HOW TO MAKE SENSE OF WHICH TRENDS TO ADOPT FOR MARITIME EDUCATION AND TRAINING

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ABSTRACT

This paper will explore those opportunities and other trends in the broader educational environment and determine how well they translate into the MET context. It will describe the current state of the practice and challenges to adopting new modalities for learning. The authors and their colleagues are currently designing a new graduate program in global maritime business. Based upon results of the market survey and benchmark analysis, elements of customizable, asynchronous learning format have been incorporated into the program. This paper will describe how those elements were designed and how they were adapted for the MET context. The lessons learned will be invaluable to the MET community as well as the broader maritime community as we endeavor to more effectively enhance seafarer knowledge and competence.

Keywords: *MET, educational trends, distance/blended learning, individualized learning, social learning*

1. INTRODUCTION

By now, we've all heard that the world is flat. At least, that's the metaphor put forward by Thomas Friedman to describe the globalization pressures that have resulted in a levelled playing field and an opening of opportunities. Much of this globalization and flattening of the world has been attributed to the new technologies born out of the information revolution.

On the one hand, maritime education and training (MET) providers have exploited these technologies to enhance learning (locally). Constanta Maritime University provided a recent, excellent summary of these technologies and how they can be applied within the MET context [1]. On the other hand, there has been considerable effort to innovate MET via work emanating out of the SCTW [2].While each of these approaches are important to the innovation and enhancement of MET, the focus of this paper will be on the broader educational trends and some attempts to adapt them to the MET environment. For in the midst of the current information revolution, several questions come to mind:

- How does this notion of globalization effect maritime education and training (MET)?
- How will opportunities be opened to mariners?
- What are the best technologies and learning trends to apply in the maritime context?

While MET has long been global, multicultural, and technological in nature, it has not yet leveraged globalization full-scale. Opportunities remain in distance/blended learning, individualized learning, social learning, and natural learning.

This paper will explore the general trends in education and determine how well they translate into the MET context. It will examine several opportunities for enhancing learning in the maritime context and will identify opportunities for employing those trending educational modes, technologies, and pedagogies.

Finally, the paper will describe the ongoing efforts of the authors and their colleagues in designing a new graduate program in global maritime business. Based upon results of the market survey and benchmark analysis, elements of customizable, asynchronous learning format have been incorporated into the program. This paper will describe how those elements were designed and how they were adapted to the MET context. The lessons learned will be invaluable to the MET community as well as the broader maritime community as we endeavor to more effectively enhance seafarer knowledge and competence.

2. TRENDS IN EDUCATION

Often when we think about trends in education, we focus specifically and immediately upon the technologies that enable improvements in learning. Rather than starting with the technologies, this paper will look at the more general trends. In a year-end 2012 summary of trends in MET, *Maritime Professional* posted the following three important trends [3]:

- Social Learning – using social media, wikis, and other technologies to foster student-to-student learning
- Learning Process Maturation – in general, this involved using more mature processes to design, deliver, and assess learning
- e-Learning – using learning management systems (LMS) to focus on the learning process rather than merely as a repository of content

Another group out of New Zealand identified ten trends for 2013: openness, smart web, ubiquitous learning, personalization, data engagement, citizenship, virtual learning, thinking 3D, social learning, and user + control [4]. If one were to attempt to capture all of the trends observed or forecasted, this list would become excessive. So, in an attempt to narrow the scope and focus on only a few of the most relevant trends, this paper will focus on the following trends:

- Individualized Learning – also known as personalization
- Social Learning – as described above

- Distance or Blended Learning – which contains aspects of several from the list of ten above including openness, ubiquitous learning, and virtual learning.

This paper will now examine each of these trends and attempt to adapt them to the MET context. Later in the paper, the authors will describe how their institution is leveraging these trends in the development of a graduate program in global maritime business.

