Comparison of Training and Education in the Training Ship

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Abstract The research regarding maritime cadets' training and education onboard training ships is compared among the international maritime universities including United States, Japan and South Korea. By comparing the education and training these international maritime universities offer, this paper can show differences, as well as beneficial and non-beneficial aspects of training and education onboard the training ships, accordingly. In addition, it will examine the impact of the recently amended content of STCW (International Convention on Standards of Training, Certification and Watchkeeping for Seafarers) for the training ships including ship security officer and fast rescue boat will be reviewed.

Keyword: *Training, Ship, Education, Comparison, Maritime*

1. Introduction

This article is to show to compare training and education of the training ship of three countries including the United States, Japan, and South Korea. It offers specification of the training ship, period and duration of training, method of training and calling ports. First of all, we reviewed the STCW-95 Training requirement for certification including STCT-95 Certificates, General requirement, Training Issues, On board requirement, STCW's Fast Rescue Craft Training and Ship Security Officer, and Revised STCW Convention and Code adopted at the Manila Conference, 21-25 June 2010. Objective of this article is aimed to find some difference by applying STCW and comparing with the training and education of training ship of three countries including the United States, Japan, and South Korea.

2. STCW's Training Requirement for Certification

2.1 STCW-95 Certificates

The term "certificates" covers all official documents required under STCW-95. It includes certificates of competence, endorsements, certificates of proficiency, special certificates and any documentary evidence showing that a requirement of the Convention has been met. Certificates are important as they are the main paper evidence you have on hand to prove that your level of maritime education and training, your length of service at sea, your professional competence, medical fitness and age all comply with STCW-95 standards. Every party to the Convention has to ensure that certificates are only issued to those seafarers who meet STCW standards.

2.2 General Requirement

If someone wants to be an officer in the merchant vessel, he or she must meet minimum requirements in respect of standards of competence, seagoing service time, medical fitness and age. They should be in possession of a valid certificate of competence according to their rank and functions on board. This

certificate should be endorsed (in the same certificate or in a separate document) by the issuing Administration. They should also have all the ancillary certificates required such as radar or ARPA, GMDSS, and those referring to safety duties on board specific types of ships. Part 2 and part 3 of this section will give them guidance as to what certificates officers require. To know the exact requirements and standards of competence for each certificate it is consulted with chapters II (master and deck department), III (engine department), IV (radio personnel), V (training requirements for personnel on certain types of ships). VI (emergency, occupational safety, medical care and survival functions) of the STCW-95 Convention.

2.3 Training Issues

All training program and assessments provided in connection with an STCW-95 certificate need to comply with STCW-95 standards and must be approved by the respective Administration. The competence tables contained in the STCW Code (Part A) provide information on what should be included in the teaching program, the criteria by which competence is assessed, and what standard of ability the student performing that competence needs to demonstrate. These regulations apply to training given both on board and ashore (Kim, 2005). All instructors, supervisors and assessors need to be qualified and experienced in the particular types and levels of training and assessment they give. They also need to know about teaching techniques. Each education and training institution needs to have its academic and training program approved by the Administration issuing the certificate. It is common for educational and training institutions to issue their own certificates for the courses they run. Before enrolling on any course, find out first if the program offered comply with STCW-95 standards and, more importantly, if the training center has been authorized by the respective Administration to provide the courses and services offered and, where applicable, to issue STCW-95 certificates for short courses.

2.4 On Board Requirement

The STCW-95 Convention lays great emphasis on practical competence. Therefore an important part of any STCW training program is to put into practice what you have learned from books or with an instructor in a classroom. For some specific skills this is best done at approved training establishments in purpose built installations ashore (fire-fighting courses, for example). However, to gain certain other competencies the best way is to practice them at sea under the supervision of a person with appropriate training and experience. This is why it is extremely important that experienced seafarers take every opportunity to train less experienced seafarers. This is the best way of passing on knowledge to new generations of seafarers (STCW, 1995).

2.5 STCW's Fast Rescue Craft Training and Ship Security Officer

In order to taking charge of a fast rescue boat (FRB) during and after launch including as follows

- Understand the construction and outfit of FRBs and individual items of their equipment
- Know the particular characteristics and facilities of FRBs
- Understand safety precautions during launch and recovery of an FRB
- Know the procedures for righting a capsized FRB
- Be able to handle an FRB in prevailing and adverse weather and sea conditions
- Understand navigational and safety equipment available in an FRB
- Search patterns and environmental factors affecting their execution
- Assessment of the readiness of FRBs and related equipment for immediate use
- Knowledge of the maintenance, emergency repair, normal inflation and deflation of buoyancy compartment of inflated FRBs
- Operate an FRB engine, including methods of starting and operating an FRB engine and its accessories.

