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**THE DEVELOPMENT OF DISTANCE
EDUCATION PROGRAMMES FOR FUTURE
MARINE ENGINEERING IN THE UNION OF
MYANMAR**

by

TIN MAUNG Oo

UNION OF MYANMAR

A dissertation submitted to the World Maritime University in partial
fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE

in

MARITIME EDUCATION AND TRAINING

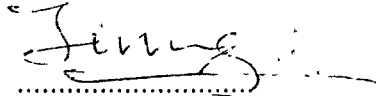
(Engineering)

1995

DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.



(Tin Maung Oo)

Dated: 20th. October, 1995

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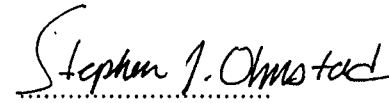
 

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Further, let me take an opportunity to mention my thanks to my parents who have briefed me, "You have to think of yourself what you are at the present and never who you have been before".

Lastly, but not least, my heartfelt thanks to my colleagues who have come from different countries for studying together with each having unique destination in their studies at WMU.

T.M.O.

ABSTRACT

The shipping industry is changing day after day in the areas of safety, operation, construction, manning, and management system. Seafarers need to go onboard ships with their ability and conduct being trained onboard and at the Maritime Education and Training (MET) Institute.

Many of the young generation in the Union of Myanmar join seagoing ships as deck cadets or engineroom apprentices after attending mandatory maritime training courses at the Institute of Marine Technology (IMT). This dissertation deals with the MET system and the competency certification of seafarers in the Union of Myanmar in chapter 1 and chapter 2. Myanmar seafarers need proper training for them to progress in their professional knowledge while they are working onboard amongst multinational crew.

Amongst other types of teaching the distance learning programme is an alternative which is a convenient and efficient education system for people who are working away from conventional institute. The distance learning institutes for seafarers conducted in Australia and Japan are observed in chapter 5. Accordingly, the IMT is the most preferable institute in the country to establish the distance learning programmes for the Myanmar mariners who are not capable to study the traditional education programmes.

The methods of distance education conducted by the IMT are proposed there include how teaching should be conducted between teachers and students and what kinds of learning materials are essential to achieve the students' progression. The effective learning programmes are discussed for mariners of ocean-going, Pre-sea training engineering apprentices at shipyards, and inland marine engineers and engine drivers.

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LIST OF ABBREVIATIONS

AMC	Australian Maritime college
DLPD	Distance Learning Programme Department
DMA	Department of Marine Administration
ILO	International Labour Organisation
IMO	International Maritime Organization
ISF	International Shipping Federation
MFSL	Myanmar Five Star Line
MICC	Maritime International Co-operation Centre
MMTS	Mercantile Marine Training School
RC	Revolutionary Council
SECD	Seaman Employment and Control Department
SLORC	State Law and Order Restoration Council
STCW	Standards of Training, Certification and Watchkeeping
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WMU	World Maritime University

Introduction

Union of Myanmar

Location and features

The Union of Myanmar is situated in Southeast Asia between Latitudes 28° 50' N and 9° 32' N, and Longitudes 92° 10' E and 101° 11' E. So Myanmar standard time is 6 hours and 30 minutes ahead of Greenwich Mean Time. The neighbouring countries are India and Bangladesh north-west, the People's Republic of China north and north-east, Laos due east, and Thailand to the south east. To the south-west and west the Andaman Sea and Bay of Bengal appear as 'Y' shaped coastline. Therefore the country has a coastline of 2276 Km in length, from north of the Naaf river to Victoria Point (Ba Yint Naung Point). The Coco islands are located at far edge of the Andaman Sea. As a result, the Union of Myanmar has a comparable large expanse of exclusive economic zone (EEZ). In this EEZ there are 9 lighthouses with lighthouse keepers, 20 lighthouses without lighthouse keepers, and 4 main sea ports.

There are four main rivers namely, Ayeyarwady, Chindwin, Sittaung and Thanlwin flowing abreast to the Andaman Sea, from north to south and taking in positions at almost equal interval over the breadth of the country. As a natural gift to the Union of Myanmar, these rivers are used for river trades throughout the country since the time of Myanmar dynasty.

Population and transportation

With reference to the records on "Immigration and Manpower Department- in 1993, Union of Myanmar", population is estimated to be 43.13 millions and it will be 48.81 millions in the year of 2000.

Table. 1. Estimated Population of Myanmar by Age Group and Sex.

Sr.No	Age group	1973 (in thousand)		1993 (in thousand)	
		male	female	male	female
1.	0 - 9	4,104	4,059	5,195	5,108
2.	10 - 19	3,205	3,207	4,639	4,686
3.	20 - 29	2,020	2,084	4,046	4,139
4.	30 - 39	1,609	1,649	2,939	3,005
5.	40 - 49	1,311	1,318	1,890	1,945
6.	50 - 59	904	920	1,304	1,371
7.	60 and above	809	884	1,359	1,503
	total	13,962	14,121	21,372	21,757

Source. Statistical yearbook, 1993- Union of Myanmar.

Referring to table.1, a considerable amount of immigrants have resided in the Union of Myanmar within 20 years. Referring to the statistical yearbook, 1993, Union of Myanmar, in carrying out passengers and commodities transportation throughout the country, the Inland Water Transport is providing this service with 327 power crafts and 258 dumb crafts. There are also traditional private operators along the inland waterways with their valid certified 1062 revering crafts and 597 coastal crafts. The Myanmar Five Star Line having 21 ships of it's own and 5 chartered ships is the national shipping company and servicing international and coastal trades.

PASSENGER--

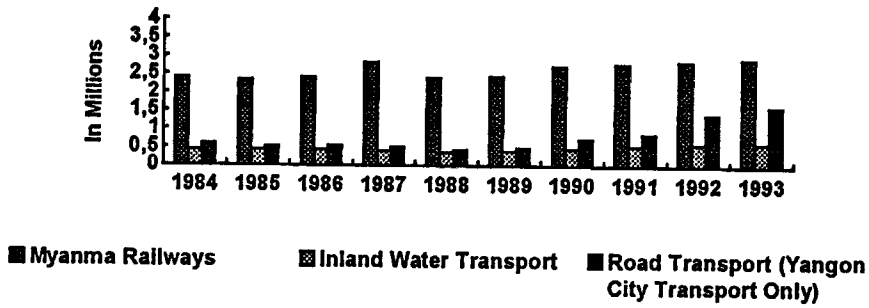


Figure: 1. Passenger Traffic By Main Public Modes of Transport

Source: Statistical Yearbook, 1993, Union of Myanmar

FREIGHT TON--

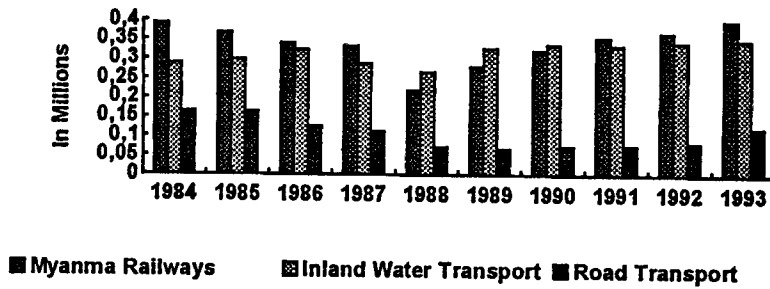


Figure: 2. Freight Movement By Main Public Modes of Transport

Source: Statistical Yearbook, 1993, Union of Myanmar

Seaborne Cargo

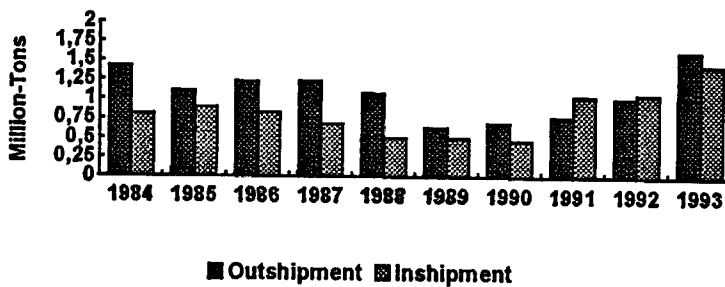


Figure: 3. Seaborne Cargo Handled By The Port of Yangon

Source: Statistical Yearbook, 1993, Union of Myanmar

Figure.1. shows yearly records of travellers through out the country by means of rails and inland vessels owned by the government. People who are travelling with private owned transportation by inland vessels and motorcars are not available to be recorded in the mean time. Figure.2. shows yearly records of cargo flow through out the country by means of rails, inland vessels, and motorcars, all owned by the government. Figure.3. shows foreign trade seaborne cargo, yearly import and export, at the port of Yangon. In the above three figures, all records show the lowest between 1988 and 1990 but the values are increasing in recent years.

Future trade

Since late 1988, the Union of Myanmar has established a market-oriented economy from a centrally planned economy as was the case before. This is done to promote business activities. As shown in Table. 2. in order to attract foreign investment into the country the government had promulgated the "Union of Myanmar Foreign Investment Law" in November, 1988. As a result, a fairly large number of registered exporters, importers, limited companies, partnerships, and joint venture companies limited appeared. These economical activation influences directly the shipping trades.

Table.2. Foreign Investment of Existing Enterprises by Selected Countries, 1993.

Sr.No.	Particulars	Nos. Of enterprises	Foreign Investment (US \$ in millions)
1.	USA	7	154.67
2.	Japan	4	61.14
3.	The Republic of Korea	5	57.14
4.	UK	6	35.18
5.	Thailand	7	28.86

Source: Directorate of Investment and Company Administration, Union of Myanmar

Chapter 1

The Myanmar MET System and the Marine Industry

1.1. Background history of Myanmar MET.

Since the 10th century, Myanmar has been known as a kingdom. In the 16th century, primitive boats were notably constructed for commodity transportation and the passenger travel by the rivers meant the introduction of advanced sailing techniques. Since the 18th century, foreigners have arrived in Myanmar. To the benefit of Myanmar, many steamers, ships driven by steam engine, were steaming along the rivers. In 1885, the British invaded the Myanmar dynasty and brought it to an end.

During the time of British colonialism, river transportation was widely used for Export trade. The Ayeyarwady Flotalar Company was the biggest shipping agency in Myanmar at that time and the crews manning the ships were from India because many of the Myanmar natives, naturally, were not willing to co-operate with the British industrialised policy. Later the British managed to obtain the service of Myanmar's onboard their ships. A few rich Myanmar's had tried to establish their own ships for river services as a rival to the Ayeyarwady Flotalar Company in economic trade and were successful. The Myanmar mariners who serviced on Myanmar ships, were admirably capable of passing the required examination for their licence at the Department of Marine Administration.

As was required in the marine industry, two main shipyards, one in Yangon and the other in Mandalay, were established for regular maintenance of the inland (river) ships. The Port Shipyard was also established in Yangon to provide the required repairs and maintenance of sea going ships whenever they called in Myanmar. The shipyard workers were indigenous Myanmar and Indians.

1.1.1. Progression of the MET

Under the British colonial administration they selected yearly some young and bright Myanmar to undertake MET in Great Britain or in some of their colonies like India. The British allowed Myanmar to serve on their ships as well. During their service onboard, the experience obtained made them able to learn more and more. So some nautical ratings, on completion of the required sea service, managed to pass relevant examination (the first examination was Second Mate). Under the British MET system it is known as post experienced training programme.

The British MET system also catered for marine engineering hence engineering apprentices could take their required workshop training service at the government shipyards in Myanmar. After completion of required workshop service in the relevant shops they were capable of passing the MOT second class part "A" examination which was held regularly at the British Embassy in Myanmar on the request of the candidates. They could then also be given the chance by British shipowners to join British ships as Junior Engineer officers. This kind of MET system was known as a sandwich training program.

The Myanmar were given on-the-job training in due course till they could succeed at the highest levels of Master and Chief Engineer Certificates. But the heroes of Myanmar were awarded only with a document (sometimes it was called "blue chit"), instead of the proper Certificate, which segregate them from the others in the system.

Myanmar gained Independence in 1948 after losing so many lives on the battle fields during the revolution. The Myanmar Government, when it was established gave priority to the reconstruction of administrative policies rather than to the MET system. But the Government could manage to send state scholarships abroad from every ministry, surely including mariners on a yearly basis. Therefore the development of Myanmar MET system and the Marine Industry in general were slow due to the lack of interest of certified Myanmar mariners to get involved.

1.1.2. Founding of the MET institution in the Union of Myanmar

"On March 2, 1962 - the army, under Gen. Ne Win, launched a successful coup against the government. The constitution was suspended and an army-led Revolutionary Council, under the chairmanship of Ne Win, began to rule by decree". (Asia and the Pacific, 1992)

The Revolutionary Council (RC) government managed to invite the Myanmar mariners from abroad back into the Union of Myanmar with generous offers of key positions in the marine industry. These key positions are in the Department of Marine Administration (DMA), Myanmar Five Star Line (MFSL) and Port Management Authority. This enables the government not to send mariners abroad on state scholarships. And under the Ministry of Education and Health, the RC government managed to establish the first MET institution in the Union of Myanmar, in January 1963. The institution was merged into the Myanmar Naval Training School but it had a totally separate training programme to follow. It was at the same time given the name Mercantile Marine Training School (MMTS).

The first intake consisted of 20 nautical cadets and 5 engineering cadets for the foreign- going Master and Chief Engineer Courses. The training programmes and curriculum were directly copied from the British system in order to ensure quality assurance. On the other hand as the glory of the British MET system was rooted in

the Myanmar soul, it was the most suitable system at that time. A few months later, the Inland Master Course was started with 10 nautical cadets.

The training courses were so designed that the cadets did the academic subjects within two years in the MMTS and the on-the-job training for within three years. The MFSL provided on-the-job training for all the Nautical cadets and the Myanmar Shipyard provided the Engineering cadets with practical training as required.

In 1968, the first batch of MMTS cadets successfully passed the examination held by the DMA and were issued the Myanmar competency certificates. In 1973, the first Master and Chief Engineer Certificates of competency were awarded to qualified candidates of MMTS after passing the appropriate examinations.

In 1970, the MMTS was relocated near to Myanmar Shipyard and under the portfolio of the Ministry of Transport and Communications Ministry. Under this arrangement the Myanmar Shipyard provided land. So, in 1972, with new infrastructure, MMTS adopted a new name the Institute of Marine Technology (IMT).

The main reason for changing the MET institution from one Ministry to another was to improve qualitative and quantitative assurances of the cadet trainees and seamen (ratings) trainees, to meet national and international needs by running the institute as a commercial body.

In 1992, the national seminar of the MET and examination system could be held at the IMT under the auspices of the Transport Ministry. As a result, there were major changes in the MET system in the areas of training scheme, syllabuses, and examination system to meet up-to-date international standards of institutions and the IMO requirements. In conclusion, the progression of the MET system can be traced back as shown in Table.1.1.

Table.1.1. Progression of Myanmar MET System.

S.N.	Government	Student	School
Under Education and Health Ministry			
1.	British(colony) (almost 100 years)	State scholars	England and India
2.	Myanmar (1948)	State scholars	England & India
3.	Revolutionary Council (1962)	State scholars (1st. To 4th.batch) (1963 - 1968)	Mercantile Marine Training School (MMTS) at Myanmar Naval Training School
Under Transport and Communications Ministry			
4.	Revolutionary Council	5th. Batch Cadets (Free Education)	MMTS at Myanmar Shipyards (1970)
5.	Revolutionary Council	Yearly intake (1972 - 1973)	Institute of Marine Technology (IMT)
6.	Myanmar Way to Socialism	Yearly Intake (1974 - 1988)	IMT
Under Ministry of Transport			
7.	State Law & Order Restoration Council. (1987)	Yearly Intake Started in 1991	IMT

1.2. The infrastructure of the marine industry

The standards and the needs for progressing the MET system of any country are obviously dependent upon the nature and development of the marine industry in that country. The marine industry is also dependent upon the international economic seaborne trade. So, nowadays, the government of Myanmar has changed the practice

in economic trades with an open door policy. The infrastructure of the Myanmar marine industry was reconstructed for national interest. This can be seen in Fig.1.1.

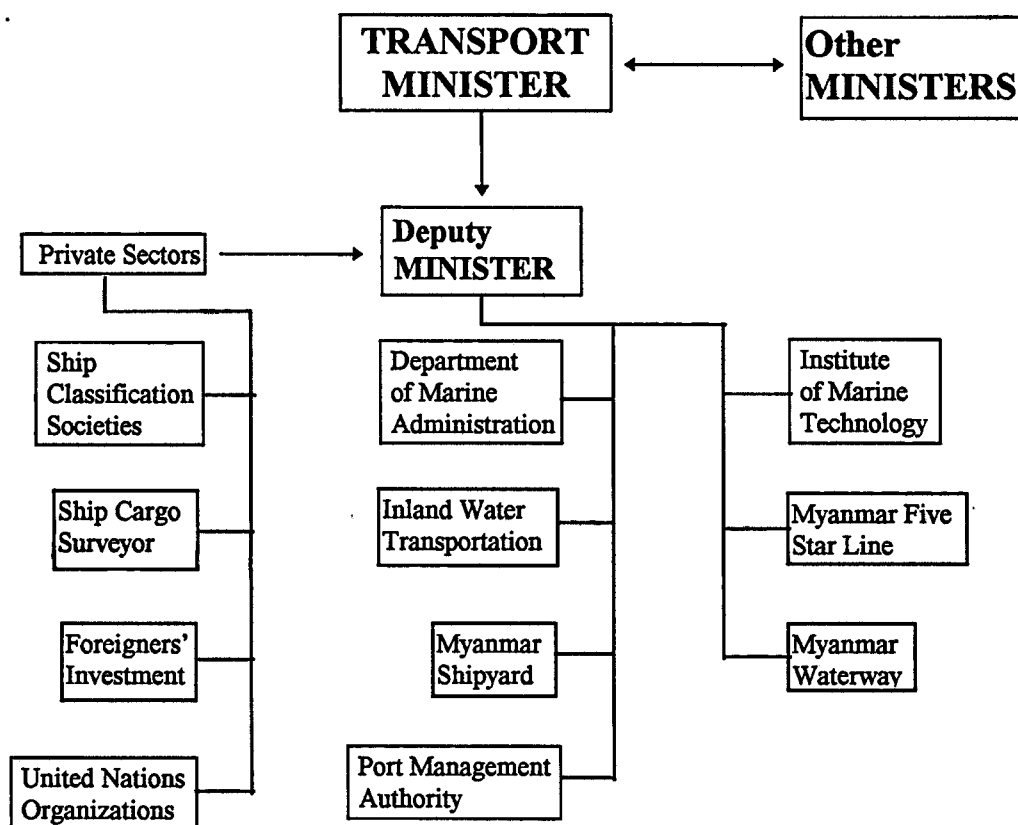


Figure.1.1. The Infrastructure of Myanmar Marine Industry & Related Organisations

1.2.1. The role and mission of marine industry.

All the governmental departments have the line of duty to achieve the development of Myanmar marine industry with fully co-operation. Here the main seven sectors are shown as following.