3. OPPORTUNITIES FOR MARITIME EDUCATION AND TRAINING (MET)

3.1 Trend no.1: Individualized Learning

There is a growing awareness that the old *one-size-fits-all* paradigm to learning is no longer effective. With origins dating back to the 1960s and 1970s (and likely long before) [5], individualized learning is not new, but due to the information revolution and the on-demand culture that results, individualized learning is becoming increasingly mainstream.In individualized learning/instruction, the content, technology, pedagogy, and pace are all dictated in large part by the learner, or student. One of the primary reasons for introducing individualized learning was the fact that no two students learn in exactly the same way, and thus, would benefit from customized education to accommodate their learning styles and preferences. This holds true in the MET context whereby students come from widely varying backgrounds, experience levels and readiness. While individualized learning appears reasonable, it comes at a cost. How often does every student require a different approach to learning? Additionally, how much effort would be required to design, develop, and deploy an educational environment that could accommodate the range of potential learning preferences? Therefore, when considering how to implement this trend, particularly in the MET context, trade-off discussions and decisions must be had.

3.2 Trend no.2: Social Learning

Social learning takes advantage of social media and other social channels to enhance the learning environment. Today, there is a common concept of social learning that emanates from the wide adoption of social media. However, the concept of social media, like that of individualized learning, dates back before the existence of social media. Originally, social learning was considered as the selection of social learning strategies by which students decided who they interacted with, who they decided to emulate, and who they decided to copy, often with foundations in population genetic and game theoretic models [6].

In this paper, we will adopt the more contemporary ideas of social learning as that which exploits the variety of the social networking services and social media tools available today. To distinguish it from the more general e-learning, social learning is defined by how content is produced and consumed – people share information with each other and determine the value of that information based upon their networks [7]. Often, in a professional setting, social learning can yield strong payoffs [8], however, in an educational setting where experience may be lacking, social learning must be used sparingly and with some consideration.

Thus, for the purposes of developing a graduate program in the MET context, social learning is used as a component of individualized learning, but not as a substitute for ensuring appropriate content is available and intentionally distributed. Social learning may be used as a means of enhancing the context of application once the concepts have been acquired.

3.3 Trend no.3: Distance/Blended Learning

This trend appears to be the dominant trend in education. There is an explosion of distance and blended learning opportunities [9]. However, there is the presumption that online delivery modes using internet technologies are ubiquitous – which they are not. That said, there is undoubtedly a great opportunity in leveraging distance and blended learning.

Furthermore, this opportunity is enhanced for mariners and the MET context [10], [11], whereby schedules and commitments often are not conducive to more traditional formats of learning. A summary of international perspectives confirms this [12]. The primary basis for such an approach to learning is to increase access. Taken a step farther, an open curriculum (referred to earlier as openness), as evidenced in MOOC's (or massively open online courses), is available to all (with the ability to form connectivity).

Thus, a key consideration of determining the degree to how much a course will be presented online (100% for entirely "distance" learning, and a "blend" for that which uses less than 100% online and the balance in traditional in residence format). Additionally, it will be important to determine whether the online portion can be delivered synchronously or asynchronously. Each has advantages and challenges.

After providing a rapid overview of three trends in education, attention will now be turned to the adoption and application of those trends in the design and development of an actual MET program.

4. GRADUATE PROGRAM DESIGN

As a part of its 2012-2016 strategic plan, the Massachusetts Maritime Academy committed to exploring the potential for offering a graduate program in supply chain management[13]. In 2012, the International Maritime Business Department began investigating the potential for offering a new graduate program. A benchmarking analysis and a broad market survey were completed.

