

INFORMATION SYSTEMS ON THE *TRAINING SHIP EMPIRE STATE VI*: PROVIDING ELECTRONIC RESOURCES TO CADETS AT SEA

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Abstract SUNY Maritime College prepares students for careers through a content-centered curriculum and a hands-on, team building approach to learning. As a part of the STCW requirements, the SUNY Maritime Cadets are required to participate on Summer Sea terms aboard the *Training Ship Empire State VI*, the largest training ship in the United States used for cadet training. The *Training Ship Empire State VI* is fitted with classroom space, computer rooms and a fully functioning research facility with access to the library's information systems and electronic resources. Similar to Maritime College Library ashore, the Ship's research facility is equipped with the appropriate technology to accommodate cadets' mode of learning and information researching. The Ship's Library is equipped with several computer workstations networked on its local area network. The Library's systems are connected with the Ship's intranet and the Ship's satellite communication system to provide access to the library's digital resources. All library computers aboard the training ship provide access to electronic publications, data banks, various training software and an automated integrated library management system. The paper "Information Systems on the *Training Ship Empire State VI*: Providing Electronic Resources to Cadets at Sea" describes the ship's library information systems in support of the maritime courses taught at sea.

Keyword: *Information Systems; Training Ships; Library Electronic Resources; Maritime Cadet Education at Sea; Ship Libraries*

1. Introduction

The study "Information Systems on the *Training Ship Empire State VI*: Providing Electronic Resources to Cadets at Sea" describes the information systems on Ship's Library in support of the maritime courses taught at sea at the State University of New York Maritime College. The study also demonstrates how technological advances in information systems and the electronic delivery of library's resource, enhances cadet education at sea.

The Maritime College is one of the 64 colleges and universities of the Sate University of New York System (SUNY). SUNY Maritime College offers an academic program combined with a structured cadet life in the regiment for both men and women. Maritime College prepares students for careers through a content-centered curriculum and a hands-on, team building approach to learning. The curriculum offers

undergraduate and graduate degrees, and a European summer sea term of 90-days aboard the Training Ship *Empire State VI*, SUNY Maritime [1]. Cadets pursuing a professional license as a United States Merchant Marine Officer are required to take a minimum of three Summer Sea Terms. Cadets aiming to qualify as a third mate undergo extensive (basic, intermediate, and advanced) training in ship operation and management. While onboard the “deckies” are exposed to rigorous training in the areas of communications, navigation, ship handling, ship operations, safety, and meteorology. Under the supervision of the Chief Engineer and the Senior Engineering Training Officer, Cadets qualifying as assistant engineers receive in-depth training in the ship’s organization, interrelationship of the components of an operating engine room, and safety of person and ship. Each cadet must take and pass intensive oral and written examinations, SUNY Maritime College.

2. Education and Training Aboard the *Training Ship Empire State VI*

The SUNY Maritime College Cadets, spend 90 days at sea aboard the *Training Ship Empire State VI* during the months of May-August for three years. During the 90 days at sea, the *Training Ship Empire State VI* visits four to five European ports. The educational objectives of the summer sea term are outlined as such, SUNY Maritime [3]:

1. To provide an understanding of shipboard organization, administration, facilities and functions of the various departments of a merchant vessel.
2. To develop a full appreciation of the principles of command, to train Cadets in the duties and responsibilities of watch officers and other supervisory personnel, and to promote a complete understanding of the duties and responsibilities of personnel in general.
3. To supplement ashore classroom instruction in professional subjects through practical application aboard the training ship at sea.
4. To promote an understanding, through practical experience, of the leadership, teamwork, techniques, and technical skills required to manage and operate a vessel efficiently, safely and economically.
5. To enhance cultural and professional backgrounds through as many contacts with the geography, history, and national distinctions of other countries and peoples, as the limited time allows.

The training ship is fitted with classroom space, computer rooms and a fully functioning research facility with access to the library’s information systems and electronic resources. The Ship’s research facility is equipped with the appropriate technology to deliver the library’s electronic resources. A library faculty serves the duties of Ship’s Librarian. The Ship’s Librarian maintains all library operations and provides research expertise for the information needs of the shipboard community. The SUNY Maritime College Library aboard the *Training Ship Empire State VI* is the primary resource and research facility for all cadets and crew.

