

## MACRO-TRENDS IN HIGHER EDUCATION CURRICULUM REFORM AND THE IMPLICATIONS FOR MET

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### ABSTRACT

There are two divergent schools of thought on the appropriate future direction of higher education. One side sees a return to skills-based, vocationally-oriented, hands-on training as necessary to compete in the globalized economy: training workers through specific programs of occupational relevance in this view is key to an economically-healthy society. The other side warns that an education tailored too closely to specific technologies and industries will quickly become obsolete due to the rapidly-evolving character of occupations themselves, and therefore institutions of higher learning must instead focus on critical and creative thinking as well as problem-solving skills. Maritime education and training, as it has always oscillated between these bifurcated poles, provides a unique lens through which to explore the ramifications of these educational trends.

**Keywords:** *vocational education, liberal education, maritime education and training.*

### 1. INTRODUCTION

In arguments about the future direction of higher education in America and across the world, there is a growing philosophical divide between proponents of a vocational, “skills-based instructional model” and those in favor of a model of liberal education with a more generalized curriculum. On one hand, and in the words of Emery Hyslop-Margison, “Responding to various political, economic, and social forces, current debates on the future of schooling are increasingly framed within the discourse of occupational relevance, globalization, and international market competition. Reflecting a historical pattern consistent with various market economy crises, governments and corporations from industrialized countries around the world are heralding vocational education reform as a major determinant of economic success within the new global economy” [1]. From this perspective, narrowly-focused curricula that produce “job-ready” graduates are key to national economic health. On the other hand, according to David Kearns, former CEO of Xerox Corporation, “the only education that prepares us for change is a liberal education. In periods of change, narrow specialization condemns us to inflexibility – precisely what we do not need. We need flexible intellectual tools to be problem solvers, to be able to continue learning over time” [2]. I argue that this debate has serious implications for maritime education and training and especially so if the twin poles of this term (“education” and “training”) are viewed either as discrete entities or as synthesized components. In an age of rapid technological change, the skills generated by a more attenuated educational structure may facilitate the transition into the shipping industry much quicker, but these skills may also be rendered obsolete sooner than later.

On average, an educated American citizen will change jobs every 4.4 years [3]. According to the Bureau

of Labor Statistics, an American will hold more than eleven different jobs in his or her lifetime [4]. On average, it takes more than four years to obtain a 3<sup>rd</sup> Mate’s license and diploma at the California Maritime Academy. (45% of students graduate in four years; and additional 12% graduate within six years) [5]. For young mariners, often a career at sea is shorter than the time taken to acquire the license for that career: different estimates approximate active sea duty as little as five to seven years after graduation [6].

This paper interrogates the ramifications for maritime education and training given the aforementioned presuppositions, and will address the following questions: What prepares students best for their occupational life: an in-depth skills-based training or an education more attuned to those “flexible intellectual tools” such as critical thinking, life-long learning, and information literacy? Given the deep need for highly technical workers, to what extent should we privilege the “skills-based” dimension of MET? Conversely, given the plethora of new career trajectories, to what extent should we privilege more malleable knowledge regimes? Can the two sides of this equation be combined for the best of both worlds, or would this effort merely dilute the power of each? How do the struggles over curricular reform actually embed this philosophical rift? In terms of educational focus, what might MET learn from the larger world, and what may the larger world learn from us?

### 2. PROFESSIONAL EDUCATION, VOCATIONAL EDUCATION, MARITIME EDUCATION

It must be noted at the outset that there are some semantic inconsistencies and ambiguities regarding the terms “professional education,” “technical education,” and “vocational education” and these ambiguities are exacerbated by different uses in different national

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educational systems. In general, vocational education prepares people for specific trades or careers, and this often includes professional fields such as engineering. Vocational education, in some views, tends toward the instruction of procedural knowledge as opposed to the instruction of declarative knowledge which tends toward theory and abstract conceptualizations.

Increasingly, American institutions of higher education are turning toward European models and developing more technical/vocational areas of study in order to produce highly-skilled workers. An analysis of 225 U.S. colleges from 1987 to 2008 found an increase in the percentage of graduates whose majors were vocational (as opposed to liberal arts) from 10.6 percent to 27.1 percent. Data for 2011 finds that vocational majors have continued to increase up to 29.1 percent [7]. This is driven, in part, by a national anxiety regarding the diminishing power of the American workforce in the global arena, and there is significant federal and state pressure to put students into the work force immediately by directing them into career-related majors as opposed to “impractical” areas of study.