4.1 Benchmark Analysis

The benchmarking analysis involved examining the market for similar products and services. Specifically, the following sets of schools were examined:
- U.S. MBA programs with specialization in supply chain management/logistics

- International (non-U.S.) maritime graduate programs
- U.S. maritime academies with maritime graduate programs

It was found that the market for specialized MBA programs in the U.S. was quite saturated and mature. There are literally hundreds of such programs in the U.S., including many from the top business schools. The following is a list of the top U.S. business schools that offer specialized supply chain management/logistics programs [14]:

1. Massachusetts Institute of Technology (Sloan)
2. Michigan State University (Broad)
3. Pennsylvania State University (Smeal)
4. Ohio State University (Fischer)
4. Stanford University
6. Arizona State University (Carey)
6. Carnegie Mellon University (Tepper)
8. University of Pennsylvania (Wharton)
9. Purdue University (Krannert)
10. University of Michigan (Ross)

In the 72,000 square mile (186,500 km^2) six-state region of New England alone, there are 231 degree-granting colleges and universities. Of those, 38% offer MBA programs and 10% offer specialized supply chain management programs.

Furthermore, the executive-formatted weekend MBA market within the greater-Boston metropolitan area (where Massachusetts Maritime Academy generally resides) is densely competitive and includes programslike the following [15]:

- Babson University – 21-month "fast track" MBA that meets 2.5 days every 7 weeks
- Massachusetts Institute of Technology – 18-month executive MBA that consists of 21 Friday-Saturday sessions every 4 weeks
- Boston University – 18-month MBA program that meets Friday-Saturday every other week

Additionally, an in-depth scoping analysis was conducted of several of the U.S. business schools just mentioned, as well as international (primarily European) and U.S. maritime graduate programs. Some of the international maritime programs that were examined included:

- Cardiff University Business School (U.K.)
- Cass Business School in London (U.K.)
- University of Antwerp's Institute for Maritime Management (Belgium)
- Erasmus University Centre for Maritime Economics and Logistics (Netherlands)
- University of Tasmania Maritime College (Australia).

Each of these programs was examined to determine entry requirements, program structure, fees, and curriculum. The intent of this scoping portion of the benchmarking analysis was to determine effective practices to generate ideas for the graduate program at Massachusetts Maritime Academy.

Finally, an in-depth analysis was conducted of the U.S. maritime academies with maritime graduate programs. This analysis was intended to determine

market opportunities as well as identify current practices. The following schools were examined:

- California Maritime Academy – online M.S. in Marine Transportation and Engineering Management
- Maine Maritime Academy – M.S. in Global Logistics and Maritime Management
- SUNY Maritime College – M.S. in International Transportation Management
- Texas Maritime Academy at Texas A&M University in Galveston – Masters in Maritime Administration and Management
- U.S. Merchant Marine Academy – M.S. in Marine Engineering

Table 1 provides an overview of key dimensions of the U.S. maritime academy programs.

Table 1. Comparison of graduate programs at
U.S. maritime academies

Institution / Program	Established	Program Duration	Mode of Delivery	Cost ($US)	Features
California MSMTEM	2011	2 years	Online	$27,000	Many electives
Maine MSGLMM	1985	1 year	Residence	$22,178	No electives, reduced tuition for alumni
New York MSITM	1968	2 years	Residence	$16,422	Specialized certification
Texas MMAM	2012	2 years	Residence	$15,050	Policy and law tracks

Information gathered from institutional websites in 2012.

Some of the most interesting effective practices observed through this analysis included:

- Blended delivery – to accommodate mariners' schedules at sea
- Reduced tuition for alumni
- Generalist (rather than specialist) program – to appeal to broadest possible audience
- Options for program duration (including "fast track") – rather than options for curriculum
- Broad maritime focus and network building

4.2 Market Survey

The market survey was performed to determine the needs, interests, and preferences of potential students. The survey gathered information on the following variables of interest:

- Demographics – information about age, gender, education level, and amount and sector of professional experience
- Interest – level of interest in pursuing a graduate degree
- Motivation – reason for interest, if any, in pursuing a graduate degree
- Focus – preferred type of graduate program
- Topics – specific topics of interest
- Format – preferred structure of graduate program
- Mode – preferred mode of delivery

- Factors – identification of key factors involved in making decisions about which graduate program to attend

The survey was administered electronically to three separate groups of potential students (or customers):

1. Senior (fourth year) undergraduate international maritime business students
2. Graduates of the Massachusetts Maritime Academy
3. Students and faculty of non-U.S. maritime academies and maritime-affiliated schools

The first group was principally a convenience sample intended to test the survey instrument, but also as a key group of potential students interested in the graduate program. The survey was administered to 45 students and 20 responded (for a response rate of 44.4%). The respondents were predominantly male, of traditional college age, and with high interest in pursuing a graduate degree.

