affect the ratings considerably.

Integrating maritime education and training into Nigeria's higher education system is necessary in order to prepare future seafarers for other specific maritime services because the students of today may become managers of shipping industries in the future (J.H.Mulders, 1984).

By integrating maritime education and training into the national education system, Maritime Academy of Nigeria will be able to produce future maritime managers, both those afloat and ashore. The end result will be the training of atleast Nigerian medium level maritime specialists who will be able to under-take limited skilled jobs and assume managerial responsibilities.

Usually, education and training of seafarers in Nigeria was confined only to that which was deemed necessary to enable them do their jobs as seafarers efficiently. Anything else was seen as wasting of money and time. Professional courses did not seem to advance the knowledge of the seafarers in any way. According to Micheal Gray (1980), "they were essentially requirements for doing a job" (p.97.). Capt. W.M.Porrit (1976) earlier described

such training as "fitting the man for the job". Today things are not the same as before.

While it is true that the traditional good seaman handled ropes, made knots, hitches, spliced wires, belayed, reaved, and hauled on tackles as though they were the only elements of shipping; today, elements of shipping include but not limited to ship automation and complexity, competition and specialization in ship operations.

Since the 1950s, competition and specialization in shipping has been accepted as " the rule of the house", within the maritime industries (Prof. Houssin, 1984).

Prof. Houssin argues that in addition to competition and specialization, other traditional aspects of shipping (economy and safety for instance) attempt to explain the principles which govern the direction of resource use in isolating part of shipping economy for close analysis.

It is this close analysis of ship operations by the shipping industries that have brought the ship masters to where they are today. In recent years ship masters are required and expected to plan, organize, command and control the activities of shipping within the limits of their trade in order to meet the demands of the shipping companies and in addition keep the ship moving economically.

To quote Prof. Houssin, effective operation of ships;

> "can be brought about by improving the management onboard and, by planning and delegating of jobs to those who have first hand knowledge of the problem, expertise

> to understand the solution put forward to them and most important, the capacity to tackle the problem in a professional manner" (Ship board management lecture notes, unpublished).

From Prof. Houssin's ideas, one can say that present day's maritime education and training of seafarers demands that maritime education and training curriculum be based on the concern for the students and their future places in the society and should therefore be a part of the overall national education system.

This is important because, according to Downey and Kelly (1984), "childrens' experiences do not fall into neat subject areas or into single academic disciplines, nor do most of the things that seem socially or culturally important" (p.223). This is also a good reason for integrating maritime education and training into the general higher education schemes.

The integrated study approach, apart from providing Nigerian gradutes opportunities for shore jobs, will also take advantage of new technologies because of its flexibility.

5.2 Dual Certificates for Low level Officers.

As mentioned earlier (see chapter 4), the science of maritime technology in the deck and engine departments has been advancing for long now. These advances are results of automation technologies of the 1970s, developed for effective manning of ships.

Manning innovation of ships have characteristically led to, and consisted of smaller complements of seafarers tasked with enlarged technical and managerial responsibilities especially on newly constructed, often highly automated ships.

Most governments of the developed countries have actively promoted the integration of technical and operational innovations of ships, i.e. ship, equipment and crew structure; thereby leading to high competive new ship constructions aimed at high automation and reduction of manning crews. West German's ship of the future program (Schiff der Zukunft) and Japan's modernization of her seafaring systems and ship building programs are examples.

Petersen (1983), as a result of these advancements in ship-board technology, stated that:

> "merchant marine officers are faced today with the challenges of jet age equipment. In addition, they must learn how to follow traditional procedures that seemed old fashion but are often based on the special conditions of seafaring life".

Supporting Petersen's statement, D.M.Waters (in a series of lectures presented at the World Maritime University, Malmo, Sweden) showed also that the basic knowledge requirements of the nautical watchkeeping officers are not very different from those of the engineering watchkeeping officers because of continous increase in ship-board automation.

And that the learning processes necessary for watchkee-

ping duties (nautical and engine) can be integrated into one single curriculum. This approach to maritime education and training was described by Prof. Zade as a bivalence system of which the French system is a good example.

It is therefore necessary that Nigerian Maritime Authorities accept that the present developments in maritime technology which has led to changes in shipping and ship-board operations over the years will continue to do so.

