

Global Awareness, Global Stewardship and the Greening of Maritime Education

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Abstract: The 21st century has given rise to an increased awareness of, and commitment to, a variety of environmental concerns. Climatology studies, renewable energy research, and a plethora of reuse/recycle/renewal programs all point to an elevated ecological sensibility. This sensibility is global, multidimensional, and encompasses oceanic and maritime concerns: the design of more fuel-efficient ships, sophisticated ballast water treatment policies and tighter national and international environmental regulations all demonstrate an economic, political, social and technological engagement by industry and assorted government agencies. The primary question facing IAMU member institutions and maritime educators in general, however, may be broader in scope: what is the exact relationship of MET to environmental sustainability? Do we assume a merely reactive stance? Or is there a deeper, more proactive strategy? Is there a means by which we can change the consciousness of students – not just to get them to react and respond to changing technology and policy in an ecologically-mindful world, but to actually understand why these changes are put forth in the first place? This mission of The California Maritime Academy is to provide a college education combining intellectual learning, applied technology, leadership development and global awareness; and the institution has a set of learning outcomes affiliated with these four concepts that every student, regardless of major, is expected to achieve. According to the learning outcome devoted to “global awareness” students must “demonstrate an awareness of diversity in the global culture and environment, as well as the responsibilities associated with promoting the welfare of state, country, whole of humanity, and planet.” The implications of this learning objective unfold in a number of ways, not least of which is a concern for environmental sustainability. Global stewardship implies a commitment to the responsible management of world resources (natural, human, and economic) through informed leadership and as such this doctrine assumes primacy as a learning objective at Cal Maritime. This paper explores the efficacy of such a learning objective, the difficulties of developing competencies to assess and measure this outcome, and the vexed relationship between global awareness and global stewardship in the context of politics, ethics, and academic freedom and responsibility. In the summer of 2011 The Cal Maritime Institution-Wide Assessment Council will analyze data from a variety of assessment tools which measure global

stewardship, and the findings (both the positive and negative) may be of use to developing similar models at other IAMU institutions.

Keywords: Global Awareness, Stewardship, Maritime Environmentalism, Student Learning Outcomes

1. INTRODUCTION

The title of this paper incorporates a sly reference to Charles Reich's 1970 bestseller, "The Greening of America." In this popular book of the era, the Harvard law professor and prophet of the American countercultural movement wrote that "there is a revolution coming. It will not be like revolutions of the past. It will originate with the individual and with culture, and will change the political structure only as its final act...It is now spreading with amazing rapidity, and already our laws, institutions, and social structure are changing in consequence...Its ultimate creation will be a new and enduring wholeness and beauty – a renewed relationship of man to himself, to other men, to society, to nature, and to the land" [1]. The relative success or failure of Reich's "revolution" is not to be debated here; suffice to say that the climate of 1970 was still open to the idea of rapid, multidimensional change across a spectrum of cultural, social, and political processes. 1970 was also, not coincidentally, the year of the first Earth Day – inaugurated in the United States but soon expanded internationally to inspire awareness and appreciation for the earth's natural resources. I bring both connotations of "greening" to the practice of Maritime Education and Training: the idea that a new movement has begun to seed and thrive, and this movement is motivated by an attention to natural resources, particularly within the context of the marine environment. There is little doubt that the 21st century has given rise to an increasing awareness of, and commitment to, a variety of environmental concerns. Climatology studies, renewable energy research, and a plethora of reuse/recycle/renewal programs all point to an elevated ecological sensibility, and the interdisciplinary nature of environmental studies has led scientists of the physical world to the scholarship of political, cultural, and social scientists in order to better understand human relationships, perceptions, and practices as they impact the planet. Prognosticators of the future (and generally cynical prognosticators at that) regularly foreground environmental concerns. For example, in *Hot, Flat, and Crowded*, Thomas Friedman claims that five trends – "energy and resource supply and demand, petro dictatorship, biodiversity loss, climate change and energy poverty" -- will dramatically alter human society in the near future and it is only through interdisciplinary work that we can understand the problems [2]. Oceanic affairs, obviously, play a crucial and primary role in environmental studies, and the rise of programs in marine biosciences, maritime conservation and resource sustainability, marine biodiversity, resource management, water ecology, wetlands ecology, and marine hazardous materials – just in the state of California – makes evident the extent of sustained environmental concern.