The second group represents a sample of primary potential students. It was administered to nearly 900 graduates of the Massachusetts Maritime Academy from all years and all majors. 304 graduates responded to the survey (32.3% response rate).The respondents were predominantly male, with average age over 40, with considerable maritime experience, and only 55% had interest in pursuing a graduate degree.

The third and final group represented a sample of secondary potential students. It is unknown as to how many people the survey was provided to, but 24 responded. The respondents were mostly male, mostly younger, and had considerable interest in pursuing a graduate program.

The following are some of the key findings of the market survey:

- 32% of MMA graduates, 66% of international students, and 55% of MMA undergraduate students have *high or very high interest* in global maritime leadership graduate degree program.
- Of those respondents interested in pursuing a graduate degree, most are seeking to *advance their career or obtain new knowledge.*
- 56.3% of MMA graduates, 72.3% of international, and 75% of MMA undergraduate students intend to *pursue a graduate degree in next five years.*
- About half of MMA graduates and undergraduate students prefer a program that *blends* business, maritime, and logistics. 58.8% of international students prefer a *global maritime business program*. See figure 1.
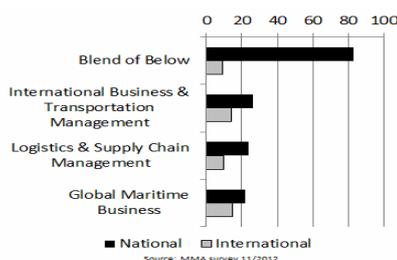

Figure 1 Preferred focus of program

- Risk management is the most sought after topic (43.5% of MMA graduates). Logistics was a top-selected

topic in each of the three groups surveyed. Port & Terminal Management, Supply Chain Management, and Vessel Chartering & Brokerage were top-listed topics for at least two of the groups. See figure 2.
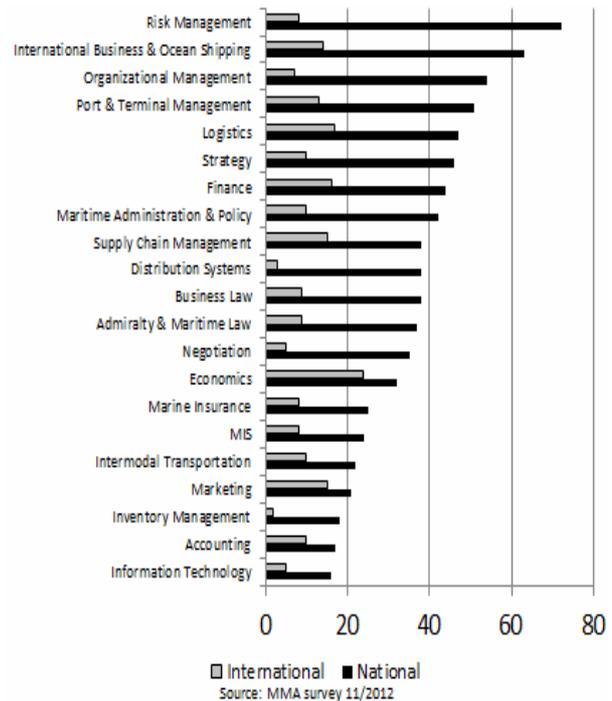