3. Information Systems on the *Training Ship Empire State VI*

Like many similar types of vessels, the *Training Ship Empire State VI* is equipped with communication systems, radars and global positioning systems. In order to meet the requirements for training and educating cadets, the *Empire State VI* is equipped with four multi Purpose Computer Labs and a Server Room. The cadet labs are running course related software such as real time navigation and charting

application/software that assist students to learn how to navigate through international waters. The additional two computer labs are designed for online communications, such as email access via satellite communication systems. Access to email for all staff and students is available 24/7.

A secure area on the Ship is dedicated to server units. The Server room on the ship contains two email servers (one for crew and another server for students), a web server and NS5 server. Two email servers are dedicated to email communication for students and staff. It is the only communication system available to students and crew for routine and social communication with the world while they are at sea during the summer sea term. In addition, the training ship maintains an active website. The website contains announcements, sea logs, and pictures of students and crew from different ports of call. More importantly, the web server is utilized to post course material for students such as assignments, readings, etc. to review for their classes and is also to update the cruise related information. The NS5 server is dedicated to the inventory of ship's equipment and parts.

3.1 Library Technology Aboard the Training Ship Empire State VI

The SUNY Maritime College Library is an academic department, accredited by professional organizations such as the Middle State Commission on Higher Education. Like many libraries in the United States, The Maritime College Library adheres to the standards and guidelines of the Association of the College and Research Libraries of the American Library Association, American Library Association [2]. The Library's collections, print and electronic support the research requirements of the maritime disciplines in engineering, science, business, marine transportation, and the humanities. In addition, the library's instructional program supports the information literacy and assessment requirements of the maritime curriculum and the general education courses.

The Library on Training Ship *Empire State VI* is located on deck four and it occupies approximately 2500 square feet. It has a reading room with seating capacity for 55 people and shelving that holds approximately 7,000 books. Similarly with the SUNY Maritime College Library ashore, the Ship's Library is furnished with the latest technology to facilitate the teaching and learning objectives of the SUNY Maritime cadets at sea.

It is imperative to have the latest technology is imperative on modern ships. Technology is also a major mode of learning for the new generation of cadets. Young cadets are well proficient and oriented with technology and they are accustomed to instantaneous access to information. Decision making process at sea is subject to instantaneous access to information; prime example is electronic navigation, electronic weather reports, electronic communication with other vessels and electronic access to important documents and resources. The Ship's Library is furnished with several computer workstations which are networked on its local area network, (LAN).

The Library's LAN is networked to the Ship's intranet which is connected to the *Empire State VI* satellite communication system. Library computers provide access to electronic publications needed by the cadets for their studies. Electronic information is also provided specific to library operations and personnel; image and data banks; a suite of various training software; and the Library's OPAC. Management of library operations is done using LibrarySoft, an integrated library management system. Cataloging of books, circulation, patron record maintenance, statistics and report generation are all managed by LibrarySoft. Content specific electronic resources and research databases are made accessible through several networked computer terminals in the ship's library, Constantinou & Fazal [4]. The Library's local area network is a shared system for running all the web applications and the local based setup for the

library's website. The LAN system also serves as a databank that houses images and the library's electronic resources. The Library's server is part of the Ship's intranet server. It is possible that anyone from anywhere aboard the ship can access the library's LAN system. In addition, the library has networked printing capabilities from any of the library's workstations to a central printer.

The Ship's Librarian workstation has all the rights and privileges to update and mortify the library's server; a task that is a part of the librarian's duties during the summer sea term. The Librarian updates information on the fly, for instance: at each port of call, the Librarian receives updates and transmitted electronic information for the research needs of the crew and students.

4. Access to Electronic Resources

The Ship's Library technology infrastructure is built on a local area network (LAN). Several computer workstations are networked to the Ship's intranet which is connected to the Ship's satellite communication system. Cadets and crew can access the electronic publications and research material through an image and data banks of various training software. The most updated editions of various official government publications are transferred in electronic format and made available on the library's computers. These publications are on subjects such as ocean conditions, navigations, federal regulations; and several sources on countries/cultures information and ports guide to support travelling to various ports of call. (Image 1.)

