

The Importance of Training Vessels to the Education of Mariners

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Abstract: The United States of America is unique in the fact that most of its Merchant Officers earn their credentials through graduating from a maritime academy which utilizes a training vessel to obtain a significant portion of the required sea time. These vessels provide a unique platform to provide an opportunity to advance the knowledge and experiences of the students who travel onboard through guided instruction and experience opportunities. Although utilizing a training vessel is not an uncommon method for training mariners throughout the world, the utilization of a training ship to obtain the required time is unique within the maritime academies of the United States. These training vessels are an integral part of the education structure for the US maritime academies, primarily due to the opportunities they present, enabling these cadets to manage the ship themselves as well as participate in evolutions they might not have been able to on an operating ship. This paper discusses the advantages and disadvantages of this training ship method which has enabled thousands of Mariners to go to sea as officers for over 100 years allowing these mariners go out to sea with the experience needed to take the watch and ensure the safety of the ship and crew.

Keywords: Training Vessels, Maritime Education, Experience

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For millennia, merchant mariners fueled the growth of the world economy by establishing trade routes for nations to buy, sell, and trade goods on a global scale. Dating back 1000 BC, before the invention of the compass, the Polynesians navigated the Pacific Ocean Island chains in order to expand and develop trade routes between colonies (Wayfinders, n.d.). The navigational techniques developed by the Polynesians, concentrated on their knowledge of the trade winds and the effects the small islands had on the direction of wind and current. These practices were passed down on ships by song, from Master to youth, for decades until more strict techniques, such as celestial navigation, were developed (Wayfinders, n.d.). Fast forward thousands of years to the present, the techniques which the Polynesians developed still stand as the foundation of basic seamanship and navigation. These techniques established also formed the stepping-stones for nations to build upon, allowing the development of merchant fleets, the exploration of the new world, and the evolution of extensive foreign trade to develop.

For nations to continue trading, it was required that mariners be trained on basic navigation and seamanship skill sets. It was common practice for a youth to join working ships and develop as a sailor or ship's officer over years of hands-on experience. However, the issue of an inexperienced crew member in a working environment was magnified during war. Therefore, Admiral Stephen B. Luce, USN developed a training program for U.S sailors on retired Navy ships during the American Revolution in the late 1700s (The stewardship report, 2011). These training ships acted as platforms for sailors to develop fundamentals that would be applicable to all ship platforms, regardless of assignment. Simultaneously, there was a decline in the merchant marine and overall professionalism of ship's officers in America. To resolve the issue, the New York Chamber of Commerce lobbied for a Nautical School to be established in New York and requested of Adm. Luce to grant the Nautical School a training ship, the USS St. Mary's (The

stewardship report, 2011). The Nautical School enrolled its first class in 1874 and offered the fundamental training necessary to develop ship's officers by combining both formalized training in a classroom setting as well as on the training vessel. Since then, the United States of America has been utilizing these training vessels as a critical training platform within the curriculum as they serve the purpose to train sailors on the fundamental techniques and practices necessary to cultivate a strong merchant fleet. Although the maritime training schools in the United States of America all follow different training plans onboard the ship, utilizing different rotations of duties or training evolutions, they tend to all follow similar methodology when it comes to the training of their cadets, allowing for this guided training of mariners in a safe environment to work effectively.

Today, training ships in the United States serve to give the future American Merchant Marine Officer a generalized training that will give them a solid foundation of experience and understanding on what is required and what they will experience as a 3rd Officer (M. Sobkow, Personal communication, 2017). While the American training ship experience lacks the cargo aspect that every commercial shipping experience has, not every cadet coming off commercial cadet shipping will experience the same type of cargo system. The Training ship offers a controlled environment to help develop and foster the American cadet. This allows the cadet to learn and mature as a seaman on their own and in a positive upward trend towards the license. Additionally, due to the operations of the ship, a commercial cadet shipping experience might be at anchor or tied up at the pier for the duration of the cadet's stay, reducing the navigation or operation based learning opportunities. On the training ships, voyages are planned so that they go through busy traffic separation schemes, rivers and many other navigational wonders solely for the purpose of giving cadets both deck and engine alike experience with ship handling and maneuvering. Whereas with commercial cadet shipping, most cadets will not experience these opportunities unless the ship is ordered by the company to transit these types of waterways. The learning of the cadets while commercial cadet shipping is not the priority of the officers and crew onboard as the operation of the vessel comes first, causing the cadet to often be considered a second thought or simply an extra hand. However, on training ships, the sole focus of the vessel is on training cadets and preparing them for sea.