Curriculum reform often gets cast in patriotic terms: “American strength in production and manufacturing depends on a return to skill based education” [8], claims Leo Smith. The U.S. Secretary of Education has claimed that “the challenge producing the best-educated, most competitive workforce in the world is not just a question of national pride, it is an economic imperative,” and this is reinforced by President Obama’s declaration that “education is an economic issue. Folks need a college degree. They need workforce training. They need a higher education to make sure our graduates are ready for a career” [9]. Derived in part by the financial crises of 2008, educational reform in the United States is often framed through economic discourse. Again, to cite from President Obama – this time his 2013 State of the Union address, American education models lag behind its European counterparts: “Right now, countries like Germany focus on graduating their high school students with the equivalent of a technical degree from one of our community colleges, so that they’re ready for a job. ... We need to give every American student opportunities like this.. tomorrow, my Administration will release a new “College Scorecard” that parents and students can use to compare schools based on a simple criteria: where you can get the most bang for your educational buck....To grow our middle class, our citizens must have access to the education and training that today’s jobs require” [10]. Clearly, the mechanism for curricular change towards skill-based instruction is driven by a perceived need for economic stability.

This re-orientation is not driven solely by governmental anxieties about an ill-trained and ill-equipped workforce – it is also predicated upon student concerns for employment after graduation. At least 40 percent of American students drop out of four-year universities before graduation, and the rate is higher at two-year institutions. According to Professor of Economics Alex Tabarrok, “young people now need to

have a strategy – the economic calculus has changed. There is now a widening distribution of earnings by major, and as a result, we as a county need to look more closely at emulating those programs in European countries that turn out highly skilled workers.” [11]. Sentiments like this have led to legislature like the “Student Right to Know Before You Go Act” which requires colleges to provide more information on what students will pay for a college education and what they can expect in return, from monthly student loan payments to postgraduate salaries [12]. The Higher Education Research Institute has found that “more students entering college in the fall of 2012 believe that the current economic situation significantly affected their college choice,” and “incoming students persist in putting a premium on job-related reasons to go to college [13].

There is, however, a counter argument that acknowledges that using salaries as a proxy to evaluate colleges or majors is reductive, commodifying a broader educational experience that can’t be so easily measured. It can also tilt the scales against majors in the liberal arts, which are less lucrative at first than some vocational or professional occupations but pay off over the long run [14].

Of course, Cal Maritime is not immune to these trends and the admissions department and career services carefully track graduates earnings in order to promote the academy to prospective students. Average starting salaries after graduation are published prominently on the website, broken down by major. Moreover, strong job placement rates for the institution also figure conspicuously in admissions literature [15]. Moreover, the mission of the institution appears to be in line with these emergent trends in higher education. Maritime training is nothing if not “skills-based” and Cal Maritime proudly trumps its hand-on, experiential education.

The pressures for colleges and universities to turn to technical, vocational, skill-based majors and to publicly reveal the earnings of graduates are not without a counterargument, however. While salary after graduation may be a valid data point, there are other factors to consider. “If you focus primarily on salaries you’re really diminishing the real value of education,” Tracy Fitzsimmons, board of directors of NAICU. “A really great college education prepares students to enter into the work force, but it also prepares them to think deeply about the world around them.” [16]. Framed another way, “The question is will the critical thinking skills responsible citizenship demands be inspired and nurtured by vocational courses of study ? [17].

### 3. LIBERAL EDUCATION, GENERAL EDUCATION, MARITIME EDUCATION

“Liberal Education” is often invoked as an antinomy to professional, technical, vocational, or skill-based training, although there is a broad array of associations with the term. According to the American Association of Colleges and Universities, some mistakenly assume that it is politically aligned with the

left, while others link the term solely to the arts and humanities rather than the sciences. In fact, most definitions of the term refer to “a philosophy of education that empowers individuals with broad knowledge and transferable skills [18]. While a liberal arts education remains a classic model, because of the aforementioned reasons – the need to generate a career-ready population and the perceived lack of use-value – interest in a liberal arts education is diminishing.