The training should intend for seafarers who are required to take charge of a fast rescue boat (FRB) in emergency situations during and after launch, in accordance with:

- SOLAS regulations
- STCW convention and code
- The Merchant Shipping (Life Saving Appliances) Regulations 1986
- The Merchant Shipping (Training and Certification) Regulations 1997

On successful completion of the training and assessment, the trainees will have knowledge of the construction and function of different types of fast rescue boats and associated equipment and be able to:

- FRB capsize; causes, prevention and righting
- FRB craft; equipment and operation
- FRB maintenance, operations and casualties
- Take charge of FRB's during and after launch and upon recovery
- Participation in all aspects of rescue and care of casualties from the water
- Operate FRB engines

The training for ship security officer should design to meet the requirements of the STCW section VI/5, requirements of the ISPS Code sections A/2.1.6, A/12.1 and A/12.2 and is based on the guidelines of IMO Model course 3.19. The training is needed for those who may be designated to perform the duties and responsibilities of a Ship Security Officer. After successful completion of the training, the trainees will be able to undertake the duties and responsibilities as Ship Security Officer, identifying behavior patterns of individuals likely to threaten security, detecting weapons and calibrating security equipment and systems. The training should include like maritime security policy, security responsibilities, ship security assessment, security equipment, ship security plan, threat identification, recognition, and response, ship security actions, emergency preparedness, drills and exercises, security administration, and security training (Joseph, 2006).

2.6 Revised STCW Convention and Code adopted at the Manila Conference, 21-25 June 2010

The 2010 amendments will enter into force on 1 January 2012 under the tacit acceptance procedure and are aimed at bringing the Convention and Code up to date with developments since they were initially adopted in 1978 and further revised in 1995; and to enable them to address issues that are anticipated to emerge in the foreseeable future. Major revisions to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (the STCW Convention), and its associated Code have been adopted at a Diplomatic Conference in Manila, the Philippines, thereby ensuring that the necessary global standards will be in place to train and certify seafarers to operate technologically advanced ships for some time to come (Kim, 2005). The Conference was held in Manila from 21 to 25 June under the auspices of the International Maritime Organization (IMO), the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine pollution from ships.

The amendments adopted are as follows:

- New certification requirements for able seafarers;
- New requirements relating to training in modern technology such as electronic charts and information systems (ECDIS);
- New requirements for marine environment awareness training and training in leadership and teamwork;
- Improved measures to prevent fraudulent practices associated with certificates of competency and strengthen the evaluation process (monitoring of Parties' compliance with the Convention);

- Revised requirements on hours of work and rest and new requirements for the prevention of drug and alcohol abuse, as well as updated standards relating to medical fitness standards for seafarers;
- New training and certification requirements for electro-technical officers;
- Updating of competence requirements for personnel serving on board all types of tankers, including new requirements for personnel serving on liquefied gas tankers;
- New training guidance for personnel serving on board ships operating in polar waters; and
- New training guidance for personnel operating Dynamic Positioning Systems.
- New requirements for security training, as well as provisions to ensure that seafarers are properly trained to cope if their ship comes under attack by pirates;
- Introduction of modern training methodology including distance learning and web-based learning (STCW, 1995).

3. Specification of Training Ship and Organization of Training

As previously mentioned, this article comprises of maritime training for three countries including the United States, Japan, and South Korea. In this chapter, the specification of training ship and time period of training will show as follows, accordingly;

3.1 The United States

TS Empire State VI In 1994 the *Empire State VI* was activated by MARAD to support the withdrawal of American troops from Mogadishu, Somalia. In the 2005 aftermath of Hurricane Katrina and Hurricane Rita which devastated the Gulf Coast, MARAD again activated the *Empire State VI*. The vessel provided housing and support for port workers and petroleum industry workers as they began repairs on strategic infrastructure and facilities in Louisiana. With twenty years of service to the Maritime College, the ship holds the record as the longest serving power-driven vessel ever used by the school. She is expected to remain in use through at least 2014 (SUNY, 2007~2010).