1. Department of Marine Administration

Director General

Administration Department

General co-ordination of administration and legal affairs, budgeting, accounting, taxation, auditing, long term planning in development of primitive ships and boats, public information, supervision of shipowners.

Executive Department

Survey, examination, certification, licensing, execution and supervision of standard construction and safety maintaining works, registration, international and domestic policy making, co-ordination of environmental matters of transport, ocean development and utilisation, and promotion of disaster prevention and communication facilities.

Seamen Employment and Control Department

Formulating basic policy of seamen's labour conditions and labour relations, labour safety and sanitation.

Technical Department

New construction and maintaining department- fleet, education and training of apprentices.

Regional Office of Maritime Safety

Execution and supervision all the matters related to the Marine transportation.

2. Inland Water Transport

Managing Director

Administration Department

Formulating of long term development plan, budgeting, accounting, auditing, public information, promotion of customers' benefit, regional agencies, supervision discipline, welfare and security to the fleet, transport statistics for economy and policy, prevention of accidents.

Operation Department

Co-ordination and safety measures of passengers and cargoes distribution.

Technical Department

New construction, improvement in maintenance on ships, jetties, cargo barges, etc; promotion of technology and safety development, education and training of apprentice engineers, education and training of crew.

3. Institute of Marine Technology

Principal

Administration Department

Execution of budgeting, accounting, staff and students affairs, public relation, promotion of faculties, supervision of trainees' educational records.

Nautical and Engineering Department

Education, training and evaluating of officers and ratings to meet the IMO requirements, promotion individual for safe and sound at works, supervision and execution of framework in quality and quantity assurance to national and international needs.

4. Myanmar Shipyard

Managing Director

Administration Department

Budgeting, accounting, auditing, marketing and public information, welfare, security, education and training of workers, promotion of computerisation.

New Construction Department

Standard development and construction works, designing new safety facilities and economy products, executing standard maintenance and restriction damages.

Research Centre

Promotion of technology and safety development, prevention of accidents, procurement of material and economy.

Security Department

Supervision and execution of cleanliness and easy communications, control of hazards, ensuring regular patrol, routine exercises, readiness in emergency.

5. Myanmar Waterway

Managing Director

Administration Department

Formulating basic policy for channels and tunnel maintenance, planning against ruin of riverbanks, public education for environmental protection, budgeting, accounting, auditing, taxation of boats crossing tunnel, long term plan for development.

Operation Division

Supervision and execution of channels and tunnel maintenance, surveying, promotion of faculties and safety in salvaging, maintenance of aids to Navigation, execution traffic controls and information of provision for boats, ships and rafts, education and training to the staff-labours.

6. Myanmar Five Star Line

Managing Director

Administration department

Formulating of long-term development plan, budgeting, accounting, auditing, control of running costs, promoting of computerisation.

Operation Department

Seeking of cargo, co-ordination to the customers, planning of ship's schedule, public information and co-operation with regional agencies, adjusting of freight rate, execution restriction of cargo damages.

Technical Management

Administration of safety and technical standard on ships, distribution of circulars about world shipping, formulation of welfare, security, education and training of seafarers, supervision of standard repairs and maintenance.

Claims and Insurance

Settlement of premium and losses.

7. Port Management Authority

Managing Director

Administration Department

Formulating basic policy for Port development, promoting of construction and technology of Ports, adjustment of port charges, long- term planning of development for international standard, budgeting, accounting, auditing.

Operation Department

Executing coastal and harbour pilotage, surveying the harbour and issuing notice to mariners, maintaining fairways and positioning navigation aids.

Port Workshop

Supervision and execution in repairing and construction of ship machinery, ships, boats, buoys, pontoons, jetties, land marks & light houses. Supervision and execution of harbour maintenance, education and training of apprentices.

Shipping Agencies

Promotion of commodity flow and passenger benefit along coastal, co-ordination of public and issuing information,

Cargo Facility Division

Supervision and execution of warehousing, cargo handling, clearing cargo, safety measures and customer's benefit.

Security department

Promotion against various hazards, supervision of contravened cargo flowing.

Chapter 2

The Role and Mission of Institute of Marine Technology (IMT)

2.1 The MET system and the IMT

The IMT is one of the supporting arms in the Ministry of Transport and it plays a vital role in quality and quantity assurance providing Myanmar mariners. This is a unique set up to the national and international standards. The owners of foreign going-ships, coastal ships and inland water ships rely upon the IMT and in return, the IMT keeps reviewing itself to meet the requirements of the shipowners and the International Maritime Organization (IMO) within the given restraints. The IMT is duly promoting the MET system to the benefit of Myanmar mariners when they have to serve onboard modern ships equipped with advanced technology.

As a result, the MET system is found to be at a prominent position of national interest and world shipping. Foreign shipowners come to think of the opportunity to take new recruits whenever there is no quantity assurance from their own countries. Because their institution/MET system cannot produce enough seafarers to their needs onboard due to the lack of interest in seagoing life by the young generation. Luckily Myanmar is still a seafaring nation and its people are interested to work at sea.

Presently, the MET system is constructed with quadrilateral supports as shown in Fig.2.1., namely DMA, Myanmar Five Star Line (MFSL), Myanmar Shipyard and IMT. The IMT is taking a leading role to achieve the mission of the MET system.

Under the Ministry of Transport the other three are giving their full support in the line of duty to the IMT to go quickly in quantitative and qualitative issues.

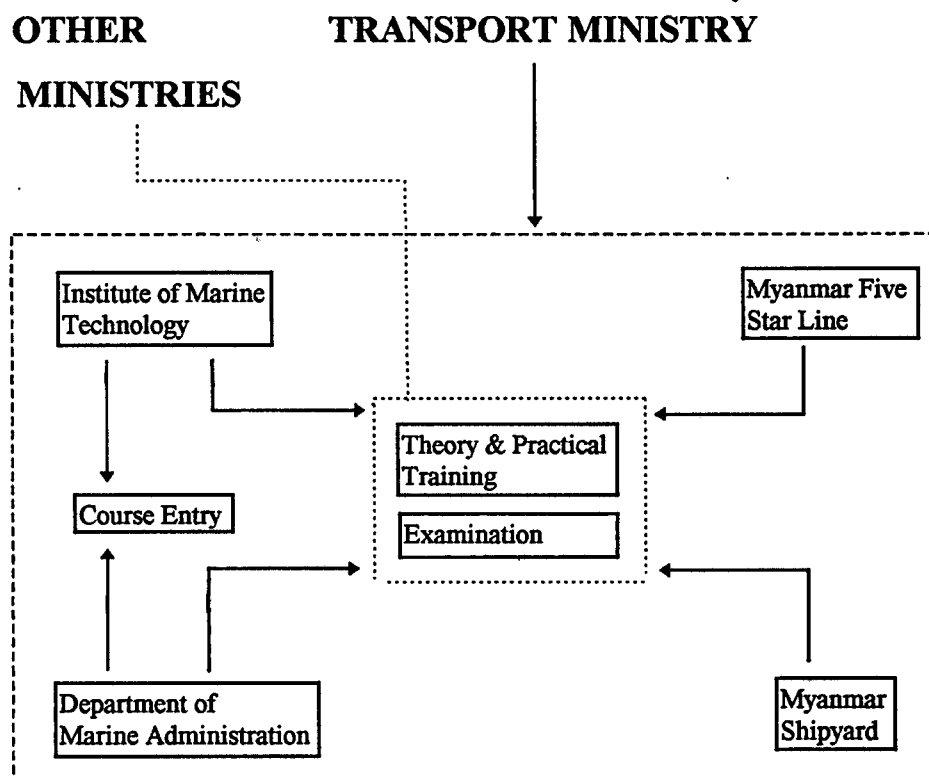


Figure. 2.1. Infrastructure of Myanmar MET System

Although the IMT is supposed to take the sole initiative in conducting courses, the procedure to determine the entry standard of the students to the appropriate courses is designed by three separate groups of Administration departmental personnel. A Selection Board, which is organized with the nominated officials in the Marine Industry takes competitive entrance examination of candidates for the Basic Marine Training courses, the DMA for the Refresher courses and finally the IMT for the IMO model courses.

The General Education system in the Union of Myanmar is a "Free Education" system. The IMT is owned by the Government which is an advantage for the MET

institution of such a developing country. The IMT needs a considerably high capacity of modern learning faculties such as advanced teaching media and qualified teachers. These are provided with the full co-operation of relevant sources of the other Ministries to fill the gap between the present trend of shipping and the traditional maritime education system. Here, the Government of Myanmar, the owner of the one and only maritime institution in the whole country, possesses such a position to fulfil the requirements of the IMT to upgrade the MET system in time and to keep abreast of international standards.

So, for the students' benefit, advanced learning media like simulation units for ARPA, engine room control simulation units, computerisation and ship stability simulation units with wave generating tank have been installed at the IMT since 1989. These equipment have been received from Japan as foreign aid (grant aid). It is a kind of blessing by the owner of the IMT paying priority for its nation not to be one step behind in advanced technology onboard sea going ships.

Referring to Article XI - promotion of technical co-operation, STCW 1978 Convention, in the area of "(c) supply of equipment and facilities for training institution", the IMT receives a series of curriculum from the IMO for various courses: Nautical, Engineering, and other specific model courses for safer shipping and cleaner oceans across the world. Now, the IMT conducts IMO model courses for Myanmar seafarers to upgrade quality assurance with mandatory basics. With the appreciable help of the International Labour Organisation (ILO), the IMO and some donor countries, the IMT is becoming known among shipowners internationally and nationally as, "Quality assurance is the IMT and the out-comes are our profit".

2.2. Mission of the IMT

In 1992, a successful implementation of the STCW 1978 convention was achieved by means of holding a National Seminar for the MET system in the Union of Myanmar.

In the seminar, Myanmar Five Star Line, Myanmar Shipyard, Port Management Authority, DMA, and IMT officials presented papers regarding applicable measures and upgrading plans of the MET system. As a result, the present MET system was restructured to meet the international standards required for the marine industry.

Referring to the STCW 1978 Convention, Article XI, promotion of technical co-operation - in the area of "(a) training of administrative and technical personnel"; the IMT seeks to polish its role by sending teachers, in turn, abroad for post graduate training and other maritime education training. For the record, the IMT can manage to send one teacher to England for a degree, Doctor of Philosophy in Education and Training, two teachers to the same country for Diplomas in Navigation courses and Electronics course, 4 teachers to Sweden for Masters Degrees in Maritime Education and Training, one teacher to Cyprus for certificate in specialised gas tanker safety and operation course, and two teachers to Japan for Certificates in Administrative Maintenance in teaching aids.

Referring to the STCW 1978 Convention - Regulation III/5 - (1),

Every engineer officer holding a certificate who is serving at sea or intends to return to sea after a period ashore shall, in order to continue to qualify for sea going service in the rank appropriate to his certificate, be required at regular intervals not exceeding five years to satisfy the Administration as to.....,

the IMT encourages teachers to join modern ships again for a one-and-a-half year contract term so as to catch up with advanced knowledge as practised in the maritime industry. It is meant for the benefit of Myanmar marine students. For the record, three teachers have already done this programme by going to sea again.

Finally the IMT magazine is issued annually to the public. It is intended for the people in the Union of Myanmar to observe the present trends and advanced

technology in the shipping industry and to acknowledge IMO's activities in maritime safety and marine environment protection across the world.

2.3. Student profile

One of the missions of the IMT is to give regimental discipline to residential training cadets and ratings during their pre-sea training period at the IMT with priority to abide orders and to perform duties. Therefore, when it is required, they might be enabling to dispose themselves in the Merchant Navy, the fourth arm of defence for the mother-land.

The day-to-day training programme for residential students and day scholars is as follow. The morning classes start at 09:00 sharply for all the students. Each class takes 50 minutes followed by a 10 minute break. The lecture periods are timed by a school bell. Lunch break is between 11:50 and 13:00. The afternoon classes start again at 13:00 and end for the day at 15:50. Number of residential cadets and ratings are about 120 and day scholars about 500. So, the annual ceremony of the graduating training cadets is most prestigious.

2.4. The course profile

The available courses being conducted presently at the IMT are illustrated in Figure.2.2. All courses are well constructed with proper curriculum prepared by the Heads of Nautical and Engineering faculties, with reference to the IMO guides and approval by the Principal. The curriculum for each course are drawn up with relevant subjects in chapter-wise relating to required periods of lectures, practical, tutorials, and excursions. Then the Principal puts forward a proposal to the Minister for a new course with covering letter which usually contains the aim and objective, entry standard of a student, duration of course, number of students per course, number of courses per year, course fee, process of examination and certification, and finally the

feasibility to the IMT standard and faculty. When the Minister is clear and satisfied the new course is approved to commence at the IMT.

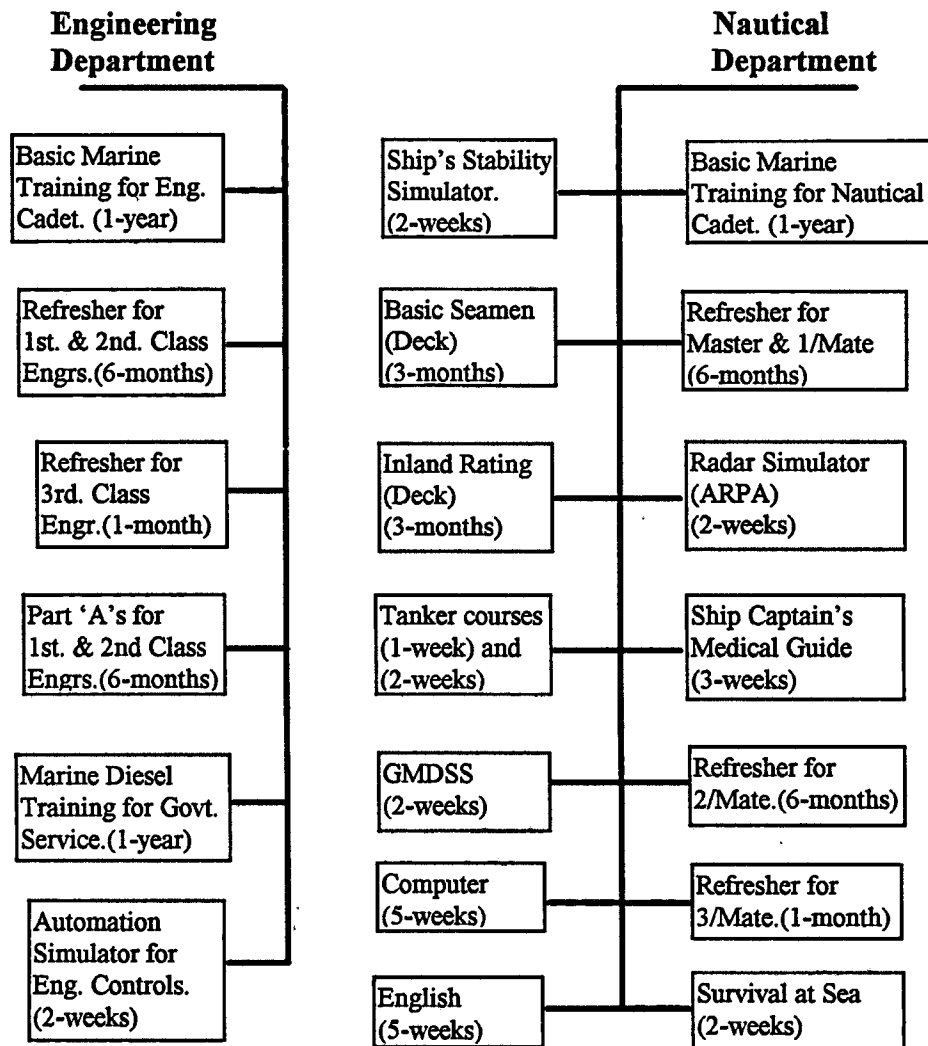


Figure.2.2. Course Profile Conducting at the IMT

A part of the course curriculum prepared in table.2.1. is an example of a model course namely Survival at Sea. It is a full time course. The duration of the course is 2 weeks. One period takes 50 minutes and six periods are provided each day. The subject contents are Fire fighting, Personal survival and life saving, and First aid and medical care.

Table 2.1. Part of Selected Course Curriculum

S.N.	Subject/ chapter	Periods (each carries 50 minutes)				
		Lect- ure.	Prac- tical	Tuto- rial	Excu- rsion	Total
	<u>Fire fighting.</u>					
1.	The three elements of fire and explosion	½				
2.	Ignition sources.	½				
3.	Flammable materials.	½				
4.	Fire hazard and spread of fire.	½				
5.	Reactivity.	1				
6.	Classification of fire and applicable extinguishing agents.	2	1			
7.	Main causes of fire on board ship.	1		1	3	24
8.	Fire detection.	1				
9.	Fire fighting equipment.	2	1			
10.	Construction and arrangements on board ship.	1				
11.	Ship fire fighting organisation.	1				
12.	Practical knowledge of resuscitation methods.	1	2			
13.	Fire fighting methods.	1	2			
14.	Fire fighting agents	1				
	<u>Personal survival and life-saving.</u>					
1.					
2.					