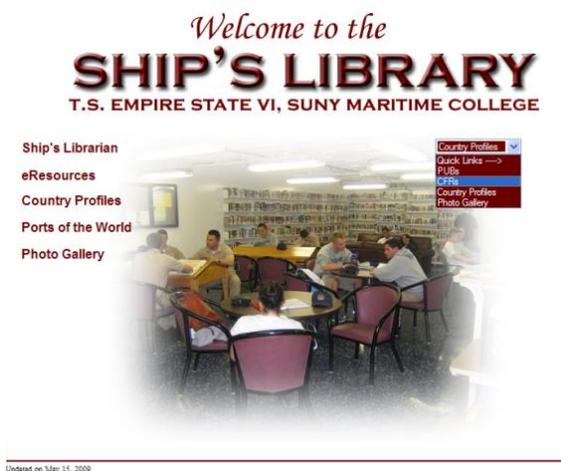


Image 1.

Cadets and crew have electronic access to titles such as *Bowditch Practical Navigator*, *List of Lights*, *International Code of Signals*, *Code of Federal Regulations*, *Pilot Charts*, *Sailing Directions*, *Radio and Radar Navigation*, and *Sight Reduction Tables*, *Countries and their Cultures*, *CIA World Factbook*, and *Encyclopedia of Food and Cultures*. Additionally, access to email enhances the delivery of electronic information to the Ship's Library. The email system is set up to work with the Ship's data satellite service.

The Ship's Librarian remains in constant communication with the librarians at the main library ashore. Whenever there is a need for access to additional electronic materials, the librarians are able to transmit the latest information via email to the ship's library.

4.1 Maritime Electronic Resources

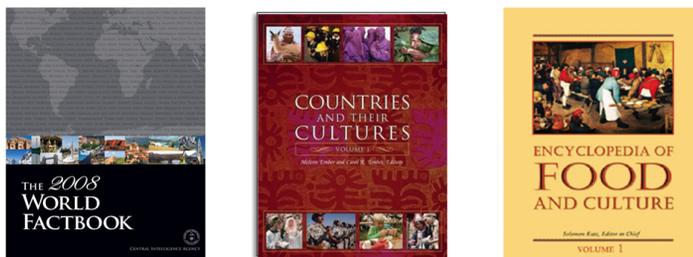
Cadets studying navigation, use one of the leading reference works for marine navigation, the *Bowditch Practical Navigator* [5]. The electronic reference work encompasses thirty-eight chapters, on marine navigation, piloting, electronic and celestial navigation, navigation mathematics, navigation safety, oceanography and marine meteorology. The electronic format of the *Bowditch Practical Navigator* is the digital version of the print book which includes charts, drawings, and mathematical formulas as they appeared in the print version. The *List of Lights* is made available electronically by the Navigation Center of the United States Homeland Security, Coast Guard department [6]. The resource includes the most up-to-date information on the list of lights presented in a PDF format. Electronic access to the *International Code of Signals*, provides the cadets with an overview of the history of the international code of signals and a detailed list with colored pictures of all signal flags.

The *Code of Federal Regulations*, (CFR) is published by the United States Government Printing Office (GPO). The CFR is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the United States Federal Government, CFR [7]. The most popular sections of the CFR used by the cadets for their studies are CFR-50 Wildlife and Fisheries; CFR-49 Transportation; CFR-46 Shipping; CFR-40 Protection of Environment, CFR- 35 Panama Canal, CFR-33 Navigation and Navigable Waters. *Pilot Charts*, and *Sailing Directions*, provide electronic access to most up-to-date navigation charts. The *Sight Reduction Tables*, are used by all cadets for charting their course during navigation classes [8].

In addition to the course-specific electronic resources the cadets are required to use during their studies at sea, the library also makes other related non-course-specific resources available through its networked stations. During the ninety days at sea, the Training Ship *Empire State VI* visits five to six European ports. The SUNY Maritime College Cadets have the opportunity to be exposed to other countries, languages, customs, cultures and civilizations. Exposure to other countries customs and ethnic identities is a valuable lesson learned in an international discipline such as the maritime studies.