The TS *Golden Bear* is the training ship of the California Maritime Academy (CMA), a campus of the California State University. The first training ship of the California Maritime Academy was known as the Training Ship *California State*, then as the T.S. *Golden State*. Since then, there have been three ships to bear the name T.S. *Golden Bear*. The current Training Ship *Golden Bear* was transferred to the United States Maritime Administration (MARAD) from the US Navy in 1994. She was converted for use by the CMA and transferred there in 1996.

The USNS *Tanner* (T-AGS-40), was built for the United States Navy as a fast Oceanographic Research Vessel by Bethlehem Steel Corporation at its Sparrows Point Yard in Maryland in 1990. The vessel was the second oceanographic research ship to bear the name of Zero Luther Tanner, a noted oceanographer and inventor of a patented sounding machine. The vessel experienced catastrophic engine failure in 1993 and was laid up by the Navy and eventually transferred ownership to the Maritime Administration (MARAD). Today Maine Maritime students in majors leading to a USCG Third Assistant Engineer (Marine Engineering Operations, Marine Engineering Technology, and Marine Systems Engineering majors) or USCG Third Mate (Marine Transportation Operations major) licenses participate in training cruises aboard the TS State of Maine. These cruises last about 60 days on average, and during that time midshipmen will rotate through both class and laboratory training at sea, ship's operations including deck and engine watches, as well as emergency drills. Port visits offer a time to relax, and visit other maritime nations, but also include watch responsibilities and routine ship's maintenance. The USCGC *Eagle* (WIX-327) (ex-*Horst Wessel*) is a 295-foot (90 m) barque used as a training cutter for future officers of the United States Coast Guard. She and the USS *Constitution* are the only active commissioned sailing vessels in American government service. She is the seventh U.S. Navy or Coast Guard ship to bear the name in a line dating back to 1792. Each summer, *Eagle* conducts cruises with cadets from the United States Coast Guard Academy and candidates from the Officer Candidate School for periods ranging from a week to two months. These cruises fulfill multiple roles; the primary mission is training the cadets and officer candidates, but the

ship also performs a public relations role. Often, *Eagle* makes calls at foreign ports as a goodwill ambassador.

Name:	TS *Empire State VI*	TS *Golden Bear*	TS *State of Maine*	USCG *Eagle*
Owner:	U.S. Maritime Administration	U.S. Maritime Administration	U.S. Maritime Administration	The United States
Operator:	SUNY Maritime College	California Maritime Academy	Maine Maritime Academy	US Coast Guard
Ordered:	February 29, 1960	28 June 1985		
Builder:	Newport News Shipbuilding and Drydock Company, Newport News, Virginia	Bethlehem Steel	Bethlehem Steel	Blohm & Voss
Laid down:	March 1, 1961	29 July 1986	1990	15 February 1936
Launched:	September 16, 1961	4 September 1987		13 June 1936
Acquired:	April 19, 1962	31 March 1989	*June. 6, 1997*	
Homeport:	Fort Schuyler, New York	Vallejo, California		United States Coast Guard Academy (New London, Connecticut)
Type:	Training Ship/Troopship	T-AGS		
Displacement:	17,000 long tons (17,273 t)	9,319 long tons (9,469 t) light 15,821 long tons (16,075 t) full		1,784 long tons (1,813 t) full load
Length:	565 ft (172 m)	499 ft 10 in (152.35 m)		295 ft (90 m) overall 234 ft (71 m) waterline
Beam:	76 ft (23 m)	72 ft (22 m)		39 ft 1 in (11.91 m)
Draft:	25 ft (7.6 m)	30 ft 6 in (9.30 m)		17 ft 6 in (5.33 m) full load
Propulsion:	2 × Foster Wheeler Type D steam engines, steam turbines, single screw	Twin diesels, 17,000 shp (12,677 kW), single 5-blade propeller, 18'7½" diameter (5.68 meters)		1 × Caterpillar (C399) diesel engine (1980)
Speed:	22 knots (41 km/h; 25 mph)	20 knots (37 km/h; 23 mph		17 kn (31 km/h; 20 mph) under sail 10 kn (19 km/h; 12 mph) under diesel
Complement:	791 (684 cadets, 107 officers/crew)		*302*	19 officers, 56 crew, 175 cadets and instructors

Table. 1 Training Ships in the United States

3.2 Japan Training Ship in National Institute for Sea Training (NIST)

Nippon Maru was built in 1984, equipped with two diesel engines as a substitute ship "the second Nippon Maru" to take the place of the former Nippon Maru which was engaged in the sea training for more than half a century. Nippon Maru is the largest sized sail training ship that was built only by Japanese own technologies for the first time, including design and manufacture of sailing gears.