2.5. Basic marine training cadet courses

The nautical and engineering cadet courses are the IMT's main mission to meet the nation's interest in the sense of future nautical and engineering officers for the Myanmar marine industry. The yearly intake for engineering training course is 20 chosen by competition in an entry examination which is done with written and oral tests. These students, having passed the basic education at matriculation and not older than 18 years of age on 31st. December in that calendar year, are required to pass the standard medical tests as well. Women are not accepted.

The programme for the marine engineering cadet training is a sandwich type course. The curriculum is drawn requiring basic knowledge to cover the syllabus of MOT 2nd class part "A" and part "B" examinations. The optional subjects are English, Survival at sea, Familiarisation with Computers, Onboard watch keeping duties, Preventive measures for the marine environment, Engine room automation and controls, and Principles of management. The three periods in the weekly lecture programme are for theory and practical training on Workshop Technology conducted in the IMT training workshop.

During one year pre-sea training at the IMT, training cadets take several excursions to relevant places, namely general cargo wharves, container wharf, ocean going ships, oil refinery plant, engineering university, shipyards, electricity supply station, steel mill, and so on. (One coastal voyage (10 days for a round trip) of sea training on the passenger ship of Myanmar Five Star Line is one of the training programs for them.)

Training

As shown in Figure.2.3., the seagoing ship engineer training and certification programme is being conducted according to the MET system in the Union of Myanmar. For a comparison, Figure.2.4. shows the training and certification programme for a seagoing ship engineer officer as a minimum requirement of the STCW 1978 Convention.

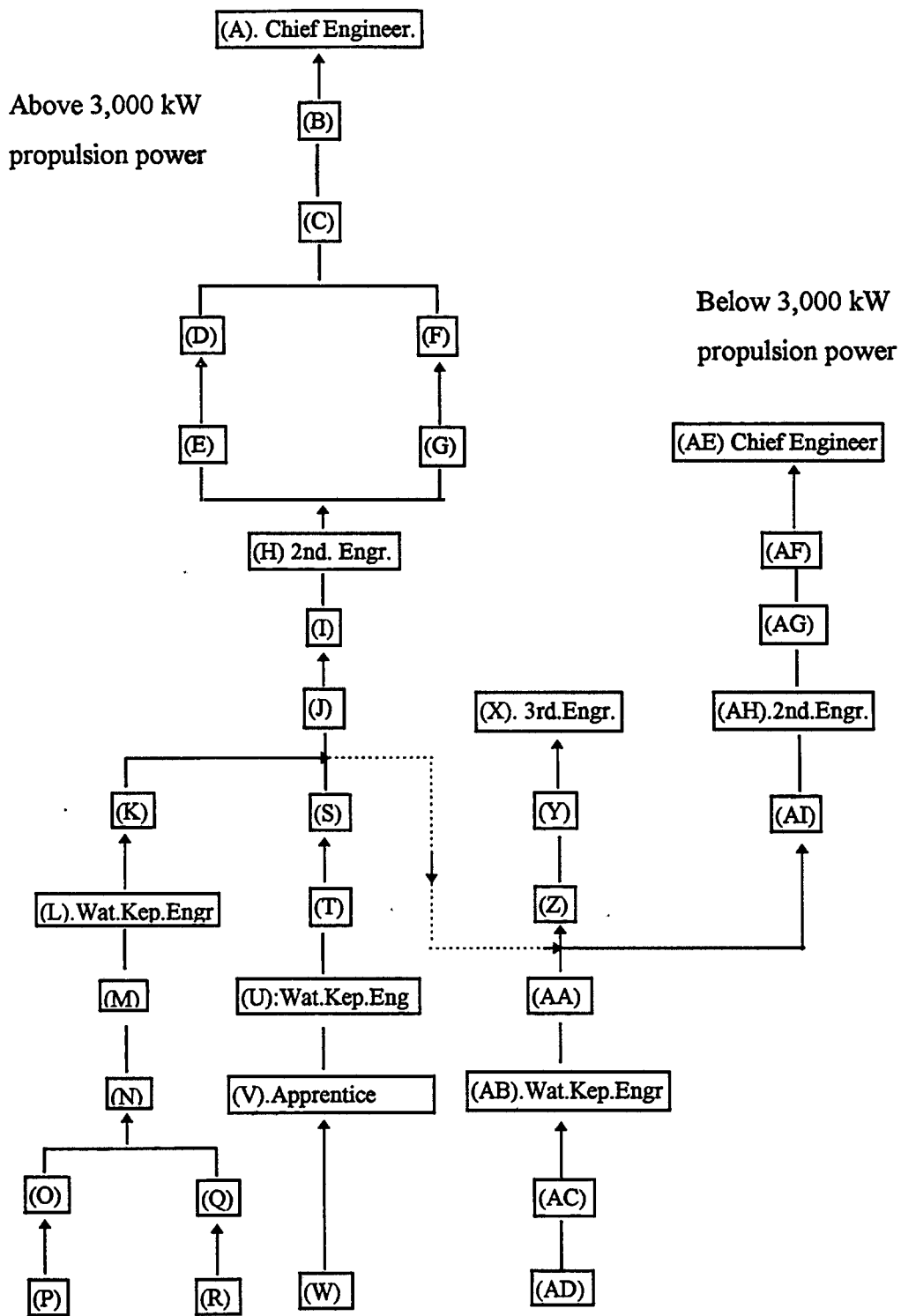


Figure.2.3. Myanmar Seagoing Engineer training and Certification Programme

Where:

- (A). Chief Engineer of ship with 3,000 kW and above engine.
- (B). MOT 1st. Class part "B" examination.
- (C). 6 months Refresher course for Chief Engineer examination.
- (D). Not less than 18 months approved seagoing service as engineer (Only for those who can manage to pass MOT 1st. Class part "A" examination within 6 months just after passing MOT 2nd. Class part "B" examination.
- (E). MOT 1st. Class part "A" examination.
- (F). MOT 1st. Class part "A" examination.
- (G). Not less than 21 months approved seagoing service as engineer.
- (H). Second engineer of ship with 3,000 kW and above engine. Every Second engineer may serve as Chief engineer of ship with below 3,000 kW engine provided that the Administration (DMA) will assess to appropriate seagoing service as an engineer in a position of responsibility.
- (I). MOT 2nd. Class part "B" examination.
- (J). 6 months Refresher course for Second Engineer examination.
- (K). Not less than 18 months approved seagoing service as assistant Engineer or engineer of entire watch keeper.
- (L). Watch keeping engineer of ship with 3,000 kW and above engine.
- (M). Two weeks Survival at sea course as mandatory requirement.
- (N). Orals examination for Watch keeping engineer.
- (O). Assessment for only Marine Drawing subject in MOT 2nd. Class part "A" examination.
- (P). University graduates, (B.E.) with two years shipyard service, during which, relevant shop services shall be completed as required by DMA.
- (Q). MOT 2nd. Class part "A" examination.
- (R). Candidate must complete four years shipyard service as apprentice engineer and during which, relevant shop services shall be completed as required by the DMA.

- (S). MOT 2nd. Class part "A" examination is exempted for the IMT training cadets when 18 months of approved seagoing services as assistant engineer are completed.
- (T). Not less than 18 months approved seagoing service as assistant engineer or engineer of entire watch.
- (U). Watch keeping engineer of ships with 3,000 kW and above engine.
- (V). Apprentice engineer (on-the-job training) for 18 months onboard as forming part of an engine room watch.
- (W). The IMT engineering training cadets must complete one Academic year in the IMT and another two years in relevant shipyards, during which required shop services recommended by the DMA must be covered. (6 months Sea-remission granted as the cadets have attended weekly class of workshop training in IMT).
- (X). Third Engineer of ships with 3,000 kW and above engine.
- (Y). MOT 3rd. Class examination.
- (Z). One month Refresher course for Third Engineer examination.
- (AA). Not less than 24 months approved seagoing service as assistant engineer or engineer of entire watch keeper.
- (AB). Watch keeping engineer of ship with 3,000 kW and above engine.
- (AC). Orals examination for Watch keeping engineer.
- (AD). Onboard ratings forming part of an engine room watch for three years approved seagoing service.
- (AE). Chief Engineer of ship with below 3,000 kW engine.
- (AF). MOT home-trade Chief Engineer examination.
- (AG). Not less than 24 months approved seagoing service as engineer.
- (AH). Second Engineer of ship with below 3,000 kW engine.
- (AI). MOT home-trade Second Engineer examination.

For the ships with 3,000 kW and above propulsion power

For the ships between 750 kW and 3,000 kW propulsion power

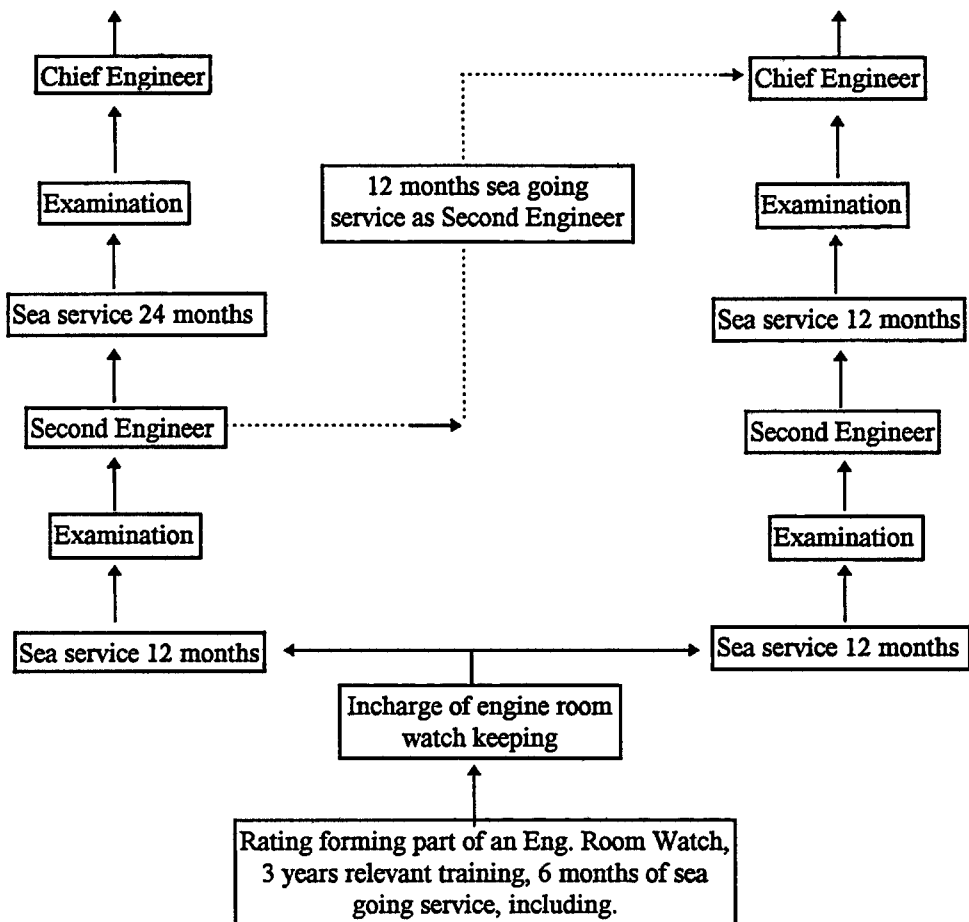


Figure.2.4. Seagoing Ship Engineer Officer Training and Certification System Required by STCW 1978 Convention.

Source: STCW 1978 Convention.

2.6. Infrastructure of the IMT.

The IMT has three departments namely Nautical, Engineering and Administration. The strength of the staff is organised with 42 members according to Figure.2.5. The staff set-up is drawn up since 1972 to run the MET institution for national and international needs. The new staff set-up is a preparation now the institution of Degree courses in the very near future.

The key person, training and faculty officer is kept under the direct control of the Principal. The Principal is one of the hard working personnel of the IMT instead of playing ceremonial roles all the time.

The Heads of Nautical and Engineering departments plan and manage the permanent and regular courses to commence at the proper target dates, reconstruct the syllabuses where required to meet IMO's resolutions, prepare the weekly time-tables for the appropriate classes and teachers, and arrange the tests and examinations, accordingly.

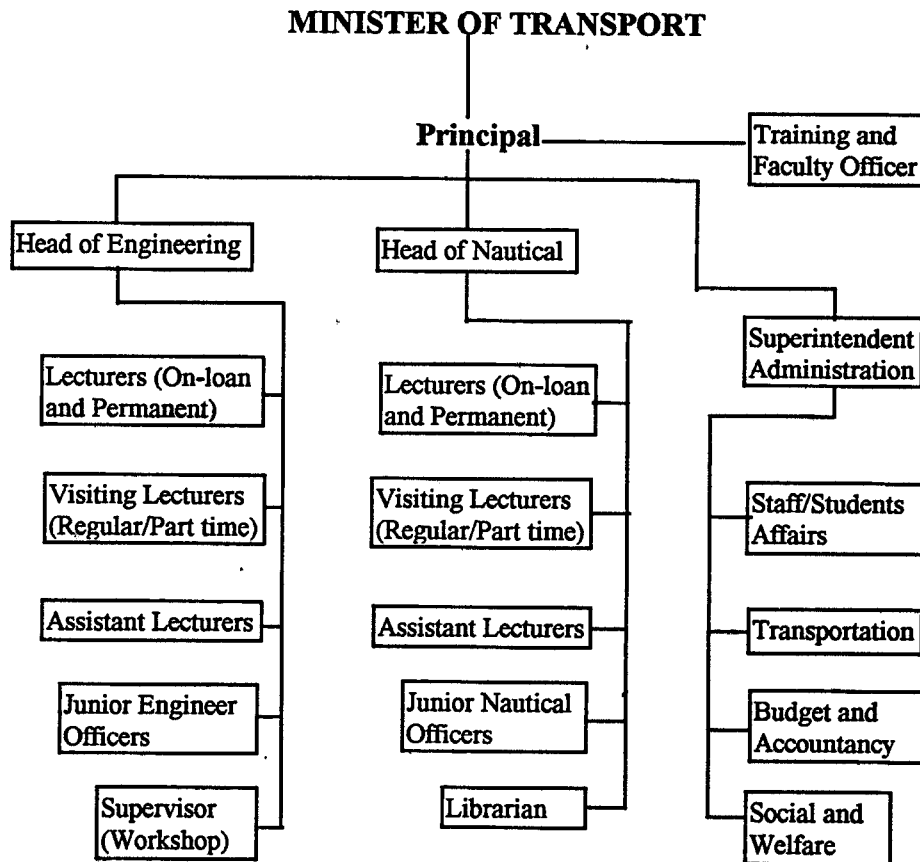


Figure.2.5. Infrastructure of Institute of Marine Technology.

The department heads give lectures to appropriate classes as well as maintaining contact with the students. They cannot avoid the decision-making for termination of a student from his course wherever the student does not fit or enable to follow the course lectures. Thus they know the students and, if required, may refer to individual's examination results and/or reports of colleague lecturers when making a decision.

In each Nautical and Engineering department, there are 2 permanent lecturers and 4 on-loan lecturers, the latter are masters or chief engineers from the Myanmar Five Star Line (MFSL) and government officials.

One electronic lecturer is kept under the Nautical department. There are 2 assistant lecturers and 3 junior officers in each Nautical and Engineering department. Not less than 10 regular, visiting and part time lecturers attend weekly the IMT in the line of duty from the Health Ministry, Communications Ministry, Education Ministry, Ship Classification Societies, Meteorology Department, Fire Brigade Department, MFSL (claims and insurance department), DMA and Shipyards for the appropriate courses on the due requests of the Principal. The remaining 23 staff are from Administrative department for taking care of resident students, day scholars and welfare/security of the institute.

2.7. Teaching practice at the IMT

English is the medium for conducting courses but Myanmar (mother tongue) may be used wherever a wide and/or further explanation is required. So the oral-lectures are conducted in both English and Myanmar but there is no way of Myanmar for replacing the terminology used in lectures. The writing tasks, tutorials, exercises and assignments are only allowed to be practised in English. This is a strict rule following the principle laid down in the IMT.

Referring the STCW 1978 Convention, Appendix to Regulation III/2,

"The syllabus given below is compiled for examination of candidates for certification as chief engineer or second engineer officer of ships powered by main propulsion machinery of 3,000 kW propulsive power or more".

Therefore some courses are prepared with combined classes. As an example, the refresher courses of chief engineer and second engineer students are arranged into one classroom for the professional subjects. Added to the above Appendix is:

"Bearing in mind that a second engineer officer shall be in a position to assume the responsibilities of a chief engineer officer at any time, examination in these subjects shall be designed to test the candidate's ability to assimilate all available information that affects the safe operation of the ship's machinery".

IMT teachers need to take the initiative in lecturing to combined class so as not to lose some of the students' attention due to their different potential.

As a matter of fact, the examination questions for the two different classes: Chief engineer and Second engineer students, should not be the same. In the classroom all the students are supposed to attempt the same question with individual knowledge based upon their different abilities. Generally, a success achievement of a student, for his examination, depends 50% upon the learning media used and the teachers' support. The other 50% is the individual's effort by himself. Here, IMT's teachers maintain their role with their hidden curriculum in teaching practice, individually.

2.8. Course Evaluation at the IMT

The evaluation of training courses is one important requirement of the MET system for the benefit of the students and also to meet the international standards as required. In practice, there are so many courses being conducted at the same time by the institute's Authorities. As they are personally involved in teaching practice with many training courses they have no chance to pay particular attention to any one of the courses for evaluation.