2. THE POLITICS OF MARITIME ENVIRONMENTALISM

Maritime environmentalism, therefore, like environmentalism in the broad sense is global and plural in that it draws from the multidisciplinary realms of energy, biology, technology, economics and cultural studies. Moreover, the maritime industry has responded accordingly

with the design of ever more fuel-efficient ships, sophisticated ballast water treatment policies, and tighter national and international environmental regulations, all of which all demonstrate an engagement by industry and assorted government agencies.

Even a cursory glance at the International Maritime Organization's "Current Awareness Bulletin" under its "Knowledge Centre" website, which contains titles and abstracts of articles published in the legal and technical press, reveals a great deal of attention to environmental issues which drive innovation on the industry side and policy on the legislative side. (In fact, the very title of this page, conjoining "knowledge" with "awareness" will be of significance for later sections of this essay). An arbitrary sampling of headlines from the February 2011 volume includes the following: "Asia's maritime industry sees benefits of a green revolution;" "A growing green fervor finds its place in the sun;" "Study backs inclusion of shipping in EU emissions trading scheme;" "US states impose strict ballast regulations;" "Saving on ballast water management;" "Hong Kong budget adopts green focus" and "Samsung Heavy to build only eco-friendly ships by 2015" [3].

Additionally, green shipping initiatives are bankrolled by public and private enterprises at a rapid clip. The Environmental Shipping Index (ESI) identifies seagoing ships that perform better in reducing air emissions than required by the current emission standards of the International Maritime Organization. The ESI evaluates the amount of nitrogen oxide (NO_x), sulphur oxide (SO_x) that is released by a ship and includes a reporting scheme on the greenhouse gas emission of the ship [4]. Furthermore, the ESI, as an instrument designed to gauge the environmental performance of ocean going vessels, can be used by all stakeholders in marine transport as a means to improve their sustainability goals and will assist in identifying cleaner ships: "with respect to climate emissions, the IMO has put forward guidelines for the voluntary use of an Energy Efficient Operational Indicator (EEOI) and the Ship Energy Efficiency Management Plan (SEEMP). Both aim for an improvement of the energy efficiency of sea going ships" [5]. Additionally, stricter air quality standards have impact portside, and "Fifty-five of the world's key ports have committed themselves reducing their greenhouse gas emissions (GHG) while continuing their role as transportation and economic centres" through participation in the World Port Climate Initiative (WPCI) [6]. The WPCI thus seeks to influence the environmental liability of supply chains, taking into account local circumstances and varying port management structures.

This greening of the maritime industry, however, is not without complex obstacles and conflicts. There is, of course, the inevitable give and take between industry and government and between environmental agencies and economic interests that beleaguer all such endeavors. To return to the IMO's Environmental Bulletins for 2011, less optimistic legal and technical news items warn us that "Pricey renewables still no substitute for oil and gas;" "Prepare to meet the costs of new ECA;" "\$3.6bn green-fuel shock for owners;" "Australian federal government lifts pollution levy;" "Uncertainty after Copenhagen: What now for ship emissions?" "IMO design index faces clash of interests;" and "Brussels questions IMO's ability to enforce emissions trading scheme" [7].

The point here is not to reiterate these deliberations but rather to highlight, in very broad strokes, the opportunities and challenges of the green maritime revolution in its uneven development because the central concern of this analysis is the role that maritime education and training (and IAMU member institutions) can and should play in this context. The primary question facing maritime educators and IAMU member institutions may be posed on a fundamentally philosophic and pedagogic level: what is the appropriate relationship of MET to environmental sustainability within a globalized framework? That

is, do maritime educators assume a merely reactive stance (i.e., train for the operation of greener ships, lecture on new environmental maritime regulations, instruct in advanced oil spill response and containment procedures, pass on information on the most recent ballast water management systems, etc.)? Or is there a deeper, more proactive strategy? Is there a means by which maritime education can change the consciousness of students – not just to get them to react and respond to changing technology in an ecologically-minded world, but to actually understand *why* these changes are put forth in the first place and become agents of change themselves?

The tussle between environmental regulation and economic growth – the give and take between, say, pollution control benchmarks and trade protection measures – will continue to ebb and flow. As green initiatives get played out in this arena, the proper role of maritime education must be interrogated. Discussions about the kind of disciplinary frameworks and traditions necessary to help shape a “green consciousness” -- without running the risk of capitulating to political dogmatism – should be opened.