And that it has resulted to changes in the field of maritime activities of crews on-board ships. For instance the monitoring of engine room from the ship's bridge through modern control devices makes it possible to reduce the number of crew considerably.

These developments are aimed at having an unmanned engine room. Therefore, if Nigeria intends to compete effectively in shipping, she must be prepared to follow and adopt the changes in maritime education and training in order for its future ship officers to meet the future demands of the shipping companies.

5.3 Upgrading of the Standards of Maritime Education and Training in Nigeria.

Traditionally, in Nigeria, the ship officer once out of job is regarded as ex-sailor and unskilled. Today, that idea is gradually changing. Nigerian ships officers still need to be accepted and regarded as equals to other specialists in other fields of education and be awarded an acceptable academic degree or diploma in accordance with

their profession based on specialization, especially now that the shipping industries have as many and as varied requirements as the range of aptitudes of potential entrants, coupled with the industries need for professional commitments of sea going officers.

Nigeria has to realise that the shipping companies need for managers of men and complex equipment in shipping today require technical and personel management skills.

The need to develop or re-discover greater training functions on-board ships, the need to cope with the changes in ship types and working conditions, dictated by external market forces in shipping require that Nigerian seafarers be trained along the same way as their counterparts within the general national higher education system.

It is very necessary that Nigeria upgrades its maritime education and training schemes in order to be able to award academic degrees and diplomas where necessary.

For instance, the Norwegian government, in order to avoid the same situation whereby the ship officer, once out of job is considered unskilled, revised their maritime education and training systems (in 1972) to include plans which provide that future maritime education and training schemes be able to adjust to both the development in the national education system and the need of shipping companies (Ditlefsen, 1977).

Nigerian merchant marine officers training program should comprise of selected subjects and be presented in the light of up-to-date trends in modern technology and the

development in ship-board navigation instruments in addition to required professional knowledge most essential to ship's post to which a ship officer will be entitled to after his promotion. Additionally, Nigerian ships officers should also be able to find jobs ashore outside the maritime business.

5.4 Specialised and Familiarization Courses.

In order for the Maritime Academy of Nigeria to be able to train Nigeria's future ships officers to meet the new demands of Nigerian ship owners and the special requirements of companies such as Niger-Brass, African Ocean Line, and the Nigerian National Petroleum Company (NNPC) that intend to acquire new tankers must be able to introduce specialized (and familiarization) courses.

Also, Nigerian ships officers should when necessary be given refresher and updating courses or be allowed to attend seminars and symposia. This is already being done in some other places through their maritime colleges in association with their polytechnics or universities.

In Nigeria, these specialized courses (which include but not limited to radar simulation, tanker operation simulation, handling of dangerous goods and other liquid chemicals) can be introduced by the Maritime Academy of Nigeria in association with companies such as Shell Oil Company, Agip Oil Company, Elf Oil Company and Nigerian National Petroleum Company, and any other companies that deal with either liquid, gas, or dangerous chemicals.

In addition, courses such as those that deal with new technical devices aboard ships, information processing in

shipping,(i.e. computers and automation), and vessel cost calculations can also be introduced and organized through polytechnics or universities, such as Rivers State University of Science and Technology,(marine engineering dept.), Federal University of Nigeria, Owerri (department of naval architecture and ship designs) and Universty of Nigeria, Nsukka (department of petroleum engineering), to mention but a few. Another alternative could be to allow the professors from these institutions come to Maritime Academy of Nigeria either as part-time lecturers or visiting professors. The list of model specialized short courses for selective offering is as shown below:(see table overleaf.)

List of Model Specialized Courses For Selective Offering.

Table 5.1

Subject	Participants	Course Level	Remarks.
Dangerous and Hazardous Cargoes (other than Special Requirements for oil,chemical and liguified gas tankers).	Officers and Key Ratings	Advanced	STCW Conference Resolution 13 Assembly res. A.437(XI) and A.537(13)
Special requirements for oil, chemical and Liquified gas tankkers	Officers and Ratings	Familia risation	STCW Contion. Chapter V Resolution 10,11,and 12 (Resolution 16) (Assembly resolutions A286(VIII) and A.437(XI).