To evaluate the MET courses, it is required to review first current applications of the maritime industry. It will be the best way for necessary steps to be taken. Nowadays, onboard machinery and equipment are sophisticated but constructed with long lasting units without needing any particular maintenance. The operations and control systems comprise of easy to handle methods according to the new concept of the maritime industry where if one of the system units is malfunctioning the stand-by unit takes over automatically in place of the damaged one. And the damaged one can also be easily rectified with the onboard spare and kept as a stand-by unit again. The ship control systems are found to be more automatic (self operating) than traditional means (manual operating). But, the manual control systems are still provided onboard as an alternative means required by the Classification Societies.

The use of automatic control system is the advantage of development in industrialised maritime communities. Nevertheless, as a disadvantage, many old seafarers are loosing their traditional pride and duty to relay their professional experiences and knowledge to next generations. Even, when old sea-leaving officers try to become the teachers in their professional institutes they are requested not to overact more than necessary. Unfortunately, the young seafarers do not want to occupy themselves in doing heavy work at sea and also studying the principles of the machines. The full impact of modern applications in maritime industry causes great changes to the MET system in developed countries by means of adoption of the new syllabus, new learning media, new training schemes, and new learning concepts. These are acceptable for the new generations.

1. The first approach to course evaluation

Course evaluation in the IMT has to be done now as it will never be done later. So the IMT is re-examining the nature of courses, individually, as a preliminary step. There are two main groups. One is meant for international needs such as IMO

courses and Basic Marine Training (cadet) courses. The other courses are for national needs such as Inland Rating course and Marine Diesel Training course.

2. The second approach to course evaluation

When the training syllabuses for international needs were reviewed, every course at IMT was constructed under two main headings: principles and operations. A student was taught essentially the principle first to receive a full knowledge of the subject matters then the operation to the appropriate applications with a proper maintenance and preventive measures against damage. Therefore, the safety, nature of duties, alternative means to keep on running the system until the malfunctioning unit was properly rectified to be in good order again and engineering sense were conducted during the course. The training promoted the skills and experiences to a student's benefit in his future.

3. The third approach to course evaluation

The curriculum of individual courses of the international needs is modified one after the other (the course contents are still the same as required by the IMO). The classroom lectures and exercises are reduced to a certain extent and homework assignments are increased to a few more with short question and answer type. The film and video shows are introduced more in place of oral-lectures. As a follow-up system a brief discussion is added to ensure that every student is capable to absorb the learning materials and increase their observation in the professional field.

Some classroom lectures are switched to onboard ship practical demonstration. Here, the Myanmar Five Star Line provides three coastal cargo-passenger ships for domestic use. These ships are constructed with bridge automation and controlled engine room machinery and equipment. Therefore, with permission, the teacher and students are occasionally allowed to run the engine and conduct the lectures on the subject matter.

A few oral tests are created to practise for familiarisation of the new concept in place of a written tutorial test in the classroom lectures. The questions are prepared with simple words and led to the key areas. Every question is meant to have an easy and quick response by the students either as individuals or in groups.

As a result, the paperwork is highly loaded upon the students and the teachers. Practically, it is hard to correct every student's paper. The teachers are supposed to note down what kind of answers or statements are wrong. Then the teachers have to retell suitable answers in the classroom for an evaluation.

4. The final approach to course evaluation

The examination results of the appropriate courses are compared to the previous traditional system. The increased scoring marks is found appreciably in the IMT examinations but there is no different number of passed candidates in the Board Examinations. Sometimes, the IMT receives some complaints concerning the student's poor ability. This means that the course evaluation in teaching practice alone is not effective to meet the competency standards of the maritime Administration. The examination system should change to match with the learning programmes as well. It is fair to suggest that in the future, seafaring engineers are not required to exercise the heavy duties of maintenance upon the ship's machinery then they may only need to learn how to do routine maintenance of appropriate machinery units which are essential to keep them at optimum performance.

} For
recommender

In conclusion, once a month, the Principal calls for a general meeting with all the teachers and some staff from the administration department concerning the evaluation of all the conducting courses at IMT. The learning programmes of the individual courses are reviewed to the benefit and convenience of the teachers, the students, and the institute itself. Then the necessary action is produced in short interval to promote the course evaluation within the favour of the IMT's faculties.

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Chapter 3

The Examination and Certification Systems in the Union of Myanmar

3.1. The role of Department of Marine Administration (DMA)

DMA's role during the British colonial period was to administer the marine affairs according to international practice. It was a centralised system operating from the Head office in Yangon and distributing the Administrative functions to regional offices in the relevant towns.

Now, under the Ministry of Transport, DMA produces the basis of marine policy and legislation for the safety of ships and the environment according to "The Burma Merchant Shipping Act". This Act is the secondary law or code of the Government of the Union of Myanmar that defines the duties of the Administration. DMA also advises the Government, from time to time, regarding new legal issues which should be adopted and implemented in the national legislation and regulations of the Union of Myanmar.

"The Burma Merchant Shipping Act" is a transformation of the India Act XXI, 1923, namely "Merchant Shipping Acts: 1894-1932". Actually, it was the British "Merchant Shipping Act, 1894". After independence in 1948 the examination and certification for Myanmar mariners was one of the DMA's functions stipulated in "The Burma Merchant Shipping Act".

Up to 1968, DMA's role regarding examination and certification is visible only in the Inland and Home-trade. During that time, the British conducted examination and certification for second class part "A" for seagoing ships engineers at the British Embassy in Yangon. If Myanmar seafarers wanted to attempt the British examinations in other levels, they could go to examination centres in Britain, Singapore and India. However, DMA managed to promote the Myanmar competency examination and certification system for seagoing ships engineers in early 1968. It started with second class part "A" level.

Meanwhile, the Notification No. 166/1968 for the second class engineers and the Notification No. 173/1970 for the first class engineers appeared in "The Burma Merchant Shipping Act" by promulgation with the necessary amendments. Actually, those Notifications are syllabuses, examination and certification systems.

On the 4th. May, 1988 the Myanmar Government deposited the instrument of accession for the STCW 1978 Convention, and the convention entered into force on 4th. August, 1988. As a result, the MET system was changed to a certain extent for seafarers in areas such as training programmes, training courses, training curriculum, learning media for appropriate courses, the conduct of examinations, and certification procedure to meet the requirements of IMO. Some courses are regulated mandatory in order to upgrade the proficiency in the sense of training, examination and certification as required onboard in line with the international practice of the present shipping industry.

3.2. New examination system

In 1992, a National Seminar on the MET system was held at the IMT and new national legislation appeared as a result with well constructed amendments to modify the examination and certification systems in the country. The new examination system was introduced by the "Examination board" which is made up of Government

Officials related to the marine field. The chief examiner amongst board members is from the DMA whose responsibility is to conduct proper performances accordingly. The rest of the members are from Myanmar Five Star Line, Myanmar Shipyard and IMT. The Officials in the Examination Board are not permanent so as to be dedicated examiners and their number also vary depending upon the capacity of the candidates.

DMA delegates examinations for some short training courses and updating courses to the IMT. These courses are required for conducting at maritime institutes to increase proficiency and up-to-date knowledge for seafarers as required by the IMO. The curriculum of the said courses are revised individually by the Examination Board in order to evaluate training programmes and provide facilities where those may be needed. The certification (endorsement) is followed later by the DMA as a statutory measure to meet international practice as required for the time being.

3.2.1. Eligibility of candidates for appropriate examinations

Under "The Merchant Shipping Act" there is an application form for checking a candidate's eligibility to enable him attempt the appropriate examination. This form is made up of the following:

- | | |
|---------------------------------------|-------------------------------------|
| (a). Class of examination intended to | (i). Recognisable mark on body |
| (b). Examination centre | (j). C.D.C. No./ N.R.C. No. |
| (c). Examination date | (k). Training / service period |
| (d). Receipt for examination fee | (l). Previous certificate / license |
| (e). Name | (m). Home-address & telephone No. |
| (f). Father's name | (N). Company / department of |
| (g). Nationality | last service / training |
| (h). Date of birth/ place | |

The application shall include two photos, signature, and necessary testimonials. (C.D.C. No. means personal number registered at the Seaman Employment and Control Department and N.R.C. No. means the National Registration Card number). All examinations related to the international shipping industry, from Chief Engineer to engine room ratings, are held at the examination centre in Yangon.

3.2.2. Conception of Myanmar MET for examination.

In every general education system, examinations are used to meet the criteria of a policy. Moreover an examination can prove the difference between required training inputs and learning opportunities for the trainees' benefit. Many examinations can improve classroom pedagogy and indicate where the additional teaching and learning are necessary in some areas. However, the main objective of the MET examination is to analyse fulfil the standard requirements in quality assurance.

Nowadays many new ships are constructed with fully automated and computerised programming controlled mechanisms instead of traditional manually control systems. Nonetheless, as an alternative means, there are still localised manual controls installed at individual machinery onboard to be operated in parallel when they may be required. This is when there is any unexpected trouble at sea and automatic controlled mechanisms are not functioning any longer, on account of their limitation, the people who may find one way or the other to keep the ship moving can use these manually controlled devices.

The Myanmar MET system believes in the capacity of human resources. Every seafarer should keep in mind that the advanced controlled mechanisms are necessary provisions for the convenience of shipboard personnel into the nature of works and duty performed with limited crew numbers. The reliability on the safety of the ship and themselves is the ability and conduct of individuals professionally. So, onboard

seafarers, as a matter of fact, must be aware of the basic principles and operations with alternative means for the ship and the machinery.

However the IMT has tried to advance its students to a reputable standard in qualitative measures so that they will survive onboard ships at sea. Therefore it is essential to train Myanmar seafarers to their utmost potential as to keep them abreast of developments on modern ships like other nationals. The marine examination is set at a certain standard to determine a candidate's skill at his professional level and that is to memorise, comprehend, familiarise, and interpret texts with his own perspective in knowledge and experience during the training courses.

The examination standard can be seen as a yard-stick or a suitable tool to dig out the professional requirements from a candidate whoever prepares his ability and conduct to challenge the modern shipping industry against his fortune. The examination questions are compiled with the problems of onboard machinery. Once a candidate can manage to solve the problems safely in front of an examiner and meeting the appropriate standard then his competency is achieved.

3.2.3. Classes and exercising of examination for international practice

1. Types of questions & examination systems for chief and second engineers

The examinations for chief and second engineers are conducted four times in a calendar year: in the third week of January, April, July, and October. Any candidate who has been recommended by the IMT for completion of a relevant refresher course can apply to sit for his appropriate examination at any time when he is ready.

The preparation of questions for the examination system in the Myanmar MET (engineering) is very similar to the British marine engineer examination system since it was established. Because the system itself is found suitable to Myanmar mariners' practice. The following are the subjects in each competency examination.

Second class part "A", (Academic subjects)

- (a). Applied Mechanics
- (b). Heat and Heat Engines
- (c). Mathematics
- (d). Engineering Drawing

Note: Assessment is done in written only. The question papers for (a), (b), and (c) are prepared for 3 hours and (d) for 6 hours.

Second class part "B", (Professional subjects)

- (a). Engineering Knowledge ;(i). Motor, and (ii). General
- (b). (i). Electro-technology, and (ii). Naval Architecture

Note: Assessment is done in both written and oral. Total 4 question papers and each is prepared for 3 hours.

First class part "A", (Academic subjects)

- (a). Applied Mechanics
- (b). Heat and Heat Engines
- (c). Advanced Mathematics

Note: Assessment is done in written only. The question papers (a) and (b) are prepared for 3 hours and (c) for 2 hours.

First class part "B", (Professional subjects)

- (a). Engineering Knowledge : (i). Motor, and (ii). General
- (b). (i). Electro-technology, and (ii). Naval Architecture

Note: Assessment is done in both written and oral. Total 4 question papers and each is prepared for 3 hours.

Concerning the written and oral examinations in the part "B" class, both are taken, as common practice, to any candidate every time he appears for his examination. Since 1992 there has been a change in the system that the written and oral tests are separated into independent issues and once a candidate manages to pass either written

or oral he has passed forever at that appropriate level. As it is a professional education examination the pass mark is defined at 50% in each subject.

The examination results are designed to have three levels: Passed, Failed and Compartmentalised (Compart). A candidate is considered Passed when he can manage to pass the tests in all subjects, Failed when he cannot manage to pass in the required subjects, and Compart., when he can only manage to pass the respective half of the subjects. To the next examination, the failed candidate has to attempt all the subjects but the Compart. candidates re-sit on the subjects failed in the previous examination.

2. Type of questions and examination system for third engineer

The third class engineer examination is conducted four times in a calendar year: at every first week of the January, April, July, and October. The examination consists of written and oral tests. During the training period, the professional subjects are conducted highlighting the requirements in safety, operation, maintenance, and watchkeeping including environment protection and management.

Each question paper has 80 questions, 20 in each subject-heading of Safety, Operation, Maintenance, and Watchkeeping. There is no special requirement for the number of questions to attempt by the candidates. On the other hand candidates are free to answer as much as they can within one hour. Because the type of questions is objective form (multiple-choice format) and the pass mark is 50% in each subject.

The oral examination is always taken after the result of written examination has been declared. The candidates who have passed in written examinations are eligible to sit for the oral examination. If the candidate fails in the oral examination he has to re-sit it again at any time to his convenience because his Passed result in written is recorded for ever.

3. Examination system for Watch keeping engineers and others

The Department of Marine Administration (DMA) promulgates necessary regulations for Watchkeeping engineering examination and certification required to meet the present international shipping practice.

The new concept of safer shipping requires fellow engineers to take appropriate examinations and certificates before they join a ship. This includes junior engineers, whether they are going to work with routine day work or assist senior watchkeeper, they need to hold required certificates. In the Union of Myanmar, the training for junior engineers is provided by means of engineering training cadets at the IMT and apprentice engineers at the relevant shipyards in accordance to the requirements of the marine engineering training programmes stated in Notification No. 166/1968 and amendments related to it in 1992.

The Myanmar MET system is encouraging to seafarers with post-experienced and sandwich training programmes. The procedures to introduce the required examinations and certifications of watchkeeping are regulated by formal exercises provided by the DMA in the form of oral examination to junior engineers and electricians. Examinations for welders, apprentice engineers and efficient engineroom hand (ratings) are conducted to produce the necessary certifications therefore fulfilling the present requirements of shipowners and the STCW 1978 Convention.

4. Classes of examination for Home-trade and Inland engineers

The trainings for the home-trade engineers, inland engineers, and engine drivers (mechanics) are not yet properly established with the institution programmes. These people are needed for the national interest. In the meantime, they are having their training on their professional proficiency by means of on-the-job training principles.

For competency examination and certification purposes, the syllabuses for the home-trade engineer are designed with more professional subjects than academic to meet the task-oriented skills. The home-trade engineer examinations are conducted twice in a calendar year: March and September, at the DMA head office in Yangon.

The syllabuses for the inland engineers and engine drivers are written in the Myanmar language covering subjects which confirm an understanding of operations and maintenance aspects in the areas of day-to-day duties and safety including fire and accident hazards.

3.3. Classes of certifications in the Union of Myanmar

To conclude, the functions of the Administration in the areas of marine engineering examination and certification, the following 15 certificates are issued to Myanmar mariners after passing the appropriate examinations.

1. Certificate of competency as First Class Engineer,
2. Certificate of competency as Second Class Engineer,
3. Certificate of competency as Engineer (Home-trade),
4. Third Class Engineer Certificate,
5. Certificate of engine room watchkeeping for Engineer,
6. Certificate for Electrical Officer,
7. Certificate for Electrician mate,
8. Certificate for Fitter,
9. Certificate for Engine Cadet,
10. Certificate of engine room watchkeeping for engine room rating,
11. Certificate of competency as efficient engine room rating,
12. Certificate for welder,
13. Certificate of competency as Engineer (inland ship),
14. First Class engine driver certificate,
15. Second Class engine driver certificate.

3.4. Comparison of Myanmar MET system to the international practice.

1. Chinese system

Referring N. Wei (1989), Dalian Maritime University, established in 1953, is the first maritime education institution in the People's Republic of China. It is owned by the government and the MET programme is designed with a 4 years Bachelor Degree course for both future seafaring officers and related shore-based personnel. The MET system in China is a Front-ended type and the students who are majoring in the marine engineering programme need to go Pre-sea training for 1 month in the second academic year and 7 months in the final academic year.

After completing 4 successive years of academic and practical training, either on shipboard or in factories in accordance to their courses chosen during the training period, the students have to submit thesis required for graduation. Then the students receive degree and seafarer certificate after they have passed all maritime examinations. The examinations are conducted under the supervision of the Bureau of Harbour Superintendent which stands for the Competent Administration to stipulate the maritime education and training and examinations for the whole country.

Each graduated seafarer receives the first class diploma of higher learning and the watchkeeping engineer certificate for unlimited capacity ships. For future prospect, they have to take required sea-service for 12 months. They are then eligible to apply for the second assistant engineer certificate of competency at the Seafarer's Examination and Certification Administration of technical appraisal department. This department checks the ability and conduct of the applicant to determine the issuing of appropriate certificate of competency.

After having the second assistant certificate, another 18 months of sea service is required to sit for the first assistant engineer examination. If a candidate manages to pass the said examination in written and practical tests he is certified the first assistant

engineer certificate of competency. For the chief engineer certificate, he has to take another 27 months of sea-service and appropriate examination, accordingly.

There are many government MET institutions at all levels, namely Universities, Academies, and professional middle school. The MET in China is encouraging the post-experience programme, too. So an engine room rating may become a chief engineer of the unlimited capacity ships in due course.

If an engineering seafarer has graduated from the Academy he needs to take sea-service for 12 months and apply for the third assistant engineer certificate and watchkeeping engineer certificate at the technical appraisal department. Then another 12 months of sea-service are required for his second assistant engineer certificate. If an engineering seafarer has graduated from the Professional middle school he needs to take sea-service for 12 months to sit for the third assistant engineer certificate and watchkeeping engineer certificate. Once he manages to pass the examination then he has to follow the same programme like others to become a Chief Engineer.