Electronic access to resources such as *Countries and their Cultures* [9], *CIA World Factbook*, [10], and *Encyclopedia of Food and Cultures* [11] provide invaluable information on other countries. *Countries and their Cultures* is a searchable database with images and maps with emphasis on the local and ethnic culture of each country. The *CIA World Factbook*, is published and made available by the Central Intelligence Agency of the United States government. It is one of the most comprehensive and current databases on factual country information about the history, government, communication, transportation, population etc. The *Encyclopedia of Food and Cultures* is an electronic book format made available through the library's Gale databases subscriptions. (Image 2.)

E-Resources



- ☛ Regulations, manuals, and navigational sources
- ☛ Countries and cultures information sources

Image 2.

4.2 Integrated Library System

The Ship’s library uses an integrated library system called Librarysoft for collection management, circulation functions, cataloging and statistics gathering. It is made up of a number of modules that provide the library with a great degree of control over the large amounts of complex data required to run an efficient library. The circulation system provides checking In and checking out of materials, renewals, fines, and reserves. Library users are able to search the library’s holdings and find items using the simple or the advance search options by title, author and subject. In addition, the system allows library staff to generate reports and statistics of circulation, searches and cataloging functions.

Librarysoft, also allows the ability to transfer patron accounts of all library users on the ship and data from the library’s systems shore to the Ship’s Library management system. Patron records are downloaded from Aleph, (integrated library system ashore), they are being converted to appropriate format in excel spreadsheet and uploaded to the Ship’s integrated library system. The same practice is performed for all monograph records so that library users are able to search the library’s holdings by title, author and subject. (Image 3.)

LibrarySoft - Library Management System

- ☛ Fully automated
- ☛ Manages all circulation and cataloging operations
- ☛ Integrated online public access catalog (OPAC)
- ☛ Generates statistical reports



Image 3.

4.3 Library Blog

The Ship's Library also utilizes blog technology to keep the community ashore and afloat engaged with daily updates and news. The Ship's librarian uses satellite email communication to send his daily ship logs to the library ashore. The library ashore subscribes to a Blogger where the librarian's ship logs are posted. The campus community ashore, (students, parents, relatives and faculty) of the shipboard community look forward to reading and responding to the blogs posted by the librarians. The library blog has received praises for keeping our two communities (ashore and afloat) connected during the summer sea term [12].

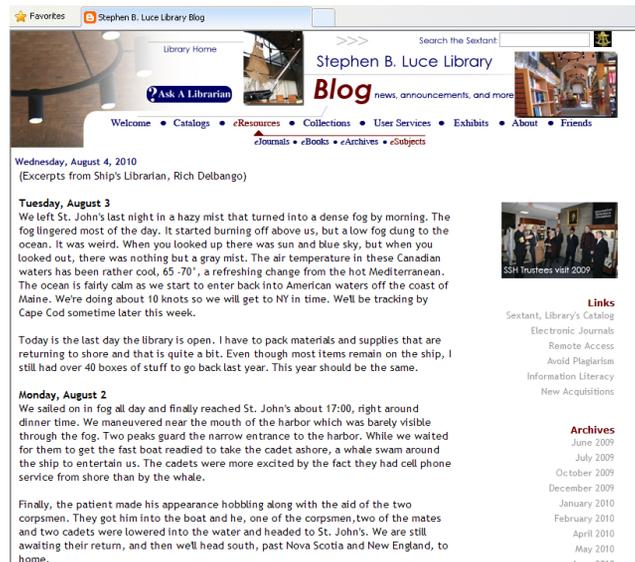


Image 4.

5. Conclusion

Traditionally and throughout history young mariners learned how to read and write and received their education from book they read at sea. Advancements in technology have revolutionized maritime studies in the areas of navigation, engineering and communication. All decisions made aboard vessels are based on access to information systems and technology. SUNY Maritime College educates and trains cadets to work under the most technologically advanced environments. The SUNY Maritime College Library aboard the Training Ship *Empire State VI* plays a critical role in providing the shipboard community with the most relevant up-to-date information. One of the most important objectives of educating mariners at sea is learning to appreciate and understand access to information as a critical component to decision making.

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