There is no normal day onboard a training ship, cadets are constantly rotating through evolutions, training or watches. Onboard the Training Ship Empire State, some cadets will stand

watch, others will work on their assigned ship rate or assist those rates for the day. A ship rate is a designated duty or responsibility associated with the operation of the ship which a cadet can earn. Some examples of ship rates include the Safety Rates which are responsible for maintaining the Lifesaving Equipment, the Navigation Rates which plan and develop the Voyage Plans, and the Bosun Rates which maintain the docking and cargo equipment. A variety of classes are taught onboard as well. One of these classes is called Focus Training which is training focused on shipboard learning and a variety of aspects related to being a ship's officer that are difficult to experience on land. This includes loading wounded individuals into lifeboats, refilling SCBAs, utilizing mooring winches or the Appleton crane, along with many other exercises. These classes, watches, and evolutions, allow cadets to reinforce what they are learning at sea in a more practical environment.

Onboard a training ship, first and foremost cadets will learn the fundamentals. They learn to chip and paint correctly, stand lookout and be wipers in the Engine Room. While in this controlled environment with professional mariner oversight they learn to work their way up. This gives the cadet on their first cruise the experience of doing “unlicensed work”. This first experience shows them how the unlicensed crew would operate on a ship and shows them to respect those who will work below them. At the same time, this gives the upper-class cadets, leadership experience which is critical for a Deck or Engineering Officer. They have to maintain the engine plant, keep the course and avoid collision all with the assistance of the underclass standing the unlicensed watches. As the upper-class practice their abilities to make decisions and develop their leadership, licensed officers are also present, ensuring the watches are stood properly and that cadets are giving the proper orders, ensuring the safety of the vessel and all those onboard.

All training ships also have a unique watch for their first class which allows them to practice being the Officer On Watch. On board the Training Ship Empire State, these watches are called the Cadet Watch Officer (CWO) and the Cadet Watch Engineer (CWE). These two positions allow a first class cadet to run the watch and gain the experience of controlling a watch in a controlled environment, whether at sea, anchor or alongside the pier. This allows for growth of the entire watch team, not just the CWE or CWO as the CWE and the CWO leads the entire watch team towards a successful completion of the watch.

Celestial Navigation is also a subject which is preached onboard training ships. While, it may not be seen as prevalent in the industry today, the training evolutions focused on Celestial Navigation which are implemented on board these training ships allows these future Deck Officers to have a solid grasp on a back-up navigation system if there was ever an error to occur with their computerized navigational aids. This is accomplished on these training ships by requiring the Deck Cadets to constantly navigate through the use of the sun, stars, moon and land when applicable. When the training ship sails with land in sight, Pilotage watches are put into effect. A pilotage watch is conducted by having cadets go up to the Aft Chartroom and practice taking ranges and bearings. Training ships also allow the students to utilize the Navigational equipment such as the RADARs, AIS, VHF radios, and ECDIS systems while on watch. This allows the cadets to have hands on experience with these navigation aids in a practical environment.

Although there are many instructors on board a training ship, most incorporate the aspect of having the upper class cadets train and instruct the underclass. On board the Training Vessel Empire State, upper class cadets also stand instructor watches in both the engine room and aft chartroom. In the aft chartroom watch, a first class cadet will supervise and ensure all navigation done on the watch is correct. In the Engine Room, the cadet instructor teaches the underclass cadets anything and everything they need and should know. This position benefits both the growth of the upper class and underclass. Underclass build a more solid grasp of the material and upper class cadets develop leadership through guiding the underclass and ensuring the material they are teaching is correct. Third Officers are expected to instruct other crew members a variety of safety related material such as Safety Management System walk-throughs, engine systems or navigation. This evolution of cadet instructors helps prepare the students for this eventual responsibility.