A turn to the work of Paul Wapner may help serve to ground these questions and issues within a broad social and pedagogical context. In his analysis of globalized political movements – the study of norms, values, and discourse which operate in the global arena outside the domain of states – he first argues from the position that ideas within societies at large structure human collective life and that “transnational environmental groups contribute to addressing global environmental problems by heightening worldwide concern for the environment. They persuade vast numbers of people to care about and take actions to protect the earth’s ecosystem” [8]. These groups, bluntly put, disseminate an ecological sensibility.

Now, according to Wapner, this sensibility operates as a political force insofar as it constrains and directs widespread behavior. It works at the ideational level to animate practices and is considered a form of *soft law* in contrast to the *hard law* of government directives and policies. Adherents of “hard law” claim that government action is the key to social change and therefore laws, policies, and directives drive and actually shape social norms. As our laws evolve, the entire configuration of social life will evolve. On the other hand, there are those who claim that social norms (or “soft law”) are central to social change. Government decrees, from this perspective, are not the *source* of change but merely a *reflection* of it. “Laws and politics arise out of, or give authoritative expression to, norms that already enjoy widespread acceptance” [9].

When we adapt this observation to the global maritime environmental context, it is seen that widely held conceptualizations animate large-scale practices and this can show how efforts to disseminate an ecological sensibility have world political significance. Once more, Wapner points out that “what makes such efforts political [...] is not that they are ultimately codified into law or governmental decree but that they represent the use of power to influence and guide widespread behavior. An ecological sensibility, then, is not itself an answer to global environment threats nor the agent for shifting one state of affairs to another. It is, however, an important part of any genuine response to environmental harm. Put simplistically for the moment, it creates an ideational context which inspires and motivates people to act in the service of environmental well-being and thus constitutes the milieu within which environmentally sound actions can arise and be undertaken” [10].

This last declaration is crucial for an understanding of how one may conceptualize the role of MET vis a vis the ecological sensibility: the maritime university may constitute part of the ground, or the ideational context, which motivates students to act in the service of environmental well-being. The maritime educator is not usually directly involved with writing laws and mandates to shape environmental policy, but the maritime educator does

have the ability to disseminate an ecological sensibility which in turn represents a kind of power to influence and guide widespread behavior.

At its core, this idea is one which expresses the need for students to develop a sense of ethics; not only in the context of their vocational pursuits or chosen career, but in their lives in general, and this has become an increasingly powerful and vocal element in dialogues on American higher education practices. The American Association of Universities and Colleges (AAC&U) recently developed five distinct but related dimensions of personal and social responsibility to be integrated into learning goals for the 21st century. These “core commitments” include “constructing personal and academic integrity,” “contributing to a larger community,” “taking seriously the perspectives of others,” and “developing competence in ethical and moral reasoning and action” [11]. Robert Franco more clearly aligns this commitment to ethics to both environmental issues and to a globalized perspective: “This new era requires American higher education to reform its educational programs to prepare an increasingly diverse generation of graduates for engaged citizenship. Now more than ever, all college graduates need to be scientifically literate in topics affecting what [is] called the ‘global public square.’ More graduates also need to be experts in the interdisciplinary realms where climate, energy, environment, economics, technology, spirituality, and human well-being coalesce and collide” [12]. The means by which an institution can adequately equip students with an environmental sensibility coupled with a sense of social responsibility which can be wielded in the global public sphere may be one of the more crucial facets to monitor and cultivate for educational administrators, and the following section outlines one way that Cal Maritime is grappling with this challenge.

3. LEARNING OUTCOMES, GLOBAL AWARENESS, AND ENVIRONMENTAL RESPONSIBILITY

The mission of the California Maritime Academy is, in part, to provide each student with a college education combining intellectual learning, applied technology, leadership development, and global awareness, and in order to better understand and measure this comprehensive mission the institution recently crafted Institution-Wide Student Learning Outcomes (IW-SLOs). I’ve previously written about these outcomes and objectives in the context of globalized trends in pedagogical reform in maritime education [13]. One of the difficulties encountered in developing these institution-wide outcomes was how to address the specific maritime focus of the academy and simultaneously encompass a set of more generalized competencies and then to align these with the strategic master plan of The California State University, the Western Association of Schools and Colleges, the AAC&U, and other influential administrative and accrediting bodies. It was the fourth “compass point” of the mission – that of “global awareness” – which spawned a great deal of intellectual argumentation. In the development of our outcomes (informed by current educational trends and drafted by our faculty), a concern for “global citizenship,” for “global learning,” for “global education,” for “global engagement,” for “responsible global education” both dramatized and muddled the argument. A rehearsal of that debate may provide insight into the ways that MET may (and may not) seek to address issues of environmental concerns because environmentalism is clearly a manifestation and subject of “global awareness” and is understood as such by Cal Maritime.