If an engine room rating has completed approved duty performance at sea for 36 months he is eligible to sit for the third assistant engineer certificate and watchkeeping engineer certificate. The basic MET system of an engine room rating to become a chief engineer meets the minimum requirement of the STCW 1978 Convention.

2. French system

Referring G. Zade (1988), the MET programme is constructed as a Dual-purpose professional course so that the students are able to work onboard as a master as well as a chief engineer with the highest and unlimited certificate of competency. He stated that

“It tried to blend the two apparently mismatching personalities of nautical and marine engineering officers in to one type of shipboard officer. The French overcame that possible discrepancy by requiring a Baccalaureat C (Mathematics) for entrance into an ENMM (the national schools for the merchant marine:- Ecoles Nationales de la Marine Merchande, EsNsMM), hereby attraction technical-minded persons to studies. It was the basic strength of the ‘officer polyvalent’ system of the MET that candidates already possessed a well-developed scholastic ability when entering an ENMM”.

The Dual-purpose training programme was introduced at the ENMM in Le Harve in 1967, as a sort of solitary adventure. As the system gives considerable benefit to today’s modern ships with advanced controlled equipment and reduced crews, some other countries have started to follow the Dual-purpose training programme.

The trainees are chosen by entrance examination from those who have completed their 12 years general education with Baccalaureat C. The training programme starts with 2 years preparatory training in an ENMM and pre-sea training follows for 4 months on the training ship (later, the training ship programme is switched to commercial seagoing ships to save expenses). The trainees have to study in an ENMM for 1 year more. At the end of the course the examination is conducted of Diploma level before the students join the ships as training cadets to serve Sea-time again for 10 months.

Once the required Sea-time of cadetship is completed each trainee is issued with the certificate of competency as Dual-purpose watchkeeping officer according to individual conduct onboard. After this, each officer needs to fulfil the Sea-time for 10 months of which at least 3 months is spent on deck and in engine room. Then they have to register at an ENMM again for a 1 year study course. At end of the course the examination is conducted for the Diploma of higher merchant marine studies.

Then they join the ships again with appropriate positions onboard for 36 months Sea-time of which at least 16 months is spent each on deck and in engine room. Finally, a Dual-purpose certificate of competency is awarded as master. The total time required for the training programme is 9 years but if time for practical is counted, it is 12 years.

The examinations conducted during the whole course are held under the supervision of the Inspection General of MET in Paris which is the Ministry taking responsibilities for the merchant marine. Every examinations in the system are in written, orals, and practical type assessments. The appropriate certificates of competency are issued by the Marine Administration in due time in accordance with individual performance.

The second level of Dual-purpose certificate of competency training is also conducted with a different programme for the trainees who have only completed their 10 years general education. The training must attempt entrance examination first. This level of certificate is meant for ships equipped with a main propulsive machinery of less than 7500 kW.

The third level of monovalent certificate course is conducted for students who are lacking in their general education but have an appreciable knowledge and practical experience onboard. This level of certificate is meant for the coastal ship master and chief engineer.

3. Malaysian system

With reference to Lau Seng Chuan (1989), since 1972, the MET programme is established in Malaysia at the National Institute of Polytechnic Ungku Omar (PUO). The marine engineering programme is a Diploma course and is conducted under the marine engineering department of the PUO. The course itself is a sandwich programme course and takes 4 years. The training starts with a preparatory course for 2 years at the PUO then pre-sea training follows for 1 year. It is essential to gain the required sea experience and to upgrade the trainees with professional knowledge. Then the trainees need to attend the higher courses for another 1 year. At the end of the training programme the trainees graduate and are certified for watchkeeping duty onboard ships by the Marine Department.

In 1983, another MET institute, Malaysian Maritime Academy (ALAM) began conducting the second class engineer certificate preparatory course. The first class engineering certificate preparatory course commenced the following year. ALAM was located at the institute which was established in 1976 as a training centre for ship ratings and upgraded in 1981 to the status of an Academy. The MET engineering institution of the ALAM caters for the marine engineers being engaged in a post-experience training programme. The appropriate preparatory courses are regularly conducted 3 times per calendar year and each course takes 14 weeks. On the completion of preparatory course candidates may apply to sit for examinations, conducted by Marine Department, for the certification up to unlimited capacity ship.

The regulatory requirements of approved Sea-time for different levels in engineering, issued by the Marine Department are 9 months of watchkeeping duty for the third engineer certificate of competency examination, 21 months for the second engineer , and 21 months after holding the second engineer certificate of competency for the chief engineer.

4. Philippines system

Referring H.P.P.Estaniel Jr.(1992) and A.P.Tagle (1990), the Philippine Merchant Marine Academy (PMMA) was the new name adopted in 1963. The original name is Escuela Nautica de Manila and was established in 1820 by virtue of a Spanish Royal Decree. It is owned by the government and cares for Filipino citizens. The Academy is a semi-military training centre of the Philippines.

The MET engineering programme commences with a 1-year preparatory course in PMMA and Pre-sea training follows for 1 year on board ships where the required training is accomplished by the onboard chief engineer and engineer officers. Then the trainees attend higher academic courses for another 2 years. After completion in 4 years, the midshipman is awarded the following, (a). Bachelor of Science in Marine Transportation, major in Marine Engineering Degree, issued by the PMMA, (b). Fourth Marine Engineer license issued by the Professional Regulation Commission (PRC) and (c). Commission in the corps of Officers of the Armed Forces of the Philippines (Philippine Navy) Reserve Force.

Once a graduated student is certified with the watchkeeping engineer onboard merchant ships (unlimited capacity), he has to serve a minimum of 1 year Sea-time for his third class competency examination. Then another 2 years Sea-time is required to enable him for the second class engineer certificate. After obtaining a second class certificate of competency, he needs to take another 2 years of sea-service for the first class examination. All the sea-time required at appropriate levels are determined by the PRC which is the only Administrative body to conduct all the examinations and certifications in the Philippines.

Since 1992 the PMMA has established a tertiary institution with introducing extension programme to offer Master Degrees for merchant marine officers of ships and shore based positions.

Chapter 4

Distance Education Programme for Myanmar MET System

4.1. Background history of the distance education system

In 1840, distance education system started in England in the sense of delivering the learning materials to students by post according to Holmberg. B (1960). In 1856, a language teaching programme through correspondence by post commenced between teachers and students in Germany according to Delling. R (1979). In the early 19th century, many countries started practising distance education and training programmes on various subjects through a nation-wide network using post-offices and published address systems according to Keegan. D (1990).

During those times, distance education was accepted as a system to present morality for a group of people who could obtain some didactic media without the necessity of attending regular classroom as traditionally practised. In distance education, individual students were responsible for their own education. The students who were committed to this type of education (distance/learning) were found to be at all levels with different types of qualifications and were working adults. The role of distance teaching was also not an academic concept but rather like an assisting programme supplying students with relevant materials of their profession hence distance learning materials were prepared ranging from basic to updating information. The students could engage in any distance learning programmes which were suitable to their own

lives and working conditions. The teachers prepared learning materials to cultivate, fertilise, and develop the students' soul with more interaction using self-esteem principles.

In 1913, Keegan. D (1990: page 143) mentioned that Thomas A. Edison forecast the general education system with referring cinematography where sound could not accompany the cinema film.

“The motion picture is the great educator of the poor people. It incites their imagination by bringing the whole world before their eye. It sets spectators thinking and raises their standard of living. Books will soon be obsolete in the public schools. Scholars will be instructed through the eye. It is possible to teach every branch of human knowledge with the motion picture. Our school system will be completely changed inside of 10 years”.

In old days, distance education programmes were undertaken with no institutes, no fixed date to start/end, no limitation of student numbers for a course, and no assessment at all. But there were various goals for learners therefore they needed for all possible kinds of support. Most of learning materials were prepared in an experimental way designed to increase the learners' knowledge, skills, and experience by self-assessment. So a continuous response was required to help the students' needs.

In 1955, Keegan. D (1990) stated that Open University in the UK had started to offer nation-wide courses for those adult learners who had completed their basic education and were unable to continue further education in classrooms of a university. The Open University system was designed independently to the traditional university and provided integrated educational media at the degree standard. The education programme was designed with self-esteem principles for adult learners. Most of the learning materials were prepared by older experienced teachers to evaluate the

accredited programme towards a university degree. So the learning materials comprised experimental learning credits, community sources, and subject matters related to the appropriate work.

The Open University was also not acceptable as an academic concept but it was widely used without research and educational theory. In order to achieve evaluation of the Open University system some universities had modified education and training programmes with innovative measures by means of revising learning materials, introducing two way communications, and adding face-to-face lecturing classes.

Meanwhile, advanced technology invaded across the World to promote living-standards of people with industrialised products. The open university system was not an exception to ignore the impact of advanced technology. With the help of new communication and sophisticated printing systems it improved its education programmes into a new style of instructional media with more theoretical presentation. However, it was noticeable that the Open University system still maintained its reputable issues by means of preparing learning materials easy and short to the point for the benefit of adult learners. Finally, in 1971, the open university institution established a new programme for adult learners providing education and training at a distance from the traditional university, called the "Distance education system".

Although institutionalized distance education had existed for about 100 years, it was only during the last few years that the practice of distance teaching had commenced to relay on theory. Keegan, D (1990: page 40) stated also that

"Distance education shatters this interpersonal communication and replaces it with some form of mechanical or electronic communication: print, telephone, teleconference, audio, video, broadcasting, and computer".

Delling, R.M (1966) [Keegan, D (1990: page 40)] had already mentioned the kind of communications referred by Keegan that

“This element is called ‘signal-carrier’ because of the diversity of procedure involved, careful formulation is needed for the role of the technological media in a definition of distance education”.

4.2. Role of the distance education system

4.2.1. What is distance education ?

The distance education system is a new version of an existing education system designed for those who are studying at a distance away from any institute. As the name implies so it can be confused with the terms of correspondence study, home study, external study, independent study, teaching at a distance, off-campus study, and last but not least open learning. A distance education system is being observed to be comprised of teachers, students and the provisions of educational media without any regular fixed attendance. Nowadays, in spite of many methods of communications are available through technological media in place of face-to-face oral-lectures, few group meetings are still necessary at a convenient place for specified intervals.

Although distance education was now known to be different it was actually derived from the open education system. But it is necessary to distinguish itself from the so many institutional education systems available. Escotet, M. (1980) [Keegan, D (1990 page 23)] states as follow.

“Open education is particularly characterised by the removal of restrictions, exclusions and privileges; by the accreditation of the students’ previous experiences; by the flexibility of the management of the time variable; and by substantial changes in the traditional relationship between professors and students”.

It is obvious that the Open education system belongs more in the hands of the students than the teachers. The timeframing for an appropriate course is so open that the students may be slack in their studies and some may think of themselves going along with a “who cares” style. The learning media have been prepared in different ways to be suitable for different students. But, looking on the bright side, the Open education system helps in making students smart and alert in saving time to achieve their goals.

In 1979, Keegan. D (1990: page 21), the UNESCO studied distance education.

“Education constructed through the postal services, radio, television, telephone or newspaper, without face-to-face contact between teacher and learner. Teaching is done by specially prepared material transmitted to individuals or learning groups. Learners’ progress is monitored through written or taped exercises, sent to the teacher, who corrects them and returns them to learners with criticism and advice”.

As a matter of duty, the UNESCO produced the above definition purposefully. So, once any institute establishes distance education institution it is required to achieve the training programmes to meet the requirements of the UNESCO which are recognised as international standards.

Rawson-Jones, K. (1974) [Keegan, D (1990: page 32)] shows the Figure. 4.1. and states a distance education system that it is similar to the study made by UNESCO.

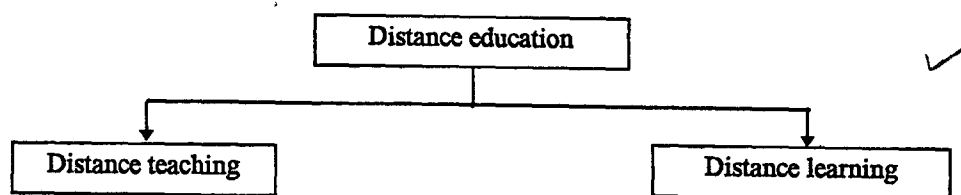


Figure. 4.1. Relationship of Distance Teaching and Distance Learning

Source: Sewart. D, Keegan. D, Holmberg. B (1988)

Wedemeyer, C. (1981) constructed Figure. 4.2 and Figure. 4.3 and defined the perfect network of an education system in all respects as follows.

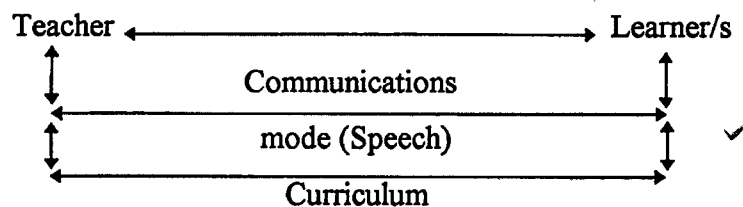


Figure. 4.2. The Classroom as a Teaching-Learning Situation

Source: Adopted Keegan (ed). 1976. Keegan, D. (1990: page 58)

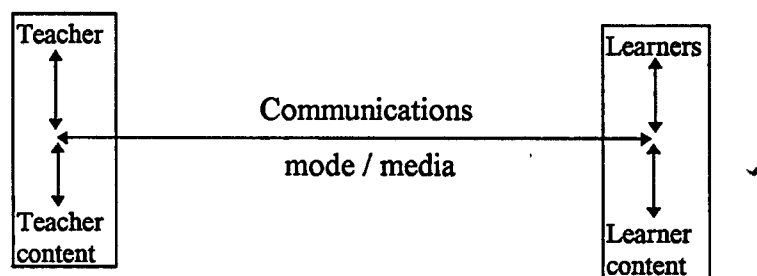


Figure. 4.3. A Teaching-Learning Situation to accommodate Physical Distance

Source: Adopted Keegan (ed). 1976 . Keegan, D (1990: page 59)

“Only the illusion of being effectively face-to-face remains, as distance within the box lengthens between teacher and learners and speech is amplified for ever more distant reception. The concept of ‘distance’ involves more than physical distance. There is social distance, cultural distance, and what I have been calling ‘physical’ distance for want of a better term”.

Moore, M. (1973) [Keegan, D (1990: page 37)] pays more attention to the teacher’s side for the evaluation of the distance education system. Because distance teaching is an instructional method in another kind of teaching style with facilitating print, electronic, mechanical, or other devices.

Peters, O. (1973: page 206) [Keegan, D (1990: page 37)] stated that

“Distance teaching/education (Fernunterricht) is a method of imparting knowledge, skill and attitudes which is rationalised by the application of division of labour and organisational principles as well as by the extensive use of technical media, especially for the purpose of reproducing high quality teaching material which makes it possible to instruct great numbers of students at the same time wherever they live”.

The definition of distance education given by Peters is based upon technical development in domestic use around people, especially in developed countries. He explains distance education as an industrialisation of the education process where a distance teaching organisation as an industrialised production of goods, and the mail order firm as an institutional structure.

Gough, E. (1981) [Keegan, D (1990: page 43)] paid more attention to the students' side for their convenience and self assessment principles of the distance education system. Because the students will have learning experiences through the use of instructional materials to access to educational resources at any time, place, and circumstances of learning.

4.2.2. Features of distance education system

The Distance education system can be found as a systematic organisation of an institute. The system itself is designed for mass operation in the sense of nation-wide interest. It has no permanent classroom, no lecture rooms, no library, no cafeterias, no playgrounds, and no recreation facilities. But there is one building institute which is practically used as a post office.

Referring Keegan, D (1990: page 125) distance education system is categorised as follows:

Group.1. It is a model for correspondence schools,

Group.2. It is a model for distance teaching university or a multi-level structure,

Group.3. It is a model for distance education in higher education institutions,

Group.4. It is a model for central institution which provides a permanent team of experts to introduce the institutional design and realization in the sense of carefully planning for controlling the education system,

Group.5. It is a model for existing institutions: school, college, or university where distance education system is adopted by the modification of institution structure to use the faculty full-time for both on-campus and off-campus students.

The distance education system is occasionally required to provide face-to-face lecturing between teachers and students like group meetings. Then a central place or a common classroom is essential. The learning media known as multi-media study package (including visits to study centres, watching television programmes, listening to radio programmes, studying course materials, and doing assignments) becomes the main determinant of distance education system in assessing the standard of students.

There are three main components in a distance education system connected together like a closed chain, namely learning media, distance teaching, and distance learning. The learning materials are prepared as standard issues by groups of teachers according to the contents of laid-up curriculum. It is known as the working groups. Each group consists of a module co-ordinator, a consultant writer, inspectors, supervisors, a strategic advisor, and editorial supporter. The co-ordinators meet regularly to share the ideas and information of their respective modules and to produce the decision-making to the process. They are solely responsible for producing the required learning materials according to the pedagogical structures and

instructional design. When the learning materials exist the institute starts distribution to students spread throughout the nation, sometimes, overseas.

Distance teaching is a process of the course development system through which it can be executed. So another group of teachers or tutors are required to use the learning materials and evaluate the students' learning during the term of respective course. These teachers, usually accompanied by the office staff, organise required face-to-face meeting, arrange appropriate examinations, mark the answer-papers, prepare the results, and award the degree.

Distance learning is a process from the student's perspective. The students need to learn with self-esteem practice at most of the times. }

4.3. Advantages and disadvantages of distance education.

4.3.1. Advantages

Nowadays, distance education system is found in many national education systems because of its needs and developed non-traditional methods for the people who can not attend the traditional universities.

{ Many traditional universities have problems with the ever increasing students and insufficient facilities. The distance education university is necessary to run in parallel in sharing the studentload. It will be an alternative means of education system for easier administration of the university and the convenience of the students. As a result, many traditional university students switch their study into distance education university. When the distance education university students and the adult learners engage in the same course at same time with same basic qualification, all the students should be referred to as distance learners.