With a considerable time on board spent at sea and no strict requirements on maintaining an ETA, training ships have more opportunities to practice lowering and recovering the Lifeboats. This allows Cadets the ability to actually drop a lifeboat on a ship that is underway in a structured environment that is not rushed with work schedules. With lifeboats in mind, some of the United States of America's training ships have open lifeboats as well, allowing them to observe the operation of a variety of systems. This provides the cadets all the tools required for a well rounded lifeboat experience, allowing them the ability to drop any gravity davit lifeboat

they will see. It is also easy to conduct Man overboard drills, allowing all cadets to learn and witness how to maneuver the vessel for a Williamson Turn and lower the Fast Rescue Boat. These drills also make it easy for the cadets to ride in the Fast Rescue Boat and practice the retrieval of a person through the use of a rescue dummy.

Weekly, onboard emergency drills are also held and utilized for more extensive training purposes. Damage Control Lockers filled with cadets get to don fire gear and to experience a drill. This allows for upper class cadets to lead the Damage Control locker with oversight from a licensed officer. Although officers are standing by as a guide and would take over in the event of an emergency, the majority of positions for drills are held by the cadets. Fire scenarios and duties of these assigned cadets are simulated on station, on the bridge, and in engine room. Boat Captains and personnel with responsibilities are generally upper class cadets who soon will be leading these drills on commercial ships.

On board a training ship, unique evolutions are held such as allowing deck cadets learn how to properly rig a pilot ladder according to IMO standards. For example, the Training Vessel Empire State has a licensed Mate who usually is a pilot, guide each cadet through rigging a pilot ladder properly. While the training ships are activated for relatively short period of time throughout the year, the vessels remain at the school, tied up at the pier. The vessel offers wealth of knowledge being around all year as being a practical platform for training purposes readily available. Cadets learn to stand in port watches, maintain the ship through weekly maintenance labs and work on the ship. This year round access to a vessel for the duration college education is a critical piece to the education of the cadets as well.

The future of the maritime industry has always been a bright and prosperous one. From the early days of sailing to the new age technology which help with cargo operations and navigation with the easy push of a button, the industry continues to be at the forefront of new ideas and technology. So what does our future hold? With our industry continually growing and moving towards technology for answers, the future training programs will include increasingly more simulators both on shore as well as on our new training ships. This can be seen on board the training ships of today such as the recent navigation simulator which was recently added to SUNY Maritime's Training Vessel Empire State. Similar to a training vessel, simulators provide a controlled environment to instruct students and provide countless opportunities for hands on training evolutions. With simulators and machinery that mimics that of what cadets will see on

both their time as a licensed officer, the cadets are provided the opportunity to have hands on training that will give them the confidence to make tough decisions along with the leadership skills necessary to be the officer the industry requires. Imagine, commanding a massive vessel in a densely populated channel where your decision making skills cannot harm a vessel or personnel but will show you the results in real time! As the dawn of digitization comes upon the industry, simulators are seen as the future of our day to day tasks in the commercial world so having the technology on a training platform with instructors to guide your thought process is ideal for the creation of the Merchant Officer. Other ideas that have been discussed at great length are to utilize medium sized vessels to train cadets. Professor Matthew Germann points out that these types of vessels would allow for a training structure which would utilize short voyages with a low number of cadets onboard, allowing instructors to show the cadet how to properly navigate small channels or harbors as well as the maintenance and housekeeping for the entire ship. From the safe navigation of the vessel, the powering of the amenities onboard and the crucial ordering, loading and cooking, this smaller platform provides the students the opportunity to learn all critical operations onboard the vessel (M. Germann, personal communication, 2017). As we look towards the future, the current training vessels are slowly aging and approaching the end of their usable life, with the average age being around 35 and the oldest being the Training Vessel Empire State at 55 years old (Tyler, 2015). Discussions between the State Maritime Academies and the US Maritime Administration are being made in regards to their replacement and the next generation of training vessels. This has included the discussion on the development of a new state of the art vessel which is specifically designed to train the future of the industry which keeps the concept of training primarily in mind.

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