Yet, many still argue for the importance of the broadly-educated student for several reasons. First, it is far more important for students to develop transferable skills and capacities than to be trained for a single occupation that may become obsolete or be so radically changed by technology that one is ill-equipped to adapt to the changes. Narrow technical skills have a much shorter shelf life than broader skills and capacities. Second, interviews with industry advisors often reveal a need for problem-solving skills and verbal and written communication skills – attributes which are not always foreground in more technical areas of education. In the words of Professor Delbanco of Columbia University, “The university should be a place for reflection. ... We don’t want to have a population that has technical competence but is not able to think critically about the issues that face us as a society” [19]. This is echoed in the work of Harvard Professor Tony Wagner: “the capacity to innovate – the ability to solve problems creatively or bring new possibilities to life – and skills like critical thinking, communication and collaboration are far more important than academic knowledge....Young people who are intrinsically motivated—curious, persistent, and willing to take risks – will learn new knowledge and skills continuously. They will be able to find new opportunities or create their own – a disposition that will be increasingly important as many traditional careers disappear” [20].

Additionally, there may be some long-term issues with skills-based training over the life span of the career. Hanushek, Woessmann and Zhang, in their study on various educational models in the US and Europe, find that most research focuses almost entirely on the school-to-work transition. When looking at the “life-cycle work experience” (or to make this specific to our concerns, ship to shore and beyond), they find there is a trade-off between short-term and long-term costs for the individuals and the entire society. After first acknowledging what has already been mentioned – that the skills generated by vocational education may facilitate the transition into the labor market more quickly, they found that individuals with general education “experience improved employment probability” and are more likely to receive “career-related training relative to those with vocational education, giving them the opportunity to continue updating their skills to be employed in a changing economy” [21]. Conversely, while vocational/technical education at the secondary level may help students get jobs, they may suffer from lower lifetime earnings by having skills and knowledge that are less transferable

across firms and industries. They’re also less likely to engage in lifelong learning, which obviously entrenches this tendency. “This reduces the return on investing in vocational education for both the individual and society” [22].

As a member of the California State University, The California Maritime Academy is held to certain standards and practices of curricular diversity put into place to insure well-roundedness. In addition to numerous units in the humanities and the social sciences, students are required to take a minimum of three semester units in study designed to equip learners for lifelong understanding and development of themselves as integrated physiological, social, and psychological beings. This requirement is meant to support the aforementioned notion that fostering a sense of perpetual learning is not only intrinsically valuable, but has an economic value as well. In order to assess this outcome, surveys were sent to graduation seniors as well as alumni. Initial feedback from the 2013 assessment shows that over 85% of CMA graduates have sought out additional formal learning opportunities and 74% learn independently for their own personal or professional development.

#### 4. SYNTHESIS OF EDUCATIONAL MODELS

There is an attempt within many institutions, including Cal Maritime, to bring together the best of both worlds –specific maritime technical training and a curriculum designed to promote life-long learning, foster creativity and sharpen critical thinking. This resonates with the work of Stanford professor Ann Colby, who notes that there is a false dichotomy between choosing between skills-based training and the rich, deep learning we associate with the liberal arts [23].The strongest academic programs, according to many scholars in the field, are those which combine elements of the liberal arts education with professional training. Such practices could be deployed through more innovative curriculum reform which looks to interdisciplinary studies as a model (cf: Benton, “The Interdisciplinary Curricular Model: Adaptations for a Fluid Future.” IAMU AGA 10 Proceedings.) Alternatively, embedding internships into programs often allow students to see how the practical is connected to the rest of academic learning.

Captain Ergun Deminerel and Prof. Reza Siarati explicitly link these twin poles in their aptly-named essay “Combining Vocational and Academic Requirements in the Maritime Education and Training”. Their focus is the European educational system, but the issue is similar to that facing the American system – how one might “partnership” between the operating methods and requirements of vocational training (and in their case, specifically maritime training) with the rigor of theoretic academic practices [24].The best programs combine major elements of a liberal arts education and professional training. This would seem to be obvious, but there are problems.

First, for Cal Maritime and many other MET

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programs, there exist credit unit thresholds which cannot be exceeded. The target total unit load in the California State University system is 120, and there is pressure to reduce the units in any program which exceeds this standard. The degree-granting program in Marine Transportation is at 159 units; the Marine Engineering program is at 161 units. STCW certification in multiple competencies requires a certain amount of course hours, and thus any attempt to supplement required major elements with additional courses is nearly impossible without exceeding the credit unit limit. Consider the redistribution of units in the marine transportation major from 1997 to 2009 as seen in Table 1.