Now, the university facilities can be used by the on-campus and off-campus students. If teachers have to teach the same lectures to new faces they will enjoy more in refreshing on their teaching references.

For the nation's overall benefit, the government can not provide buildings for schools, colleges, and universities near every workplaces of every communes. Therefore the distance education system can help their needs. The distance learners will also have privilege because age is not a deciding factor for enrolment, the nature of work in which a student is engaged in for the mean time and anyplace or anytime from which a student likes to start.

Media

In some developed countries, the distance education institution uses the educational telephone network and computer network, e.g. Internet, to achieve the necessary responses from both sides (teaching and learning or group discussion), this is known as two-way communication or dialogue programme. But when the radio is used for lecturing the structured learning materials, there is no chance to response the needs of the individual, this is known as the linear programmed instruction test. The linear programmed instruction test can deliver learning materials through means of communications such as television programmes, videos, newspapers, magazines, and broadcasting to learners: on-campus, off-campus, and the nation-wide as well.

Referring Sewart.D, Keegan.D, and Holmberg. B (1988), there are four kinds of media used in distance education system.

(a). Programme constructed with no dialogue and no structure: It consists of independent reading materials, this study programmes is known as "self-directed" learning.

(b). Programme constructed with no dialogue but with structured lectures: In this programme didactic lectures are conducted through radio or television.

(c). Programme constructed with dialogue and structured lectures: This programme is specially prepared for a particular group of correspondence students.

(d). Programme constructed with dialogue but no structured lectures: It is only meant for students these need a tutorial studies.

The learning materials

Referring Sewart.D, Keegan.D, and Holmberg.B (1988) the learning materials in the distance education system are usually prepared in two types: Subject matter and Advice/Support. Subject matters are purely explanations to embrace the academic contents so that the students can learn new information or knowledge concerned for his study. The advice and support include exercises for practice so that a thorough understanding and experience can be achieved and obtained in the appropriate areas.

So the students can improve study daily by doing the exercises properly. They will also possess self-discipline and self-motivation in order to keep on studying to their success as a result of this approach. Most of learning materials are formative design. Therefore the on-campus students are happy to go along with the distance learning materials so that they can do the materials in their private time as tutorials. Compared to their classroom lectures these materials are more text-oriented presentations.

Generally there is no limitation on the number of students in a course. Students also view it as a chance to receive learning materials and necessary supports in line with the needs of every student. Group discussion is also a kind of learning arrangement which can benefit distance learners by upgrading themselves in reading, listening, discussing to relevant academic areas that requires to further development on structures and logic.

The distance education system emerges as an appreciable project of new education systems for proper institutional purposes in most countries. Because students

assignments through out the course are kept as a crucial part of the system enabling to monitor progress based upon regular feed-backs. The application of guide-providing programmes with correspondences to individual student is an effective undertaking for evaluation, improvement of the course itself, and promoting the distance learners.

There are different abilities for distance learners in the same course. Some are remarkably clever (known as high fliers) and they can manoeuvre their study without bothering weak learners (known as low-fliers). But the low- fliers can pace their study by taking extra time and develop themselves later by using this learning process.

Finally some printed learning materials can be prepared with assignments leaving white space for learners to write in, boxes to choose required answers, incomplete diagrams to continue for finished drawings or figures, blank tables to fill in as required and so on. Once a student has completed the relevant assignment the learning materials will belong to him as for his achievement. This is the beauty of distance education system because the individual can get his enjoyment in his study while he may be left alone at some far end of the world.

4.3.2. Disadvantages

Generally, people think that distance education system is ^{no} cheap. Actually there is a complex range of factors to be considered through out the courses and the expenses are not cheaper than they have thought it would be. If the course, itself, has been tried and it is cheap, as a result, the quality of provisions will effect distance learners.

The distance education system, in some cases, is an industrialised institution. The process is based upon the technologically-produced interaction between the teacher and the students. Many distance learners rely on the communication media. So the academic concept is more of materialism than logical issues. The quality of technology becomes an influential determinant in the production of distance learning.

Referring Thorpe.M and Grugeon.D (1980) there is usually about 30 % drop-out of distance learners during the courses. The followings are the reasons:

- (1). The entry qualification of a learner is not stringently sound.
- (2). The requirements of regular attendance at the study centre, group discussion, face-to-face learning at weekend, or residential programmes are not feasible to go along with some learners.
- (3). Some provisions used for specific learning media are noticeably expensive.
- (4). Few learners have trouble and needed encouragement with an innovative learning media in some areas of the course. Sometimes they can not survive any longer.
- (5). When some sections of learning materials are required to take tutorial practising often and some learners do not obtain such an opportunity on their own accounts.
- (6). Some distance education courses are designed with a considerate timeframing and some learners can not cope to fit in.
- (7). Some distance learners have switched to another course owing to circumstances.
- (8). The nature of a distance learner is incompatible to distance education system.

The distance education system has an advantage of enabling to spread the same kind of learning materials all over the nation but these may not be the needs of some learners living in different provinces and different communes. Therefore the distance teaching centre has to concentrate and collate the actual needs of the learners living in different geographical locations at occasional intervals. It will be a complicated part of the function of distance education system but it is the only way to evaluate the learning provisions required to keep quality standard high for the nation's interest.

The learning materials are prepared with intertwined presentations, one is meant for assessment and the other for a student's own and independent response. If a learner is not capable to fulfil the requirements of distance education system he may not attain his destination at the end of the term. That is why the distance education system is named self-assessment of progress programme.

The distance learners have to study with self-esteem principles. Whenever some learning materials on new subjects are delivered to them the distance learners are excited, curious and apprehensive. Naturally, they are told that they do not need to learn all the things printed in the packages but they only have to follow to achieve required course objectives. Then some of distance learners feel that their study is inadequate or they are fed up with their studies because of loneliness. Especially when learning materials are getting harder and harder and the assignments tougher and tougher, they are discouraged doing their exercises. When the examination is closer they are feeling more isolated. They will always have some doubts on their acquired knowledge. They start to think what other people will say if they cannot manage to achieve their success. Some are trying to turn against their original aims of studying in the course.

The distance education system therefore, has to provide a residential face-to-face tutorial programme for a certain length of time preferably just ahead of the examination. In this case, the tutors encourage the distance learners with precious advice about the examination. They are always trying to build up the distance learners' confidence with their experiences. There are no long lectures conducted during the seminars but the questions on the course structured strategies and examination technique, sharing the ideas of the course contents and the process on how to solve the problems in the conduct of an examination. Finally the counsellor brush away their worries about the examination by saying that it is a common issue for students all over the world.

4.4. Distance education system in the Union of Myanmar

4.4.1. Education systems and Myanmar with the past

Before the British invaded Myanmar, the country was a Kingdom. The king was very keen on his people to be educated for the development of the country. The education at that time were religiously, culturally, geographically and ethnically subjects, so basically they were about natural and human resources.

The conducting courses for education purposes always took place at the monasteries. The classes were made up of young and old people throughout the country. Originally teachers were monks and the subjects taught were religion and arts than science. The students, therefore were accordingly more effected to mental adult life than physical.

The colonial government started its education system very late on their own account to the young generation of Myanmar to adapt them to the colonial administration. After two decades, the minority of young educated group who utilised the colonial government's education system could not go along with their knowledge among mature majority of the Myanmar because of the religion and culture.

Regarding university education, the learning materials in the university were limited knowledge as it is regulated by the colonial government. Few Myanmar students, those who were allowed to study at university level in England on their own finance had graduated already and had been working at the National schools. The Myanmar University administration was kept under the India (Calcutta) University. When the time came many of the university students asked for an evaluation of the curriculum of the university. The colonial government did not agree to change the syllabuses. Consequently, some of the university students started a minor strike in the university campus. Later many of the Myanmar students across the country started demonstration leading to the fight for independence of the mother land.

After independence, there are so many ways of education systems discovered in order to keep abreast of international education practice. It is fair to say that the education system depends upon the administrative policy of the government. Actually, the government policy again depends upon the economics of the country and the country peoples' appreciation of their government which depends upon the individual's wealth. It is a common barrier faced by every developing country government to overcome with its strategic decision on the administrative policy. The education system is laid up by the government as one supporting arm to successful achievements in the country. Then there are modifications to the education system whenever the policy of the government is likely to change.

4.4.2. Education systems and Myanmar at the present

The structure of education system in the Union of Myanmar is in two: Basic education and Higher education. The University institution is kept under the administration of Higher education. Basic education administration runs for high school, middle school, primary school and vocational training programmes.

1. Basic Education System

The profile of the Basic education system can be observed in Table. 4.1.

Table . 4.1. Basic Education Statistics by Level in 1993.

<u>Sr. No.</u>	<u>Particulars</u>	<u>High</u>	<u>Middle</u>	<u>Primary</u>
1.	Schools	856	2054	35657
2.	Teachers	16510	53473	154759
3.	Students	319274	1109330	5919339

Source: Statistical Yearbook - 1993, Myanmar

The high school institution is meant for students who are planning to continue to university education in the future and have to achieve the 9th. and 10th. Standard. It is a platform to enter the university education system but there is a limited number of student places at each relevant universities. Therefore after graduation from high school it is a turning point for many students on their futures. Some high school graduates, those who are not able to choose professional institutes because of comparatively low scores, turn to vocational training schools to continue study in an interesting profession. The vocational schools can be observed in Table. 4.2. The students' interest choosing the appropriate institutes varies according to present economic policies of the government.

Table.4.2. Education Statistics for Technical, Agricultural and Vocational Programmes under the Basic Education Sector in 1993.

<u>S.N.</u>	<u>Particulars</u>	<u>Students Appeared in 1991</u>	<u>S.A. in 1992</u>	<u>S.A. in 1993</u>
1.	Govt. Tech. Institutes	1562	-	1955
2.	Agricultural Institutes	179	-	76
3.	Technical Schools:			
	(a).Govt. Tech. High schools	1260	-	1819
	(b).Agricultural high schools	163	-	254
	(c).Commercial schools	52	721	547
	(d).Computer operator course	-	222	170
	(e).Engg. Tech.evening classes	-	216	212
	(f).Handicraft schools	460	906	1638
	(g).Weaving schools	369	318	143
	(h).Fishery schools	82	186	111
	(I).Others (Domestic science, general repair and in-service)	3551	3513	<u>7950</u>
				14875

Source: Statistical yearbook - 1993, Myanmar

The profile of annual attempts by high school students to pass the matriculation can be observed in Table. 4.3. The examination results are not impressive to the teachers but the education programme in the basic education system is designed to promote the individual student's achievement to a required standard.

Table. 4.3. Examination Results of 10th. Standard in 1992 and 1993.

<u>S.N.</u>	<u>Particulars</u>	<u>Appeared in 10th. standard Exam.</u>	<u>Passed (A-list) (Matriculation)</u>	<u>Passed (B-list)</u>
1.(a).	Arts. (1992)	65236	6441	2357
(b).	Science (")	<u>118577</u>	<u>25162</u>	<u>3770</u>
		<u>183813</u>	<u>31603</u>	<u>6127</u>
2.(a).	Arts. (1993)	73419	16142	5376
(b).	Science (")	<u>87797</u>	<u>38614</u>	<u>5969</u>
		<u>161216</u>	<u>54756</u>	<u>11345</u>

Source: Statistical yearbook - 1993, Myanmar

2. Higher Education System

Students who only manage to pass on the "B-list" have to attempt the next year's examination in order to continue their university education. As a matter of fact, the government should welcome all matriculated students by preparing well furnished university institutes. However universities can only provide a very limited number of places for the students. Entrants to the professional institutes are also arranged giving priority to higher marks. The number of professional institutes and available student places can be observed in the followings, Tables. 4.4.

Table.4.4. Teaching/Research Staff and Students at Professional Institutes in 1993.

<u>S.N.</u>	<u>Professional Institutes</u>	<u>Teaching/research Staff</u>	<u>Fresh Students</u>	<u>Total Students</u>
1.	Medicine I	265	436	1499
2.	Medicine II	146	303	820
3.	Medicine Mandalay	145	347	855
4.	Dental Medicine	48	116	326
5.	Technology	299	1051	5066
6.	Economics	197	1235	4593
7.	Education	149	785	1477
8.	Agriculture	114	295	1101
9.	Forestry	54	42	259
10.	Animal Husbandry & Veterinary Science	38	135	759
11.	Computer Science	21	56	519
			<u>4801</u>	

Source: Statistical yearbook- 1993, Myanmar

4.4.3. Establishment of distance education

According to the statistical yearbook-1993, Myanmar, the relevant institutes of higher education system had provided about 35,000 student places. However the students who passed matriculation in the 1992 academic year was about 32,000. With reference to table 4.5, number of students enrolled at the distance education university alone was 53389 in the 1993 academic year. And distance learning students with major in Science were comparatively less than the Arts. On the other hand, Arts major is more independent to university education without having regular attendance for practical exercises where these are part of course credits in Science major.

Table. 4.5. Distance Education University Students in 1993 Enrolment and Available Under Graduated courses for 5 Successive Years.

<u>Sr. No.</u>	<u>Particulars</u>	<u>First year enrolled students</u>
1.	Arts	42493
2.	Science	8659
3.	Law	1243
4.	Economics	994
		53389

Source: Statistical yearbook- 1993, Myanmar.

Here the number of distance education students in the 1993 academic year was noticeably greater than the students passing matriculation in 1992 as previously stated. Due to the political crisis in the Union of Myanmar in 1988, the university, as a consequence, stopped for a certain period. When the universities opened again the entrants were given places according to the year of seniority in the matriculation examination. Some students, those who passed the matriculation in late years, in spite of waiting their turn, enrol into distance education institute.

Since the conventional education system is not equipped to cater for an ever increasing size of student population the government has to find ways to fulfil the requirement for proper education suitably within its maximum efforts. Here distance education system exists for the Myanmar to adapt to university institution. So, it was established in 1979 in the sense of correspondence courses.

During the time of preparation for correspondence courses, the government Authority might give a speech to working-group officials with the main concept for off-campus institution as follows. It is an alternative measure taken for the university education to be a supplementary programme as required for the country right now. The new

programme shall be an industrialised enterprise for institution like other countries do. So, the management skill is essential to keep producing the appreciable teaching materials for quality assurance.

Accordingly, before the correspondence courses start the working-group officials may need to dispose themselves for daily occupations with lead time, dead lines, printed runs, job schedules, type-faces, warehousing and later delivery and dispatch. In the process of distance education system, the cost of production and delivery of the learning materials will be considerably high for the Ministry of Education but it is creditworthy for the nation's benefit in the future.

The Ministry of Education had established its radio broadcasting education programmes to the secondary education students: 8th., 9th. and 10th. Standards, throughout the country since so many years ago. Also, many students were relying on the newspaper issued on every Sunday with the special supplement (extra-sheet), neatly prepared with the advanced learning materials in subject-wise for learning. The future planning of introducing the television programme would also be the use of learning media to correspond with students.

As a result, the television programme in the Union of Myanmar was established in 1980 and corresponding lectures were conducted on the Television Education Programmes in every day early in the evening. The correspondence courses conducted to the Myanmar through out the country could achieve a remarkable success and the institution was promoted to a University (Distance Education University) on 15th. June. 1993.

For keeping a proper education system, the government has established post-graduated courses as well as Table 4.6 which shows the annual teacher training students. The staff set up for teaching and research is organised with 72 members in

the distance education university to cater for undergraduate and post-graduate courses.

Table 4.6. Teacher Training, Post Graduated Course, with Distance Education.

S.N	Particulars	Year.	First year (Dist.Eductn)			Second year (Dist.Eductn)		
			Enrolled.	Appeared	Passed	Enrolled	Appeared	Passed
1.	Education	1991	440	419	271	805	758	569
2.	Education	1992	499	433	288	458	416	327
3.	Education	1993	499	436	355	361	344	273

Source: Statistical yearbook-1993, Myanmar

The student drop-out at annual records can be observed in Table 4.7. The system of distance learning programme is, sometimes, hard to fit for new students and drop-out in first year is comparatively larger than other years. Referring the drop-out in final year, it is appreciably less which means that the students have gained learning experiences through the use of instructional materials

Table 4.7. Student Drop-out at Respective Levels of Distance Institution in 1993.

S.N	Particulars	Enrolled Students	Appeared for Exam	Drop out %
1.	1st. year students	53389	48236	9.65
2.	2nd. year students	19227	18094	5.89
3.	3rd. year students	10399	9812	5.64
4.	4th. year students	30012	29574	1.46
5.	5th. year students	20605	20463	0.69

Source: Statistical yearbook-1993, Myanmar

4.5. Distance learning programmes for the Myanmar marine engineers

Some MET institutes, around the world, have already established maritime distance education programmes by conducting appropriate courses to update individual's knowledge and skill of seafarers during their stay onboard. The distance learning system is constructed with instructional methods for on-the-job training programme. The IMT has a strategy for the future progression of Myanmar seafarers. Now, it has to reproduce a new strategy for the MET system with a distance education programmes parallel to the conventional institution as a supplementary measure. The revised STCW 1978 Convention is also insisting for onboard practical training conducted by the Captain and the Chief Engineer for the proficiency of fellow seafarers, working under their supervision and to familiarise an onboard advanced machinery and equipment.

The IMT has sole responsibility for carrying out distance learning programmes for onboard Myanmar seafarers. The process of maritime distance education will be no more different than on-shore distance education system. The introduction of maritime distance education programmes will be helpful to onboard personnel in achieving successful management of each individual's duty and the nature of their work.