Figure 2 Preferred topics for program

- Most of the MMA graduates and MMA undergraduate students prefer a program that blends in residence and online sessions and runs 18-24 months. International students prefer a daytime program that runs 12 months. See figure 3.
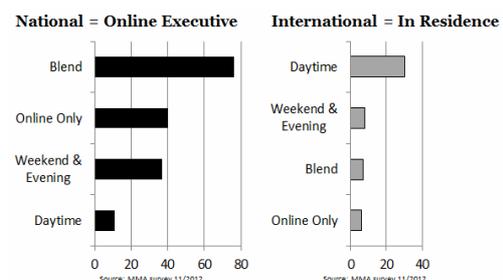

Figure 3 Preferred format/mode of program

- All groups indicated that "curriculum," "exposure to practitioners," and "cost" arethe most important factors for choosing a graduate school. "Ability to advance professional growth" and "mission of program" were also important factors for two of the groups.

4.3 Top-level Programmatic Design

Based on the benchmarking analysis and the market survey, a preliminary program was developed. The program will *focus* on global maritime business (rather than supply chain management/logistics as originally envisioned).

This *focus* will bring in elements of international business and trade, marine transportation, logistics and supply chain management, and general business. The initial offering will be deployed using a blended *mode* of delivery (25% in residence and 75% online). This is consistent with trend of growth in the U.S. MBA market [16]. The initial introductory courses and the final capstone course will be intensive in-residence courses. All other courses will be online and may be completed asynchronously. Students will be able to complete this course in a two-year period. Eventually, it is envisioned that a 12-month "*fast-track*" residential option will also become available (once the blended program has been proven). Table 2 illustrates the proposed curriculum for the program.

Table 2. Global maritime business program curriculum

Period	Course	Credits
Summer (August)	+ Welcome Aboard: Introduction to Global Maritime Business + Shipping, Trade & Globalization (2 weeks in residence)	3.0 3.0
Fall (Sept – Dec)	+Maritime Leadership & Strategy + Shipping Economics, Operations & Management I + Shipping Economics, Operations & Management II (online)	3.0 3.0 3.0
Winter (Jan – Feb)	+ Maritime Law, Policy & Regulation + Maritime Finance & Risk Management (online)	3.0 3.0
Spring (March – June)	+ Global Logistics & Supply Chain Management + Port Operations & Management + Business & Maritime Information Technology (online)	3.0 3.0 3.0
Summer (June – August)	+ Global Maritime Business Capstone (online + 2 week in residence)	6.0

The proposed curriculum (table 2) and the corresponding syllabi have been approved by the governance bodies within the Massachusetts Maritime Academy. Additionally, the Board of Trustees has approved the curriculum. Next, a proposal will be made to the Board of Higher Education for the Commonwealth (state) of Massachusetts.

4.4 Online Course Design

Now that the top-level programmatic design (including individual course syllabi) has been approved, focus will turn toward the design of effective online courses. There are many design criteria that must be considered in the development of online and blended courses.

One of the keys to developing an effective and satisfying online course is to ensure an appropriate learning environment has been developed with adequate student engagement and interaction. Student interaction is particularly important at the graduate level [17]. Discussion is an important aspect of ensuring student interaction, particularly to help ensure connection to the program and other students [18],[19], [20].

5. CONCLUSIONS

In past decade or more, there has been a great expansion in options and opportunities when it comes to design and delivery of MET programs. This paper explored only a fraction of those trending options and considered them through the lens of the design and delivery of a graduate program.

While it would seem that implementing trends such as individualized learning, social learning, or distance/blended learning would appear to merely be an extension of traditional methods, there is much more to be considered. Not unlike the transition from sail to steam or manual to automation, new approaches and frameworks must be adopted. To be truly effective in our efforts at MET, we must once again become students of our trade and consume the vast literature and research on these topics. Together, through fora like this conference, we will become better educators and learn from others present and virtually present through their writings.

As we advance to the development stage of our blended graduate program in global maritime business, we endeavor to use what we've learned here as well as what we'll learn from colleagues facing similar challenges. In the end, we expect a world-class program will result because we have access to a world of high-quality programs and findings to draw from. Just as our students learning environment will be enriched by the trends, our program development will also be enhanced by our sharing efforts

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