Subject	Participants	Course Level	Remarks
Human Relations	Supervisory Personel	Basic	STCW Conference Res.22.
Shiphandling Simulator	Masters and Senior Deck Officers.	Advanced.	STCW Conference Resolution 17
Radar Simulator	Masters and Deck Officers	Advanced	STCW Conference Res.1 and 18. Assembly Resolution A.(XII).
Automatic Radar Plotting Aids (ARPA).	Masters and Deck Officers	Advanced	STCW Confe-rence Reso-lution 20 (Assembly resolution A.482(XII)

Personel Survival	Primary New Entrants	Basic	STCW Conference Resolution 19.
Medical Care.	Persons in charge of Medical Care Aboard Ships on Certain Voyages.	Advanced	Assembly resolution A.438(XI)
Maritime Safety Training of Personel on Mobile Offshore Units.	Primary Personel with designated responsibility for the survival of others.	Basic	Assembly resolution A.538(13)
Radio / Electronic Equipment Maintenance	Primary Radio Officers.	Supplementry or Updating	STCW Conference Resolution 14,Part 11

Table 5.2

Subject	Participants	Course Level
Electronics	Primary Engineer officer	Advanced
Control Engineering and Automation	Primary Engineer Officer	Advanced

Fuel Combustion and Plant Efficiency	Primary Engineer Officer	Advanced
Planned Maintenance for Machinery Installations	Primary Engineer Officer	Advanced
Financial, Technical and Personel Management	Supervisory Personnel	Advanced
Bridge Team Work and Passage Planning	Masters and Senior Deck Officers	Advanced
Marine Search and Rescue	Primarily Masters and Deck Officers	Advanced
Maritime Law	Masters and Senior Deck and Engineer Officers.	Advanced.

Source: STCW 17/WP.7, Annex 1, p.11.

Chapter 6.

Technical Assistance and The Implementation of Maritime Education and Training Program In Nigeria.

6.1 Introduction.

During the last few decades, many maritime colleges have offered courses on maritime education and training at degree levels for the serving ship's deck officers and this has opened the way for research in the marine fields and areas associated with ship operation distinct from ship and engine design.

In addition to the specialized courses mentioned in chapter five (5), it is difficult to go into all the possible areas of studies in maritime science and technology and the various subjects offered by different maritime institutions. Generally speaking, studies are widely possible in a variety of subjects, namely, navigation, marine engineering, hydrographic surveying, meteorology, maritime law, oceanography and fisheries, to mention a few.

Offering of these courses bring the maritime colleges close to and / or parallel to the generally known national institutions of higher learning. This is undoubtedly a significant development and perhaps more noteworthy is that it has demonstrated that most ships officers are capable of under-going prolonged studies in their profession and making worthwhile academic contributions.

It is the desire of the Maritime Academy of Nigeria to

introduce such courses as mentioned above and also award academic diplomas or degrees. But in Nigeria, cost of training is another matter which often gives rise to argument and those who have to pay for it often complain. Traditionally, cost of maritime education and training for the certificates of competency are mainly the responsibility of the shipping companies.

The attitude of the Federal Government of Nigeria towards maritime education and training has been that of a "buyer's market". But the shipping companies prefer that the federal and state governments provide support by which tuition fees, examination fees, books and other expenses are provided to the students without cost to the shipping companies.

Most Nigerian shipping companies believe that such financial support to the students can be done through a system whereby the governments provide scholarships, grants, federal quaranteed loans or through tax arrangements as obtained in Nigerian universities.

In the Maritime Academy of Nigeria, although tuition is free, the cost of training is still very high. Fees paid by cadets per semester are shown below:

Table 6.1

(a)Fees for first semester of the first school year.

- Registration fee	N 50.00
- Lodging	" 45.00
- Education Tour	" 25.00
- Games and Sports	" 50.00
- Breakage Deposit	" 50.00
- Discharge Book	" 20.00
- School Uniform	" 800.00
- Feeding	" 450.00
- Hair Cut	" 5.00
Total	N 1495.00

(b) Fees for subsequent Semesters.

- Lodging	N 45.00
- Education Tour	" 25.00
- Games and Sports	" 50.00
- Feeding	" 450.00
- Hair Cut	" 5.00
- Total	N 575.00

* All fees are paid in Naira (Official Nigerian Currency).
* Text books and stationaries are the responsibility of the cadets.

There is no doubt in most Nigerians mind that the present high cost of education in Nigeria is a deterrent to education, and to maritime education and training in particular, since most parents cannot afford the high cost of training their children beyond the secondary school level without asking for scholarship from either

the Federal or the State Governments when they cannot get company sponsorship.