Kaiwo Maru was built in 1989 as a substitute ship "the second Kaiwo Maru" to take the place of the former Kaiwo Maru as well as Nippon Maru. Although Kaiwo Maru is almost the same size and type sail training ship as Nippon Maru, it is highlighted to adopt feathering propellers different from Nippon Maru equipped with conventional propellers. The builder/owner of Kaiwo Maru was The Training Ship Education Support Association (currently, Maritime Academy Foundation) at that time, and she was built by combining the governmental subsidy, the subsidy from the Japan Shipbuilding Industry Foundation, public subscription and a loan from a bank. NIST puts Kaiwo Maru into effect for continuous sea training by leasing her from TESA with a new mission to familiarize maritime consciousness, accepting twenty trainees from the public several times a year.

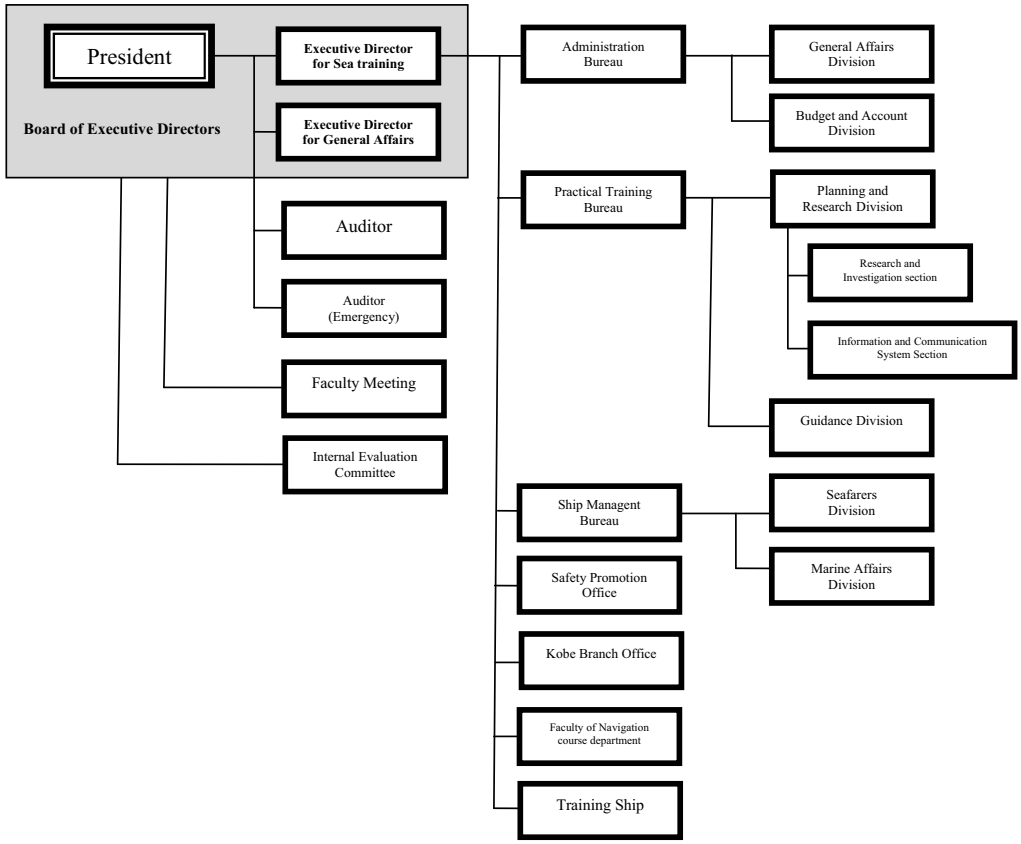
Taisei Maru was built in 1980 as a substitute ship "the third Taisei Maru" to take the place of the former Taisei Maru. Taisei Maru is equipped with steam turbine plant as its propulsion system and is a unique steam turbine training ship that has been in service since another steamer ship "Hokuto Maru" was decommissioned in 2004

Ginga Maru is the newest training ship built in 2004, equipped with a diesel engine and CPP as a substitute ship "the third Ginga Maru" to take the place of the former Ginga Maru. A new concept, that is response to the marine intelligent transport system, to modernization of domestic vessels and to functions as a training ship for the next generation, was adopted when she was built.