Table 1. Comparison between the degree content in Marine Transportation - 1997 and 2009:

| Unit Category       | Units 1997 | Units 2009 | % Change      |
|---------------------|------------|------------|---------------|
| General Education   | 45         | 50         | 10% increase  |
| Maritime Technical  | 69.5       | 70         | No change     |
| Maritime Management | 21         | 11         | 48% decrease  |
| Sea Training        | 12         | 24         | 100% increase |
| Other               | 3.5        | 3.5        | No change     |

Doubling the number of units for sea time was necessary to justify the educational workload during that component. What is unfortunately lost is a number of courses in maritime management, but this was sacrificed in part to ensure compliance with general education requirements, and the STCW competencies within the maritime technical category could not be compromised.

One issue with the discrete categorization of units in this manner, however – to bifurcate the technical from the managerial to the general – is to invite a divide, both formally and philosophically, between the educational components. Nonetheless, such a grouping serves to identify the total curriculum and to propose recommendations for changes. To push too far into the liberal arts may erode the skill set necessary for successful job placement. There is also a fear of diminishing the hands-on experience and applied technology that many of our institutions value as educational practices. Conversely, an additional trend with potentially harmful effects is the movement to migrate many liberal arts courses and much of general education into distance education platforms. The emergence of MOOC (Massive Online Open Courses) threatens to marginalize these courses further.

Thus, the conundrum: we want our students to be globally aware critical and creative thinkers, as well as strong communicators with an understanding of the motivating forces of history and culture so that they can adapt to a rapidly evolving workplace and succeed through a series of careers. We also want them to be technologically proficient and competent in their specific fields of study. We want to do both, within a certain time frame and within specific budgets, and to move too far in

one direction may dilute the power and value of the other.

One way through this impasse may be to reconceptualize the dilemma not as two separate entities that must struggle for space and power in a limited curricular field, but to foster a holistic, interdisciplinary approach to skills-based training and intellectual theorization. To take one example: a cornerstone of Cal Maritime's mission is Leadership Development. It is acknowledged that the world is dynamic, fast-paced, and complex in both scope and scale. "The ability to efficiently and effectively process and prioritize information and make quick, informed decisions has never been more precious. America's leading maritime enterprises recognize the need for intelligent, responsible, conscientious, team-oriented graduates who can think critically and creatively while responding to stressful situations" [25]. Viewed in this way, leadership development becomes one of those aspirant qualities we want to instill in our students via leadership courses, ethics courses, literature courses, and survey of history. To foster leadership skills in cadets is to almost inevitably work in the terrain of lifelong learning that has traditionally been the domain of general education and the liberal arts. A sense of self-esteem, if well fostered, can lead to confidence which in turn allows for flexibility in changing occupational arenas. However, leadership is also adopted and measured in those skills-based courses as well. Bridge Team Management implicitly and explicitly foregrounds leadership development over several areas, including Sea Training, Introduction to Bridge Simulation and Watch standing Simulation – a capstone course. By literally and figuratively "bridging" intellectual flexibility and drill-driven skill acquisition, the divergent paths of these educational philosophies may merge.

## 5. CONCLUSIONS

Our interconnected, globalized world and our national economies have a deep need for highly technical workers, but the skills-based training necessary to produce these workers may actually be detrimental given the highly malleable and rapidly changing environment into which they are placed. This dilemma is being played out on national and international forums of education, with different systems and models vying for validity. The International Association of Maritime Universities, with its particular focus on maritime education and training, is in a unique position to weigh in on this matter. If we see our mission as one which trains the seafarer and educates the whole citizen, we may have a model that other institutions and educational structures may choose to adopt.

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education we provide. Several of the same companies and agencies that hire Cal Maritime graduates have many other connections to the Academy. We have many industry advisory groups telling us what knowledge, skills and traits they would like to see as part of a changing economy and workforce. 93% of the graduating class of 2011 (all majors) were employed in their field by August 1, 2011. The remaining 8% did not respond to our survey. Average starting salaries in each major were as follows: Marine Transportation \$69,000, Marine Engineering Technology, \$71,000, Facilities Engineering Technology \$73,000, Mechanical Engineering (licensed) \$63,000, Mechanical Engineering (non-licensed) \$57,000, Business Administration-International Business and Logistics \$44,000, Global Studies and Maritime Affairs, \$40,000."

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