Since 1980-1981 the number of government sponsored cadets in the Maritime Academy of Nigeria have declined due to the high cost of training cadets at the Academy (see table below).

Table 6.2.

Intake of the Maritime Academy of Nigeria since 1979.

Class of	1982		1983		1984		1985		1986		1987	
Dept.	D	E	D	E	D	E	D	E	D	E	D	E
Intakes	19	17	30	37	18	22	11	22	9	14	?	?
Total	36		67		40		33		23		-	-
Sponsors.												
Fed.Govt.	15		12		18		-		-		-	-
State Govts.	-		-		-		1		3		-	-
NNSL.	-		17		19		5		1		-	-
NPA	11		8		-		12		2		-	-
Parents / Guardians.	-		-		-		17		17		-	-
Others.	-		-		-		2		2		-	-
Total	26		37		37		37		23		-	-

Key: D = Deck department. E = Engine department.

6.2. Manpower Development.

Nigeria like many other developing nations is very much in need of technical assitance in areas of selection, acquisition and effective use of manpower and technologies appropriate to its existing standard of

maritime education and training.
Regarding maritime education and training, the problems facing Nigeria are numerous and complex. The most important ones are; the need for financial resources and the shortage of trained and experienced personnel.

Because of the above reasons Nigeria looks to the IMO and other international organizations for technical assistance in order to be able to bridge the gap between the training requirements of the STCW 1978 and the existing standards of maritime education and training in Nigeria (chapter 4).

Nigeria expects the IMO and the other international organizations such as ILO, UNDP, UNEP, UNCTAD, etc.; to provide her with technical assistance in the areas of manpower through the sending of maritime experts and consultants individually or as a team to help in the training of personnel.

Technical assistance for the training of maritime personnel is presently provided to Nigeria through fellowships, seminars, and special courses. Thanks to the IMO for the setting up of the World Maritime University (WMU) at Malmo, Sweden which started on July 4 1983.

Although in the last few years Nigeria has experienced an expansion in the fields of technical assistance, Nigeria needs more assistance since Nigeria places great emphasis on the promotion of maritime education and training in order to be able to train her ship officers to an agreed international standards (STCW 1978). Nigeria is a party to the STCW 1978 Convention.

In sum, Nigeria looks to the IMO and other organizations including the developed countries to provide her with technical assistance in her efforts to establish new maritime facilities in conformity with future global standards.

With reasonable amount of technical assistance, Nigeria could achieve her principal aim which is the development of national manpower and internationaly accepted merchant mariners. Generally, in shipping, Nigeria needs assistance in the following areas:

- maritime education and training
- maritime legislation
- maritime safety
- cargoes
- communication and
- ship building

6.3 Acquisition of educational infrastructures.

The important elements that contribute to the successful development of any maritime education and training program are:

- buildings which are adequate and suitably designed and furnished in terms of ;
  - student numbers who will attend,
  - number and level of courses to be held,
  - education purposes of spaces; and training functions of spaces;
- well trained and experienced lecturing staff;
- well trained and experienced specialist technical support staff;
- practical training equipment and facilities which

are relevant to modern ship and marine machinery operational practices and procedures;
- properly equipped laboratories for effective support of the class room lectures;
- availability of audio-visual teaching aids; and
- a modern information storage and retrieval system available to members of staff and students.

In the case of the Maritime Academy of Nigeria, a very comprehensive technical assistance project policy which should extend over a number of years and encompass all the important elements that have been listed, i.e.;

- building
- staff
- equipment

and - other resources need to be formulated and properly followed in order to effectively benefit from any received technical assistance.

Because Nigeria already has an existing national maritime college, the main aim of the technical assistance program should be the strenghtening and enhancing of existing marime education and training programs and / or the introduction of additional courses in ordre that international standards can be achieved as required by the STCW Convention of 1978.

In addition to outside assistance, (with a properly planned technical assistance program) most of the training needs of the Maritime Academy of Nigeria can be obtainned alternatively through Nigerian ploytechnics and Universities, local / port fire fighting services, national / local medical units and other national institutions

such as the navy.

Where outside organizations are involved, there should be close supervision and co-ordination between the Maritime Academy of Nigeria, Nigerian Maritime Authority, and the outside organization to ensure that the training standards in terms of IMO Convention regulations and other Assembly resolutions are satisfied.