4.5.1. Profile of maritime distance learning materials

The IMT will produce learning materials which are easy-to-understand for each respective level onboard personnel, apprentice engineers in shipyards, and inland engineers and engine drivers. There may be difficulties in preparing learning materials suitable and applicable for onboard machinery and controlled equipment. This is because these machines are made from different manufacturers with different functions of their own on different ships. But the wise working-group of experienced teachers can manage the required print-out to be useful learning materials concentrating to the "principle concept" of individual machinery. Some print-out will be provided with blanks for filling up the actual "operational procedures" of relevant

compression and spark ignition system". As a teaching practice, all learning materials will be prepared in theoretical aspects using the mother tongue, Myanmar, though the English pronunciation in engineering terminology will be spelt with the Myanmar letters.

The print-out will be full rich of photographic pictures. And the sentence constructions for the explanation are easy-to-understand for a lay man. The Myanmar are "by-heart" type in studying their education but, on the contrary they are not "Blind faith" people. Referring to Guinness (1985: page 23), the tradition of Myanmar in learning education can be observed.

"Bhandanta Vicitsara recited 16,000 pages of Buddhist canonical texts in Rangoon, Burma, in May 1974. Rare instances of eidetic memory, the ability to reproduce and thus 'visually' recall material are known to Science".

The main reason of preparation with two types of learning materials is that the IMT will cater for other people who are not only from marine fields but also in the Automobile industry. Many of the contents in both types are identical except a few differences according to the nature of working principles. So, there may be a few extra work for the working-group to do in different courses in the main core of engineering fundamentals. Because the distance education system needs a greater number of customers to keep the cost of the course as reasonably low as possible. It is depended upon the attraction of distance learners and new market areas for distributing the learning materials by introducing new courses as well.

4.5.2. Profile of maritime distance learners

Old seamen always say that they join the ship to see places which are beyond the seas and to survive themselves challenging the cruel sea. Nowadays, travelling across the deep blue seas is no more an endeavour of a modern seafarer because new ships are constructed strong enough to avoid accidents and there are tourism trades if

somebody wants to see elsewhere in the world. The nature of work onboard is modified to be easy to handle and more likely to be the same as shore-based industry work. Days at sea are somewhat less, too. Consequently, there are only a few seafarers found drunk in a sea port but many learned and decent ship personnel will be seen having fun and enjoying themselves at the usual social public places. It means that seafarers are no more a kind of different people and they are ambitious and alert gentlemen.

The distance learning programme of basic engineering for the apprentice engineers is expected to achieve great success because many of them are matriculated students and some have passed middle school of general education. The age of an apprentice engineer is to be not less than 16 years old according to the factory law. Their main objective for joining shipyard training is to serve onboard a ship at the end of their course. As a procedure, the eligible junior engineers, those who have applied their service in shipping companies owned by foreigners, are required to sit for orals/interviews in front of the company representatives at the selection time. Then maritime distance learning programme will provide a lot of help to younger generations in the maritime field for their ability in quality assurance.

The IMT will set up independent programmes for inland engineers and engine drivers of primitive boats steaming on the rivers and along the coastal areas of the country. The process of distance learning programmes will be totally different to the above two programmes. Because, many of the distance learners, in this course, left primary school years ago. They have different background: age, basic education, culture, tradition, habit and even interests and aims. But they are essential for the nation. So they should be good and qualified engineers/mechanics/engine drivers as well. Their appropriate certificates, issued by the Department of Marine Administration, will have to be appreciated by all the people of Myanmar with their ability and conduct in performing their duties well.

4.5.3. Profile of IMT's distance learning programmes.

The IMT will expand the MET system for seagoing engineers with the distance learning programmes as an integrated institution. It will be sensible to install expensive up-to-date teaching facilities in the institute apart from the equipment recommended by the IMO. Then the IMT needs to achieve a strong link between distance learners and the institute.

Public interest can be obtained by conducting inland engineers and engine drivers courses. Because the face-to-face meeting classes are essential during the courses to promote the students' study in all respects by reuniting the students and the teachers at regular intervals.

Concerning the seminars, the teachers/counsellors need to anticipate the kind of questions raised by the distance learners and to demonstrate the technological changes which they are familiar with at their work places. It will promote the awareness of their studies and they can gain appreciable knowledge as well. At end of the time, it is preferable that every explanation is concluded by referring to the working principles of the subject matter so as to widen the students' observation in the engineering sense.

After the seminar, the teacher will lead his class to the public library of that community. He will explain to them that the books are additional facilities and learning packs for day-to-day use in their work. The distance learners must know the nature of the course that is constructed with a certain breadth and flexibility, combined with balanced academic and practical teaching. So the students need to create artistic thoughts, invention, and self expression to achieve clear understanding from the lectures. The library can also be used as a support for learning practice. Finally, in order to promote the students' attraction and reliance upon the distance learning programme, the teacher needs to promise that each and every student

deserves to be offered better jobs owing to the hard time experienced during the course. The employers are happy to use both the knowledge and skills of an employee who can manage to complete his training and development while in the workplace.

Concerning the assessment of the distance learning programme, this will be done when every unit of the course is completed by the student. Here, the courses are constructed to provide regular feedback to and from the learners on their progress and to build up credits for appropriate examination held by the DMA. The main methods of assessment by the institute are upon the course work, written examination papers, learner's presentations and project work. So, the DMA can proceed the examination and certification referring to the achievement of the candidate at the maritime distance learning programme.

In conclusion, the future of maritime distance institution in the Union of Myanmar will surely be a supporting arm to ensure the standards of IMO and today's shipping industry in the area of qualified ship's personnel.

Chapter 5

A Comparison with Selected MET with Distance Learning Programme

5.1. Distance learning programme in Australia

5.1.1. Australian Maritime College (AMC)

Referring P. Muirhead (1995), since 1960 maritime education and training institutions started for the people in Australian maritime industries. Then, under the Maritime College Act 1978, the AMC was established as an autonomous corporate institute with initial investment for college buildings and facilities of over \$ 90 millions. Consequently, the first undergraduate courses for maritime and fisheries administrations were introduced at the AMC in 1980.

The AMC offers courses leading to awards of certificates, diplomas, degrees and postgraduate courses as well as about 80 non-award short courses and certificate of competency preparation courses. These courses are conducted all the year round in respective schedules.

The AMC conducts so many distance learning courses and one of the courses is the Marine Engineer Cadet Training course which leads to the award of Bachelor of Applied Science (Marine Engineering). The course itself is carried out with onboard training included as an integral measure of its Front-ended training programme. The onboard training starts after 2 years preparatory academic training in the college.

So cadets are required to join the ship twice at intervals. This is known as a sea-phase training programme. This starts before they begin the 3rd. and 4th. academic year. Therefore the limited period of sea-phase training programme is essential to cadets for skill based assessments. Accordingly the AMC provides students with necessary learning materials to study while onboard ships through distance learning as they are away from the AMC.

Every cadets, before they join a ship, receives three kinds of books namely 'Engineer Cadet's Training Record Book', '(Book 1) Sea Service Guide' and '(Book 2) Task & Assignment Cover Sheets'. The first one is prepared by International Shipping Federation (ISF) and the latter two by the AMC. The onboard Master, Chief Engineer and designated officers are requested to counsel the study-works.

5.1.2. Training record book

The individuals of engine room machinery and systems are listed as headings in the Training Record Book. Each heading is attached with a description of their operation and maintenance required. A cadet is supposed to take part in routine maintenance works and learn engineering sense in terms of how, why, what, when, and which. Then interaction with the Watchkeeping engineer in engineroom regarding duty performance. Therefore, when an opportunity is given to carry out overhauling and maintenance of any relevant machinery and operation of engine room systems, the designated officer has to acknowledge the cadet as a participant by signing in his Training Record Book with respective date.

The contents in Training Record Book are so arranged that training cadets can not be adrift from undertaking an intensive programme of planned sea-phase training by the AMC. As a co-ordinate measure, the Master and Chief Engineer have to pay attention to the progress of the cadets in their duty performance as well as written tasks requested by the ISF.

The sea training cadet has to prepare a "Workbook", too for the project-work with following guidelines.

- (1). Scale drawings,
- (2). Safety,
- (3). Protection of Environment,
- (4). Main Engine,
- (5). Steering gear,
- (6). Electrical Systems,
- (7). Bunkering.

So the workbook will determine skill achieved and progression of a cadet in knowledge and intelligent observation at the appropriate areas of the ship and engineering, initiative and reference to details of ship's structural features, machinery and equipment. The cadets are personally responsible for safe keeping of Training Record Book so as to present at the inspection of a shipping company, the instructors at maritime training college and engineering examiners when are ready to sit for their first professional certificate of competency.

5.1.3. (Book 1) sea service guide

It contains a series of questions in the form of tasks and assignments to answer by cadets as required during his sea-phase training period. The cadets are encouraged to join different types of ships. Then they can manage to learn the familiarisation and safety measures onboard ships and achieve comprehensive preparation to their due tasks and assignments.

After each task is prepared completely, it is required to submit to the onboard Chief Engineer for necessary correction and suggestion with appropriate reference literature (suggestions). And, if it is necessary, some tasks will be needed to write again to the satisfaction of the Chief Engineer. Finally, the finished work is required to be sent to

the department of engineering at the AMC for assessment. After assessment, the assignments will be returned to the sender. When the cadets arrive back at the college, staff members will discuss their assignments. Therefore, each cadet needs to complete at least 75% of total tasks and 75% of total assignments as prescribed in the Sea Service Guide for assessment purposes.

5.1.4. (Book 2) “task” & “assignment” cover sheets

This book is a compilation of cover sheets printed in two colours. The questions, written in (Book 1) are reprinted in appropriate covers again for easy of reference for assessment. At the bottom space of each cover sheet the specifications of Cadet, Vessel, Date, Chief Engineer and Remarks are printed with the respective blanks provided for any remarks. The Chief Engineer is requested to endorse his comments regarding the written reports by a cadet in each task and assignment with grading.

The presentation of a cadet's work is to be understandable to others and himself too. So the writing must be simple in grammar. And the diagrammes (where needed) must have a nice appearance for quality measure. The cadet must be aware of safety features of onboard machinery and equipment. If there is any lack of knowledge of ship's safety features he has to learn extra lectures which will be arranged by the department of engineering.

5.2. MET and distance learning programme in Japan

5.2.1. Japanese seamen's education system and Dual-oriented education

Referring K. Ishida (1995), West-European navigation from the Netherlands was introduced to Japanese seamen and later from France and United Kingdom.

Regarding recruiting for officer training programme, there are five Mercantile Marine Colleges in Toyama, Toba, Oshima, Hiroshima and Yuge. The entrants are graduates of Junior high schools, ages between 15 and 18 and having passed an achievement test and a health examination. Each college conducts Navigation and Engineering courses for 5 years at 6 months terms of study including one year practical training on board a training ship. At the end of a course, students have to sit for the national examination for maritime officer's competency conducted by ship officers' examiners under the supervision of the Ministry of Transport. Students who pass this examination are awarded Third Grade M.O.(Nav.) license and Third Grade M.O.(Eng.) license.

There are two higher educational institutes, Mercantile Marine Universities, located in Tokyo and Kobe for ship's officer training. The faculty of the Kobe University alone has Departments of Navigation, Transportation Science, Marine Engineering, and Ocean Mechanical Engineering. The entrants are graduates of senior high schools. The Engineering Department of Kobe University conducts 4 years of study including 6 months of practical training on board the training ship for the award of a Bachelor's degree. The graduates are required to serve 6 months of sea training enabling them to sit for the national examination for Third Grade M.O.(Eng.) license.

Dual-oriented education system was started at these colleges in 1983 and at the universities in 1984. The graduates from colleges and universities were required to sit for national examinations for Nav. Watch licenses and Eng. Watch licenses. Nowadays, the following ocean going training ships belonged to the institution are shown in Table 5.1 and those are available for Sea Training for Japanese seamen.

Table. 5.1. Ocean-going Training Ships for Japanese Seamen Institution.

S.N.	Ship's Name	Gross ton	Crusing range	Speed	Cadet capacity	Engine	
						kind	x No.- kW
1.	Nippon-maru	2,570	6,000	13.2	120	Diesel x 2	- 2,206
2.	Kaiwo-maru	2,556	6,000	13.2	130	Diesel x 2	- 2,206
3.	Taisei-maru	5,875	12,600	18.8	140	Turbine x 1	- 5,148
4.	Hokuto-maru	5,856	12,000	19.0	160	Turbine x 1	- 5,148
5.	Ginga-maru	5,039	20,000	18.8	180	Diesel x 1	- 4,560
6.	Seiun-maru	4,980	21,800	18.3	180	Diesel x 1	- 3,972

Source. The Institute for Sea Training, 1994, Ministry of Transport, Japan.

5.2.2. Marine Technical College and Distance learning courses

The Marine Technical college (MTC) in Ashiya, the neighbouring city of Kobe has an interesting history in accordance with the book of "An Outline of Maritime Technical College, 1992", Marine Technical College, Japan. In April 1945, three Nautical colleges located in Tokyo, Kobe and Shimuzu were amalgamated in Shimuzu. Another two marine institutes were combined into one under the name of Marine Technical College.

In January 1946, Japanese mariners established the MTC in Ashiya with the facilities of Kobe Nautical College and Kishiwada Marine Institute. Steam ship named "Baikal Maru" was used as a branch of the college. Then the college was shifted to Kobe in 1948.

In February 1951, the provisions for a Correspondence Education were enacted for Japanese seamen. This is made it possible for the MTC to expand its institution with distance learning programmes for Navigation and Engineering courses. The Junior Courses started in April and the Senior Courses in October of the same year.

In March 1975, graduates of the Correspondence Junior 'A' Class were regularised as qualified candidates to take entrance examinations of either colleges or universities. Now, under the direct control of the Ministry of Transport, "Kaigi Daigakko", the MTC is a vocational training institute for mariners. The institute also carries out practical researches too for technological development of mercantile marine.

The MTC conducts regularly three levels of Correspondence courses for Navigation and Engineering. Senior Technical Education Class courses with 300 distance learners for a 1 year term of study start in October, Junior 'A' Class courses with 100 distance learners for 1.5 years start in either April or October and Junior 'B' Class courses with 200 distance learners for 2 years start in October and carried out alternately in calendar years. These distance learning programmes are intended to educate seamen: officers and ratings, onboard who can not have chances to attend the conventional classes. It is also intended to familiarise them with up-to-date knowledge and skills on modernised systems on Japanese vessels. For entry requirements of Senior courses, distance learners must have watch keeping license plus they have to be a graduate of a Seaman's Training School to apply for the Junior 'A' Class and a graduate of the Junior high school for the Junior 'B' Class.

Nowadays, the MTC expands with new upgrading courses for ratings to ensure the refilling of necessary number of officers required in the very near future. These upgrading courses are, namely: (a). Third Grade M.O. Class II, (b). Third Grade M.O. Class III and (c). Fourth Grade M.O. Class.

5.2.3. Distance learning programme for seamen

The Correspondence courses are prepared with fundamental learning materials, designed to achieve the necessary knowledge and skills enabling distance learners not only to carry out various duties on highly modernised and technologized vessels but also for their future maritime licenses.

The distance learning materials required for distance learners are in the forms of Text Books and Work Books comprising applicable instructions according to their appropriate duties onboard. The assessments for the course are carried out with regular assignments plus a final written examination. Therefore, every student has to complete a series of assignments given in the "Guide Book for Assignment". They have to attend the school for 3 weeks before the end of the course. During this time, face-to-face lectures and tutorials are conducted for 2 weeks and the last week is meant for explanation for the appropriate examinations.

Referring K. Ishida (1995) and Maritime Technical College (1992), each of the Correspondence courses is prepared with the following subjects to study onboard according to the nature of works.

(a). Senior Technical Education Class (Engineering)

1. Ocean Science
2. Mathematics
3. Marine Propulsion Engines
4. Marine Auxiliary Engines
5. Electricity / Electronics
6. Fundamental of Engineering
7. Shipping / Maritime Labour
8. English
9. Instrumentation / Automatic Control

(b). Junior 'A' Class (Engineering)

1. Mathematics
2. Sciences
3. Social Studies
4. Arts

5. Japanese
6. English
7. Health and Physical Education

(c). Junior 'B' Class (Engineering).

1. Marine Engines,
2. Electricity / Electronics,
3. Instrumentation / Automatic Control,
4. General Management of Engineering,
5. Maritime English,
6. Maritime Law and Regulation.

Note: Marine Engines consist of the followings.

- a. Engineering I, (Boiler, Turbine, Internal Combustion Engine, etc.)
- b. Engineering II, (Aux. machinery, Electricity, Electronic, Automatic Controlling)
- c. Engineering III, (Fuel and lubrication, Applied Dynamics of Machines,
Engineering Drawings, etc.)

In conclusion, the distance learners, having had enough money saved to continue University institution, they may choose to proceed on to the Chief Engineer Certificate of Competency. So this is the beauty of the Japanese seamen's education system for the nation prosperity, indeed.

Chapter 6

Strategic Implementation of Maritime Distance Education Programme in the Union of Myanmar

6.1. Proposed approach to distance education programme

Nowadays, many of the MET institutes in Asian countries have established distance learning programmes for seafarers at appropriate levels. The distance learning institutions of those countries is carried out by delivering learning materials in a package form for students to study onboard. They are required to study under the supervision of the Chief Engineer and Senior Engineers onboard. This is required because the feed-back system to the institute is inconvenient as ships steam to neither fixed ports nor proper destinations.

As the maritime distance learning programme is constructed in the sense of an integrated training mode the distance learning materials are prepared with a part of the curriculum included. These materials are designed to provide easy understanding for practical works and training onboard. All the learning materials comprise relevant assignments to be written with the knowledge they have learnt at that time. Therefore distance learners have to rewrite a subject matter with reference to operating manuals of the respective ship machinery which will become the notes of their own. Actually the distance learning programme is one innovative teaching method of an institute in dynamic action.

As a requirements for maritime distance learning programmes, the institute has to brief the distance learners before they join the ships to know how the learning materials for onboard study are prepared and the writing task required to complete them. So the institute expects assignments to be finished properly before they are engaged in their relevant academic training in classrooms. Once face-to-face classes start, debriefing to individual assignments is done to evaluate the distance learning training programme materials amongst the students. This enables each of them understand one's experience by means of creative group work.