Seiun maru was built in 1994, equipped with a diesel engine, CPP and fin stabilizer as a substitute ship "the second Seiun Maru" to take the place of the former Seiun Maru. The engine room was located in the semi-afterpart of the hull for the first time and also designed to be able to sail an around-the-world voyage in 75 days. When she was built, new facilities such as onboard ship handling simulator, classroom in tiers, sports dome, sanitary accommodations for the cadets from abroad, and etc, were installed, considering embarkation of foreign cadets which was an additional mission newly given to her.

Name	Nippon Maru	Kaiwo Maru	Taisei Maru	Ginga Maru	Seiun maru
Flag	Tokyo	Tokyo	Tokyo	Tokyo	Tokyo
Owner	NIST	NIST	NIST	NIST	NIST
Type	Sailing Ship	Sailing Ship	Steamship	Steamship	Steamship
Launch	Feb.15, 1984	Mar. 7, 1989	Oct. 3, 1980	Dec. 12, 2003	Mar. 4, 1997
Built	Sep.14, 1984	Sep. 12, 1989	Mar. 16, 1981	Jun. 15, 2004	Sep. 25, 1997
Call Sign	JFMC	JMMU	JLPY	JFFP	JLLY
Voyage Area	Open Sea	Open Sea	Open Sea	Open Sea	Open Sea
Gross Tonnage	2,570	2,556	5,886.73	6,185	5,890
LOA(m)	110.09	110.09	124.84	116.40	116.00
Breath(m)	13.80	13.80	17.00	18.00	17.90
Draft(m)	10.72	10.72	10.50	10.50	10.80
Engine	Two of Diesel	Two of Diesel	One of Turbine	One of Diesel	One of Diesel
Power (PS)/(kW)	1,500×2/2,206	1,500×2/2,206	7,000/5,148	9,000/6,600	10,500/7,722
Fuel Capacity(kl)	433.3	432.35	1,660.7	1612.8	1,476.9
Utmost Velocity(k't)	14.33	14.09	19.22	20.5	21.0
Voyage Velocity(k't)	13.2	12.95	17.9	18.62	19.5
Voyage Distance(mile)	9,800	9,800	12,600	11,000	15,000
Complements (Cadets)	190(120)	199(128)	214(140)	246(180)	252(180)

Table. 2 Japan Training Ships in National Institute for Sea Training (NIST)



Faculty and Staff (2009)	Number
Professor	73
Associate Professor	65
Instructor	21
Teaching Assistant	7
Assistant to Professor	102
Technical Staff	137
Administrative Staff	47
Dispatched Faculty and Staff	3
Total	455

Fig. 1 Organization and Arrangement of NIST

3.3 South Korea

Table 3 shows training ships in Korea including Mokpo and Korea Maritime University, and Korea Institute of Maritime and Fisheries Technology. Each institution has run with two training ships. Specific information of the vessel is in the table.

Name	SaeNuRi	SaeYuDal	HanNaRa	HanBaDa	HanBanDo	HanWooRi
Owner	Mokpo Maritime Univ.		Korea Maritime Univ.		Korea Institute of Maritime and Fisheries Technology	
Type	Steamship	Steamship	Steamship	Steamship	Steamship	Steamship
LOA	103.00m	102.7m	102.70m	117.20m	99.8m	86.85m
Breath	15.60m	14.50m	14.50m	17.80m	14.50m	15.00m
Depth	7.30m	7.00m	7.00m	8.15m	9.50m	7.20m
Draft	5.40m	5.20m	5.40m	5.90m	5.22m	4.50m
Gross Tonnage	4701t	3,644t	3,640t	6,686t	3,491t	3,288t
Full Capacity	208	202	202	246	228	210
Average Speed	16.5kts	15.0kts	15.0kts	17.5kts	12.0kts	12.7kts
Voyage Area	Open Sea	Open Sea	Open Sea	Open Sea	Open Sea	Inshore
Call Sign	D8QS	D8WX	D9GV	DSON4	D8WU	305Hanwoori
Main Engine	Diesel 6,060Hp	Diesel 3,970Hp	Diesel 4,000Hp	Diesel 8,130Hp	Diesel 3,800Hp	Diesel 2,500Hp
Built	2003.03.24	1993.10.30	1993.12.23	2005.12.08	1975.08.	1969.12.