What is most needed in Nigeria is the strenghtening of the practical / professional knowledge, understanding, and experience required of ships officers, particularly in respect of the maritime technology currently used aboard ships.

Nigeria should make allowance for the manner and speed with which maritime technology changes by using any technical assistance received to build into course structures the necessary updating procedures; keeping in mind that there is a continuing use and development of automation and other advanced systems and equipment aboard ships in all phases of ship operation, cargo handling, navigation, communication, propulsion, etc.

This will enable Nigerian seafarers to receive the type of maritime education and training that will help them to operate ships safely, efficiently, and with minimum pollution of the environment.

Chapter 7.

Summary and Conclusions.

7.1 Out look Into The Future of Maritime Education and Training In Nigeria.

From all that has been said in this paper, there is no doubt that the present and future trends of ship designs and changes in modern maritime technology is of great concern to Nigerian maritime educationists and lecturers of maritime studies. The inability of the Maritime Academy of Nigeria to keep pace with the changes in modern maritime technology is reflected on the present standards of Nigerian seafarers of today in relation to the existing modern maritime technology.

For instance, most Nigerian seafarers today cannot go from, say general cargo ships to tankers or containers without requiring to be retrained, but Nigerian Shipping Industries (like their counterparts in other places) need specialists in the maritime fields.

It is therefore desirable that Nigerian Shipping Industries, Nigerian Maritime Administrators, the State and Federal Governments, Nigerian National Planning Authorities and the Maritime Academy of Nigeria seek a mid-way to maritime education and training in order to meet the demands of the nations' shipping companies and the society as a whole and at the same time avoid conflicts.

This mid-way approach to maritime education and training requires that Nigeria makes some gradual changes in its

maritime and education curricula. Although any change introduced into the present system of maritime education and training (chapter 2) may lag behind modern maritime technology for few years, it may also level off within few years if properly planned keeping in mind recent technical developments in maritime training equipment.

7.2 Trainining Requirements For Future Nigerian Seafarers.

Without going into further details of the various changes in ship designs and maritime technology there is no doubt that present-day specialized vessels require specialized training and education in order to be manned effectively.

If one accepts Professor Zade's ideas about future systems of maritime education and training (in a paper submitted to Singapore Polytechnic Technical Report Series; 1987) one can say that the type of training needed today in Nigeria is that which can "bring changes in broad terms" to the Nigerian Shipping Industries, Nigeria's national economy and the society as a whole. In Zade's opinion, (1) future deck/engine training program should be bivalence (2) syllabi for MET should be enriched and (3) Maritime Administrations should adapt to economic pressures from shipping.

These desired changes outlined by Professor Zade will provide Nigerian seafarers labor mobility opportunities in regard to being able to move from one labor force to another especialy within the maritime related fields. In order to enjoy the full benefits of future changes in maritime education and training, Nigerian maritime education and training system should include the award of

academic diplomas or degrees.

7.3 Entry Qualifications For Nigerian Future Seafarers.

Since Nigeria intends to integrate maritime education and training with the National Higher Education System, the Maritime Academy of Nigeria will continue to maintain its high entrance level (see chapter 2). The reason for maintaining the same high entrance level is the entrance level of the Academy should be comparable to the entry requirements of the rest of the institutions of higher learning.

In addition to the above reason, since the work load of future integrated ship officers curriculum will be more scientific, new entrants should have more science oriented subjects (particularly mathematics and physics; including computers) which are necessary for information and data analysis. This means that Nigerian future students "will have to be academically better qualified and prepared than their predecessors after graduation" (Zade, 1987).

It is important that future students have high education standards at the entrance level if the "mathematics and scientific educational level is to form a strong foundation for life long learning" (Femina, 1987) . According to Femina, modern marine engineers for example "require a strong knowledge of and use of computers".

7.4 Certification.

Nigeria needs a strong and well equipped Maritime Administration in order to be able to monitor, review and set standards of training and certification since shipboard

operation is becoming more sophisticated and electronically controlled (with the tendency to save energy and labor). Another reason for a strong Maritime Administration is that since ships have become more sophisticated, well trained and specialized ships officers are required.

The overall study program of future Nigerian seafarers should be as shown in table 7.1, figures 7.1 and 7.2 below.

Table 7.1.

First and second year of study, there should be no distinction between nautical and engineering students.
The level at the end of these years should be such that the practical seatime serves its purpose.
General subjects.