In June, 1995, the revised STCW 1978 Convention was held at IMO head office and the Union of Myanmar will sign it in the very near future. Before the time comes the IMT will prepare the necessities for earliest implementation of the requirements of the revised STCW 1978 Convention. So, the distance maritime education in the sense of integral training programme at the IMT should start in time as a kind of an innovative measure. It will also help Myanmar mariners to maintain a harmonised quality-standard. The revised STCW 1978 Convention is strongly encouraging maritime institutes to be equipped with simulators as training facilities for seafarers.

According to the IMT's strategic programmes, the Bachelor degree courses will have to start as soon as the training ship arrives like the Australian and Japanese maritime institutes, the correspondence courses will also be introduced to onboard training engineers with relevant learning materials in order to ensure comprehensive learning. The institution programme, regarding the training ship will also fit into the requirements of the revised STCW 1978 Convention, relating to the provisions of special training for special ships, mandatory simulator training and quality control of each country's certification procedures and systems.

Then, when considering new equipment and controlled systems provided onboard the training ship, the Distance Learning Programme Department (DLPD) of the IMT can

prepare easily understandable learning materials for distance learners. For the benefit of the Myanmar mariners, while they are away from the institute, they can learn the engineering profession independently by making a comparison to their onboard machinery experiences. And, once they arrive back at the institute, they may gain more knowledge and skills at face-to-face debriefing classes and practical demonstration classes onboard the training ship.

The yearly intake for the Bachelor degree courses is 20 engineering cadets depending on the future needs of the Myanmar maritime industry. Although the IMT is going to introduce cadet training with Front-ended programmes, Post experienced and Sandwich training marine engineers, a traditional practice, still need institution for promotion and further competency certification because graduates of this systems have readily survived on ships with appropriate levels of conduct and required approved sea time in accordance with the Burma Merchant Shipping Act.

With the help of distance learning programme students will receive classroom teaching materials earlier. So they should have learnt something on certain subjects or engineering before enrolling for the competency courses. The classroom teaching load therefore will be less. And they may also reduce their schooling-days in the IMT to sit for their appropriate examinations. It will be an advantage for IMT to promote the institution to international standard as required by the IMO.

6.2. Establishment of new infrastructure of IMT

The maritime distance learning programme, like maritime institutes in many other countries, should be introduced as an integrated measure of IMT. So, when the time comes for face-to-face classes of distance learners the same teachers will act as counsellors at the same classroom. The institute facilities are going to be used alternately for on campus and off campus students. Depending upon the capacity of

the distance learning programmes a few more lecturers and extended school buildings in campus may be required.

The IMT will need to produce new infrastructure for preparation of necessary distance learning materials and printing works. It is therefore advisable that 10 persons in the working group and another 10 persons in student support services will be required in addition to the existing ones for the establishment of the DLPD.

The working group designated to prepare distance learning materials should be stay-on-chair type and having a mature knowledge in all respects. During the time of preparation, the MET conventional curriculum and practical case-studies in respective subjects need to be carried out at least in threes. In order to obtain a comprehensive preparations of learning materials within a short time these staff in the DLPD can be recruited from government pensioners with marine related backgrounds and are interested working as Consultants or Officials on Special Duty. The staff chosen for printing and student support services can be recruited from staff of the Distance Education University of Yangon.

6.3. Operative guide line

The DLPD of the IMT takes care of Myanmar MET engineers through three levels of courses, namely: (i). Class A - Onboard Training Engineers, (ii). Class B - Per-sea training engineering Apprentice at Shipyard and (iii). Class C - Inland Marine Engineers and Engine Drivers. Each of the distance learning courses contains a series of appropriate modules. The number of distance learners in Class A is estimated to be 5,000 ; 500 in Class B and 50,000 in Class C. These courses are planned to start one after another.

Therefore, the IMT should find proper ways, through the Ministry of Transport, to obtain the contact with the Maritime International Co-operation Centre of Japan (MICC) for appropriate advice through their experience. This is a positive suggestion because the MICC has a "Research and Study Programme" to pay interest with a "Study on the Maritime Education and Training Project in Myanmar" under JICA project since 1983.

6.3.1. Class A. Onboard training engineers course

According to the nature of the course, comprehensive and sophisticated learning materials are prepared for onboard study. Face-to-face lectures are required to be conducted for one full week in the beginning to produce the necessary briefing about how the learning materials are designed and the learners should go along following these instructions. The learning materials will be in a package and can be found with the following subject headings. These are prepared in accordance with the books recommended in the IMO model courses.

- (1). Engineering Knowledge (motor) - propulsion machinery,
- (2). Engineering Knowledge (motor) - auxiliary machinery,
- (3). Engineering Knowledge (steam) - boilers and accessories,
- (4). Naval Architecture and Ship Construction,
- (5). Ship's Electro-technology and Applications,
- (6). Engineering Management.

At the end of the course, the assessment will be done on the completion of appropriate distance learners' assignments. Therefore students who can submit their completed onboard assignments still need to have satisfactory to the DLPD of IMT. Upon their successful presentations they are eligible to attend face-to-face discussion classes for a period of 3 weeks. The discussion classes are needed for debriefing the distance learning matrix and in preparation for their written and oral examinations.

Appropriate examinations will be continued in the following week. This passing out examinations will be held in two kinds, namely: "Distance learning examination for second engineers" and "Distance learning examination for third engineers". According to the present practice of examinations, the type of conducting these examinations at the IMT will be suitable to the requirements of the "Examination Board".

The distance learning courses for onboard engineers are available only for second engineers and third engineers certifications. Here are information of the courses.

- (1). Duration of the course - 1½ years.
- (2). Number of courses - 4 courses in a calendar year in 3 months intervals.
- (3). Number of students - Maximum 50 persons per course.
- (4). Entry requirements - Identification of onboard marine engineer and onboard apprentice engineer.
- (5). Others - Preferably Myanmar citizenship,

The distance learning programme for chief engineers will be fairly late to introduce. This is because of the impact of maritime distance learning programme on the present competency examination and certification system. The changes required for the examination and certification system will be the result of introducing distance learning programme of the IMT that can attract all of mariners working onboard. Whenever the demands are coming from the mariners it is the pleasure of the IMT to serve them.

6.3.2. Class B. Per-sea training engineering apprentice at shipyard course

The course curriculum will be designed comprising a series of short modules to cover necessary engineering knowledge for future marine engineers. The group meeting or face-to-face institution is essential once a month on a chosen weekend. The distance learners living in Yangon area need to attend the said classes dutifully at the IMT but for those who are living in other places, face-to-face classes will be arranged by

shipyard engineers of that particular area. But, by no means, necessary assignments as a feed-back for correction, further necessary instructions and assessments of the course will not be tolerated to be sent to the DLPD of IMT through relevant IMT's branch offices.

The learning materials will be prepared with reference to books recommended by the IMO for marine engineering training model courses. The subject headings are:

1. Workshop technology
2. Mathematics
3. Heat and heat engines
4. Applied mechanics
5. Maritime english
6. Basic electro-technology
7. Marine engineering drawing
8. Elementary ship construction
9. Engineering management

The assessment for certification needs the completion of proper assignments throughout the course as given in the learning packages plus a final written examination. As usual, 2 full weeks of face-to-face classes will be provided for preparation of examination in every subject. Then examinations will continue in the following week.

The followings are information of the course.

- (1). Duration of course - 2 years.
- (2). Number of courses - 2 courses at every April and October of calendar year.
- (3). Number of students - Maximum 50 persons per course.
- (4). Entry requirements - Registered Engineering Apprentice in relevant shipyards.
- (5). Others - Preferably Myanmar citizenship,

6.3.3. Class C. Inland marine engineers and engine drivers courses

Concerning Inland marine engineers, the course alone regarding learning materials will be prepared to cover the syllabuses issued by the Department of Marine Administration (DMA). The course will comprise of a series of modules under following subjects.

- | | |
|---------------------------------|-------------------------------------|
| (1). Workshop technology | (7). Basic electro-technology |
| (2). Mathematics | (8). Elementary ship construction |
| (3). Heat and heat engines | (9). Basic naval architecture |
| (4). Applied mechanics | (10). Engineering knowledge (motor) |
| (5). Engineering management | (11). Shafting for propulsion |
| (6). Marine engineering drawing | |

The content of learning materials in chapter-wise will be applicable as to the nature of works on inland vessels basing upon relevant case studies. The confirmed linking between distance learners and the DLPD of IMT is essential and will be assured by means of regular feed-back of the proper assignments through local IMT's branch offices. There will be no monthly face-to-face lecturing. But, at the end of each yearly modular course, 2 full weeks face-to-face classes, just before appropriate written and oral examinations, will be provided at the IMT. The assessment for different levels of the courses at yearly basic will be done by taking into account of proper assignments, too. At the end, final examinations for certification for inland marine engineers will be conducted like the previous systems which is carried out at the end of the year.

Here, oral examination is very necessary for assessment of students' ability and conduct in their professional subjects. Because many students may have left school for a long time and they can not manage to finish their writing tasks within limited time allowed at the written examination.

The followings are information of the course.

- (1). Duration of course - 3 years.
- (2). Number of courses - 2 courses at every February and August of calendar year.
- (3). Number of students - Maximum 50 persons per course.
- (4). Entry requirements - No age limitation and male students those are interested in the marine engineering on the inland vessels.
- (5). Others - Preferably Myanmar citizenship,

Concerning the Engine drivers course, there will be two kinds of model courses namely "Type A - Heavy load engine course" and "Type B - Light load engine course". The DMA has already issued the syllabuses for Compression ignition engine (heavy load). So the IMT working group will prepare the content of the learning materials of the two courses to cover all respective requirements.

The followings are the subject headings of the course contents.

- (1). Principles of the Internal Combustion Engines:
 - (a). Compression ignition engines (Heavy load),
 - or, (b). Low compression spark ignition engines (Light load).
- (2). Operational systems and maintenance:
 - (a). Compression ignition engines (Heavy load),
 - or, (b). Low compression spark ignition engines (Light load).
- (3). Basic electro-technology.
- (4). Basic naval architecture.
- (5). Management programme.
- (6). Workshop technology.
- (7). Basic ship construction.

The assignments will be provided richly in due course to achieve progression systematically in observation and practical learning at their own workplace within

their own convenience. The face-to-face institution at weekends with monthly basic will be conducted regularly and distance learners will receive timetables for classes showing which section they are enlisted. One section of the classes will be arranged with students not more than 50 numbers. So students who are registered in Yangon area will have to attend at the regular face-to-face classes in the IMT and the same classes will be available for students living in townships conducted by government engineers as counsellors to produce their appreciable service in the line of duty.

The assessment for certification at the end of the course is based on their regular feedback assignments to the IMT by means of correspondence and a final written examination which is to be held at examination centres in chosen areas.

The followings are information of the course.

- (1). Name of the courses - Engine drivers, Type A course, and
Engine drivers, Type B course.
- (2). Duration of course - 1 year.
- (3). Number of courses - 2 courses at every May and November of calendar year.
- (4). Number of students - Maximum 100 persons per course.
- (5). Entry requirements - No age limitation, minimum with graduated from
primary education and eligible for both sexes.
- (6). Others - Preferably Myanmar citizenship,

Notes: The student can register either in Type A course or Type B course at a time as an option. Once either of the course is completed the other, if it is interested, can be continued being credible by the IMT with another 6 months course.

6.4. Maintaining effectiveness

The distance learning materials in every course are prepared with the view to stick to the simplest explanation possible so that distance learners can easily understand the subjects and practical exercises. Therefore the presentation of learning materials will be revised occasionally by means of not only referring to students' feed-back but also to different reference books and type of relevant productions. In order to increase the knowledge and updating of distance learners the working group in IMT will pay particular attention to the changes of applications at workplaces whether those are minor or major. So these changes will be published as special information stating in simple description comparisons and contrasts to previous issues. The safety measures and protection of the environment from an engineering sense, are also not being left in appropriate modular packages in due course.

Learning materials when prepared must contain thorough descriptions of the subject concerned using decorative drawings, pictures and simple forms of exercises on where they are required. The maritime distance learning programme of the IMT will be run with a non-profitable objective. This will enable the cost of the service to be lowered for students therefore having the potential to attract a greater number of students. A big number of students will increase the costs in preparing learning materials but student's benefit will be resulted from 'economics of scale'.

The IMT has to provide necessary maritime teaching aids such as film and video tapes for teaching at all places where face-to-face classes are held across the country. Apart from localised counsellors' encouragement to distance learners, the IMT being the most responsible body for maritime distance learning will initiate moral support to the students who are going along with the course with poor conduct and irregular responds. Sometimes, the IMT will distribute documents and special notes to lacking students on appropriate subjects.

Finally, the faculty of the IMT need to keep themselves happy in dealing with unseen distance learning students. It is the same thing that students will like to appreciate and give due respects to their teachers and persons who are doing good for them from the IMT. The students also want to know who is who according to inquisitive nature of the Myanmar. But, due to the practice of the distance education system, it is not possible to achieve a proper interaction between them. So, each of the faculty and a group activity in the vicinity of the IMT will be published occasionally at the last page of the learning material packages to invade the students' proposal for the institute's benefits. It is hopeful that a progress in writing practice for distance learners will be achieved.

Chapter 7

Summary

7.1. Conclusion

Since 1963 the MET institution in the Union of Myanmar started for ship's officers. The Institute of Marine Technology (IMT) was established in 1972 for ship's officers and ratings. The IMT is always trying to keep quality assurance of training mariners to meet the requirements of IMO with well-equipped and latest teaching aids like computer programming and other means of functioning simulators.

But, according to new requirements of the revised STCW 1978 Convention, the IMT needs to promote its institutional programmes for Myanmar seafarers who are onboard ship. Future planning of upgrading the IMT, in the sense of awarding bachelor degree to training cadets, can be achieved by introducing distance learning programme to training cadets during their sea-phase training period like other developed countries. It is essential for the cadets to gain more professional knowledge of onboard skill and familiarisation on technologically advanced seagoing ships. This is because today shipping management is almost changed in its industrialised practice in all aspects hence the need of reliable computerised operations. Here the distance learning programme department (DLPD) of the IMT will take full responsibility by conducting Class A. Onboard training engineers course.

According to the perception of the secretary-general of IMO, the IMO is driving to a goal of safer shipping and cleaner oceans. As a matter of fact, the revised STCW

1978 Convention is taking account also of Fishery Education. As a result, marine laws and regulations are given priority in the shipping industry. Every signatory country is supposed to provide enlightenment of environmental protection. In the sense of duty bound the Maritime Administration alone is found not enough to conduct its responsibility and the Maritime institution is now pushed forward to implant security and management of maritime personnel who are working at sea and in ports on a day to day basis. Here conventional institution of the IMT will definitely expand with the distance learning programme institution to perform the required national duties by introducing Class B. Per-sea training engineering apprentice at shipyard course.

Finally the DLDP of the IMT will introduce Class C. Inland marine engineers and engine drivers courses for the nation's needs and to promote those dispersed personnel across the country for their professional skills and experiences in the engineering aspects other than mechanic practice.

7.2. Recommendations

The MET system in the Union of Myanmar should concentrate on evaluation of the institution to produce an effective achievement with closed relationship in the form of an education triangle where the three elements; teachers, learning media and materials and students will act as individual sides of the triangle. Once any one of the sides changes to a shorter or a longer length, there will be an out of shape triangle against what was desired before. But, if one side of the triangle is enabling its length to adjust, the enclosed and perfect shape triangular shape can be formed again. Here the distance learning programme in the integrated mode which will act as an enabling length side of the Myanmar MET system triangle.

Actually maritime education is a long term learning programme for a student who is going to learn for his professional experience by using the general education first as a

stepping stone. Then quality assurance of professional training will be determined with his continuing study on how much he has paid necessary interests to the subjected matters as required in both theoretical and practical aspects. So, as long as the trainees are kept not to drift from conventional and distance learning institutions, spending all the time in shore-based and sea-phase training of their own pace, the more they will care to learn and the stronger they will be qualified accordingly.

Although the distance learning system had existed since the last century, the beauty and theme of it could be known across the world only a few decades ago appreciated by an ever increasing population whenever education was being considered for themselves as required. Looking on the bright side always, proper and steady development of the Myanmar maritime industry should take into account human resources as well. Therefore nation-wide maritime institution at relevant levels of learners' ability should be introduced at the IMT as early as possible. Now the distance learning system, I agree, is the most suitable programme to adopt for the convenience of both teaching and learning, the IMT faculty and onboard seafarers.

To the benefit and attraction of the distance learners, the efforts dutifully paid by the IMT and acceptable progression done by the Myanmar mariners should be recognised by the Authorities very soon with blessing by means of reconsidering the present examination systems and that certification of the distance learning programme should be partial fulfilment of a learner's certificate of competency.

For the mean time, the IMT will exercise with revising its distance learning materials and seek more applicable teaching media in all respects at any cost. In order to expect such a change in examination and certification system, within 5 years, the IMT should ask voluntary service of the members of "Examination Board" to practise teaching to distance learners. Because it is essential to achieve a successful transfer of knowledge to Myanmar mariners with the help of Examination Board members who

have chances to know more knowledge related to up to date information about the maritime industry. And they are truly the ones to distribute and fulfil the needs of students. Nowadays, the new word "*assessment*" is taking in the place of "*examination*", the latter has been used for so many years ago in the MET system, whenever the tests are carried out along with teaching facilities who are naturally provided in Maritime Institutes.

Finally, the IMT should ask Myanmar Masters and Chief Engineers for their kind co-operation to conduct familiarisation and skill training to their fellow officers and ratings regarding onboard machinery and equipment. As a duty bound, the IMT should prepare some "Training Record Books" of appropriate levels of seafarers for convenient and successful teaching programmes onboard and to be of any suitable types of ships with reference to IMO's module courses.

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