Source: (Noh, et al., 2008)

Table. 3 Training Ships in Korea

4. Applying STCW in the Training Ships and Calling Ports

4.1 The United States

4.1.1 Courses and Time Period for Training

State University of New York – Maritime College has run with several ways of effectively applying STCW as follows;

Freshman Sea Term will consist of 45 days, Sophomore Sea Term will consist of 45 days (or an optional 75 day Cadet Observer), and Senior Sea Term will consist of 90 days.

ADVISORY SYSTEM (Big Brother System) - All First Class Deck Cadets will be assigned a licensed Deck Officer, this deck officer will be an advisor, and will mentor the cadet during the Sea Term. The licensed deck officer will also be responsible for the Voyage Plan assignment of his or her First Class cadets and to assist the cadets in their studies on board. The First Class cadets are obligated to satisfactorily complete all voyage plans and any other assignments in a timely fashion and by the appointed date

- The Big Brother Family - Every first classman will be assigned one or more second classmen and every second classman will be assigned one or more third classmen. They and their assigned officer will make up the “Q” family. They are to mentor and assist one another in all their studies aboard but especially in the Qualification areas. Since there are two cruises, Cruise A and Cruise B, the 1/C will have new underclass half way through their 90 day cruise.

CADET FUNCTIONAL ORGANIZATION - For purposes of the ship's functional organization, Deck Cadets are divided into three watch sections (1,2, and 3) of approximately equal size and with equal

distribution of first, second and third classmen. Assignments to Watch, Maintenance and Repair, or Lecture, are in accordance with the Watch section structure. Watch sections are subdivided into 'A' and 'B' groups for the purpose of in-port watch standing, maintenance and repair labs, and for at anchor / in port training.
The Summer Sea Term is broken up into four (4) principle training study areas, each being an integral part of the Summer Sea Term grade. They are:

1. Watch standing
2. Lecture and associated requirements.
3. Maintenance & Repair, under the supervision of the Ship's Deck Department.
4. Oral/Written Qualifications (SUNY, 2007~2010).

4.1.2 Calling Ports
Calling ports of TS State of Maine are as follows in order of time;

- 1998 - Iceland, Estonia, Russia, Germany
- 1999 - Spain, France, Italy, Gibraltar
- 2000 - Bermuda, Barbados, Philadelphia, Port Everglades (Ft. Lauderdale, FL)
- 2001 - Natal,BRAZIL; Galveston, TEXAS; San Juan, PUERTO RICO; New York City
- 2002 - Cobh, IRELAND; Kiel, GERMANY; Portsmouth, ENGLAND; Tallinn, ESTONIA
- 2003 - Antwerp, BELGIUM; Tenerife, CANARY ISLANDS; Halifax, NOVA SCOTIA
- 2004 - Vera Cruz MEXICO; Bermuda; Tampa; San Juan PUERTO RICO
- 2005 - Aruba, Nassau BAHAMAS, Quebec City, CANADA Boston, MA
- 2006 - Barcelona SPAIN, Cohb IRELAND, Gdynia, POLAND, Portland, ME
- 2007 - GIBRALTAR, Odessa, UKRAINE, Split, CROATIA, Halifax, CANADA
- 2008 - Norfolk, VA, CANARY ISLANDS, BERMUDA, Savannah, GA
- 2009 - San Juan, PR, Key West, FL, St. John, NEWFOUNDLAND, Baltimore, MD
- 2010 - Marseille, FRANCE, Kiel, GERMANY, Belfast, IRELAND, Portsmouth, ENGLAND