English language
Maritime law
Management
First aid and health care

Science.

Mathematics
Physics (mechanics including lab.)
Computer science, including lab.

Professional subjects.

Control theory and automation
Electrical installations, including laboratories.
Ship knowledge and Radio telephony

Nautical subjects. Manoeuvring
Meteorology and Oceanography
Practical training
Navigation, Navigation instruments and systems
Cargo technology
COLREGS

Marine Engineering subjects.
Mechanical laboratory
Technical practical training
Technology
Propulsion systems
Auxiliary systems

Third year of study:

Practical sea time, guide.

The aim of the quided seatime should be for students to experience all aspects of the operation of the ship as a unit. Not as an accumulation of units.
Duration of this training is 18 months (actual).

Fouth year of study:

Examination year. There should be a distinction between nautical and engineering students.

Part 1:

Tested subjects

Health care
Automation
Ship knowledge
Manoeuvring
Meteorology and Oceanography
Laboratory, mechanical and electrical installations

Part 2:

Examination subjects.

Navigation, Navigation instuments and systems
Passage planning
Cargo technology
COLREGS.
Propultion installations
Auxilliary systems
Electrical installations

Part 3:

Project, compulsory for all students. Subject of project is student's choice.

Source: Taken from the Netherlands Maritime Education and Training system.

MAN : UNDERGRADUATE PROGRAMS INCORPORATING 'INTEGRATED RATING' TRAINING AND THE 'KNOWLEDGE' REQUIREMENTS FOR 'WATCHKEEPER' & 'CLASS 1' CERTIFICATES OF COMPETENCY

(Fitness, Experience & associated Skills requirements are assessed separately by the Federal Marine Authority)

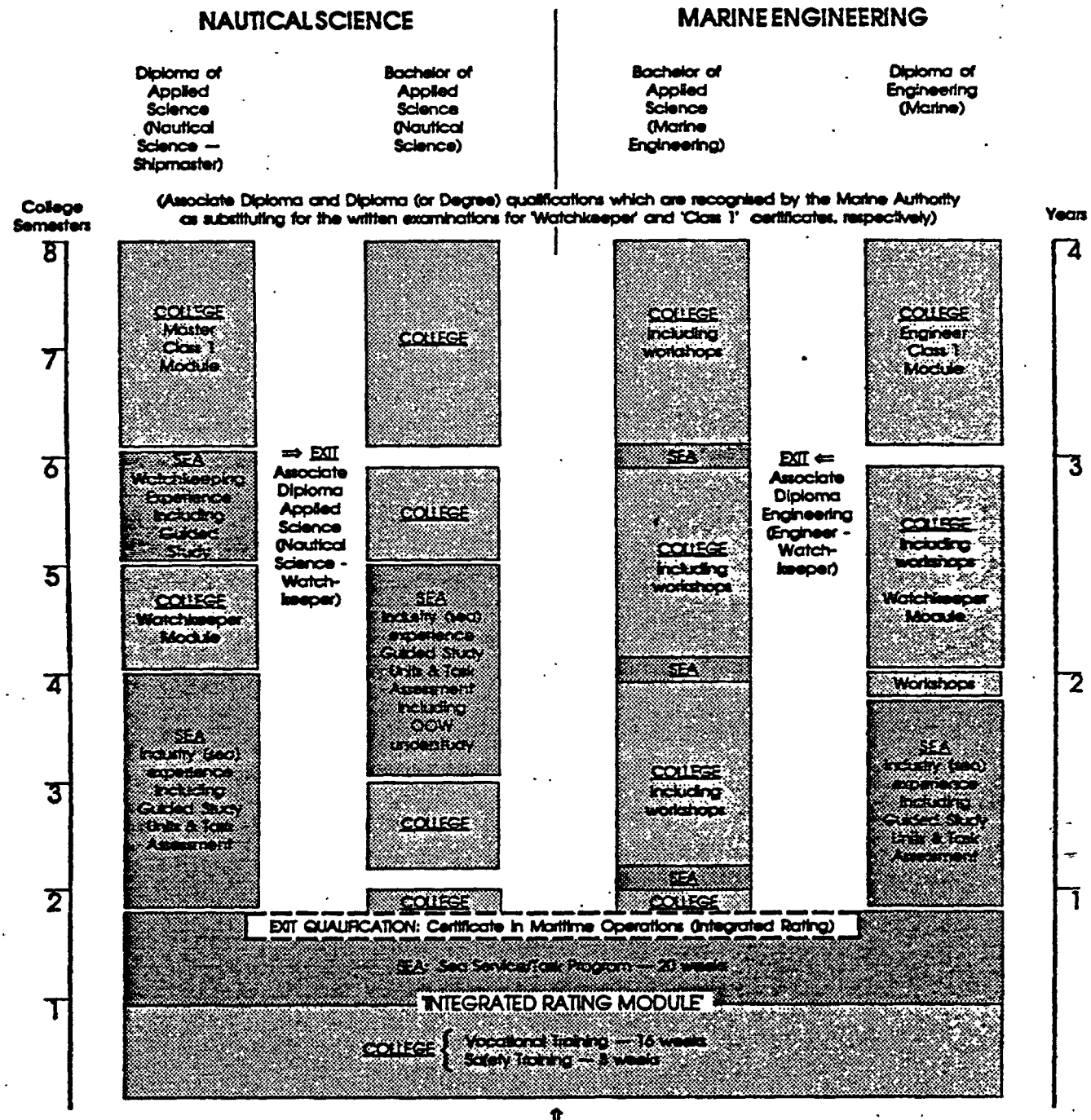


Fig. 7.1

NOTES: 1) The degree programs are designed as 4-year programs of which the Integrated Rating module is the common first year.
2) The diploma programs comprise three modules, with exit points at completion of Integrated Rating and Watchkeeping Modules — to facilitate a variety of entry and exit requirements.
3) The education qualifications cover the 'knowledge' requirements for the certificates of competency, but not the qualifying sea experience or the oral examination.

Source: D.M.Waters, 1988.

Certificate of Competency Requirements

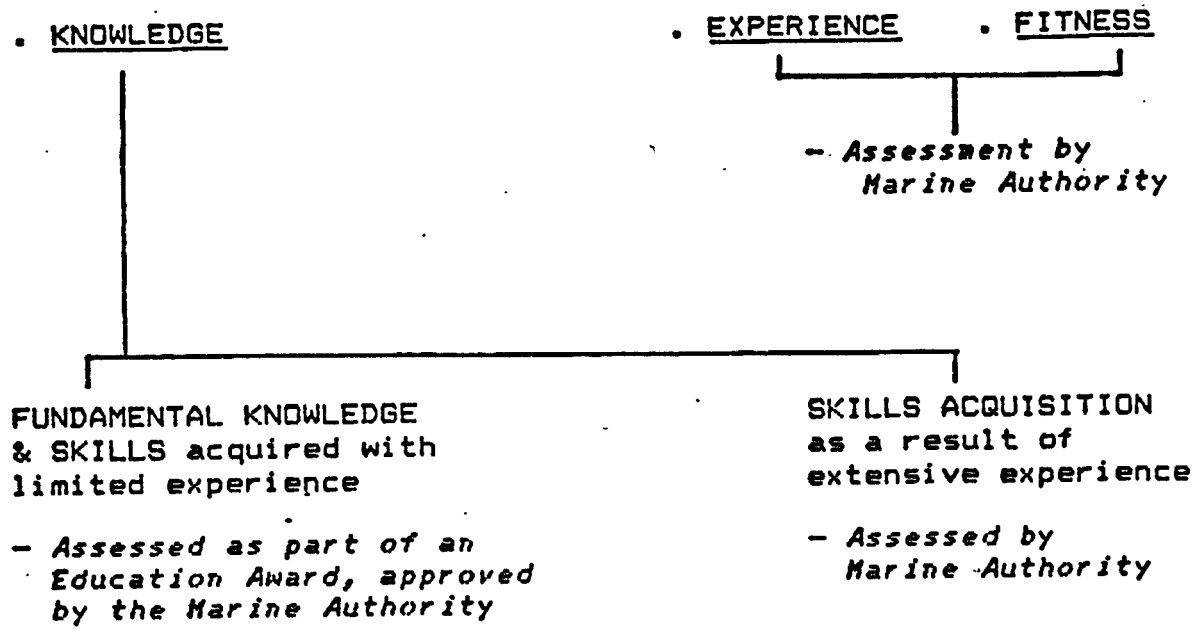


Fig. 7.2

Source: D.M.Waters, 1988.

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