4.2 National Institute for Sea Training in the Japan

4.2.1 Courses and Time Period for Training
Navigation and engineering training course are prepared each for Third/Fourth Grade Maritime Officer Competency Certificate and navigation training course for Sixth Grade Maritime Officer Competency Certificate. The training curricula/programs are based on “The Law for Ship’s Officer’s and Boat’s Operators”, its associated regulations and STCW convention. Training periods are one year for the third grade course, nine months for the fourth grade course and two months for the sixth grade course. As one-year/nine-month training period is regarded by the law as equivalent to three-year onboard experience required for having national examinations, the students can take the examinations to obtain the Third/Fourth Grade Maritime Officer Competency Certificate, soon after they complete the training program. In addition, the training curricula for the Third Grade Officer Competency Certificate meet requirements of the operational level stipulated in STCW convention, so that persons who have the certificate can get on board any type of the international seaborne transportation vessels as a third officer/engineer.
In order to attain this educational policy represented by this concept, the training curricula are structured of three elements, which are practical training, tactical exercises and lectures. In the lectures, necessary instruction and knowledge for effective practical training are given to the cadets and these instructions contribute to smooth training process and to help them understand practical knowledge. These lectures are given usually in ports, sometimes at sea as a course lesson or briefing just before practical training. As for the practical training and tactical exercise, the cadets experience duties of

ship's officers at any situation of the training ships in a suitable group size and tactical exercises are accordingly assigned to the cadets to let them study some subjects by themselves.

4.2.2 Calling Ports

Calling ports of Nippon maru from April 1 2006 to March 31 2007 are as follows; Tokyo, Yokkaichi , Nagasaki, Kobe , Shimonoseki, Yokohama, Vancouver, Canada, Hilo, USA, Honolulu, USA, Tokyo, Dock Yard, Tokyo, Hiroshima, Shimizu, Osaka, Nagasaki, Chiba, Tokyo, Kobe, Moji, Takamatsu, Kagoshima

4.3 The South Korea

4.3.1 Courses and Time Period for Training

In South Korea, there are courses that the cadets should take part in order to get mariner certificate including voyage plan, voyage and positioning, safety information, maneuvering, safety duty, emergency response, GMDSS, navigational gear as Radar (ARPA) and ECDIS, operating vessel, COLREG, maintenance of ship, handling of life saving gear, fire-fighting, and medical provider in the ship so forth (MMU, 2007~2010).

4.3.2 Calling Ports

Table 4 below indicates the calling ports both domestic and international of two training ships in Mokpo Maritime University including Yeosu, Gwangyang, Jeju, Busan, Kobe (Japan), Sanghai (China), Hochimin (Vietnam), Subic (Philippine) so forth;

Year	Semester	SaeNuRi	SaeYuDal
2009	Spring (Mar.~June)	Busan	Masan
		Okinawa, Japan	Subic (Philippine)
		Malaka, Malaysia	Hochimin,Vietnam
		Hochimin,Vietnam	
	Fall (Aug.~Dec.)	Sokcho	Jeju
		Hukuoka, Japan	Chingdao, China
		Daireon, China	Hiroshima, Japan
		Incheon	
2010	Spring (Mar.~June)	Donghae	SeoGuipo
		Jeju	Inchon
		Malaka, Malaysia	Subic, Philippine
		Hochimin, Vietnam	Okinawa, Japan
	Fall (Aug.~Dec.)	Inchon	Jeju
		Tokyo, Japan	Shanghai, china
		Shanghai, china	Osaka, Japan
		Jeju	Busan

Source: (MMU, 2007~2010)

Table. 4 Calling Ports of Training Ship in MMU, South Korea

5. Conclusion

This article is compared with training and education in the training ships of three countries including the United States, Japan, and South Korea based on the STCW requirements. This research found that some difference applications of training and education are performed and conducted in terms of time period of training, training institution, and faculty & staff arrangement. For example, in the United States, training ship was operated usually in Summer Season only during the summer semester, whereas in Japan, they have run a specific National Institute for Sea Training (NIST) for maritime cadets who want to obtain deck and/or engine certificates. In future study, SWOT (Strong, Weak, Opportunity, and Threat) analysis will be conducted for the each training and

education in the training ship of the countries in terms of most effective cost approach, education method for cadet, and training time and period.

References

[1] Joseph, A., et al., "*Vessel Security Officer",* 1st edition, CMP, (2006). Pp 140-148
[2] Kim, S., "Ship's Safety Magement", *Dasom*, (2005), pp 35-60.
[3] Noh, B., et al. "A Study on Improvement of Efficient Educational Personnel and Facility in the Training Ship" (2008), p2.
[4] Mokpo National Maritime University (MMU) Documentary for Training Procedure (2007~2010)
[5] State University of New York (SUNY) – Maritime College Schedule-Summer Sea Term (2007~2010)
[6] STCW-95: A Guide for Seafarers
[7] http://www.imo.org
[8] http://www.sunymaritime.edu
[9] http://www.kohkun.go.jp/