The deliberations initially hinged on word usage and linguistic connotation, and this is not a trivial matter of semantics, because the language of the learning outcomes ultimately impact course objectives, curricular development and academic resource allocations. We want our students to be “globally aware,” and presumably this means not only knowledgeable in basic geography, but also to be educated in the political structures of various nation states, the myriad cultures of the world, and to possess a fundamental understanding of international trade and international maritime security. Concomitant to this would be an environmental literacy component to include knowledge of global climate change, ocean environmental management, and the like.

Yet, in aligning the mission to the aspired outcomes, language and intent shifted from simple “awareness” to “stewardship;” from “knowledge” to “responsibility;” from “understanding” to “engagement.” Not only do all these binaries appear to involve an additional layer of development (one must be “globally aware” before one can be “globally responsible”), but they also imply a shift from the passive to the active: simply put, one can “know” about the earth and do nothing, but one cannot be “responsible” for the earth and remain so. This observation, then, begs the larger and more thorny questions: is it the role of the university to “teach” stewardship in this manner? If so, what does it look like? Do different academic departments even have the same definition of stewardship or the same understanding of what it means to be environmentally aware? Might not the political agenda of a particular faculty member impact the instruction of stewardship? At a maritime academy with close ties to industry, to what extent might radical environmental activism alienate institutional stakeholders? Conversely, might instructors with relationships to industry consciously or unconsciously neglect or ignore certain environmental considerations? Finally, when adopting global stewardship as a learning objective, how do you measure it?

Ultimately Cal Maritime adopted the following language for its student learning outcome:

Learning Objective:	Through participation in curricular and co-curricular learning opportunities, our graduates will be able to:
Global Stewardship	Demonstrate an awareness of diversity in the global culture and environment, as well as the responsibilities associated with promoting the welfare of state, country, whole of humanity and planet

Figure 1. Cal Maritime IW-SLO (K)

Clearly, the language of the second clause of this objective is a bit slippery: we do not require students to “promote the welfare of the planet;” rather, we require them to “demonstrate an awareness of the responsibilities associated with promoting the welfare of the planet.” There is a very significant difference. On the one hand, the wording of this outcome neatly circumvents the vexed dichotomy between education as the dissemination of information and education as advocacy for a particular politicized agenda. On the other hand, it might not go far enough into what Caryn Musil would argue is a fundamental objective of education itself: “to engage more emphatically in helping students make sense of the world and of their responsibility to it” [14]. Traditionally, she writes, the university “had firmly ensconced knowledge as value neutral, as something that transcended and was cheapened by contact with the grittiness of life. [Now, however] colleges and universities are seeing the work of the world as inextricable from the life of the mind.” One could

argue that MET has always bound “the work of the world with the life of the mind” through experiential learning and applied technology. Yet, in terms of binding civic engagement with intellectual learning through the prism of cultivating an environmental consciousness, there may be some ways to go.

Nonetheless, Cal Maritime has pursued the assessment of this global awareness/stewardship outcome: a rubric was drafted and distributed across the campus into all courses which have a ‘global awareness’ component [see Appendix I]. These courses were identified by drilling down from the institutional wide outcomes to the degree program outcomes and down further to the course level which was made possible because there is an alignment of student learning outcomes on all three levels (course, program, institution). While the assessment data is still being collected and thus has not been fully analyzed at this point, it is our hope that the findings will tell us something about the state of our commitment to both global awareness and global stewardship, and as a result, our commitment to environmental issues. The primary motivation for the creation of this learning outcome was to assure Cal Maritime was indeed educating globalized citizens. The process of *assessing* this outcome led to a host of other questions: are we preparing students to engage in the world as informed, ethical, socially responsible and productive citizens? How can we weave global education into general education, major courses, and faculty research and development? What exactly does it mean to be a responsible citizen in today’s global context? Is there a balance to be found between nihilistic relativism (“there are many different and equally valid relationships humans have with the world and the seas”) and institutionalized dogma (“there is only one appropriate way to act in all matters of the environment and oceanic ecology”)?

4. MARITIME STEWARDSHIP

If the impetus of Cal Maritime’s learning outcome is animated by the claim of Ernest Boyer that “the aim of the undergraduate experience is not only to prepare young for productive careers, but also to enable them to live lives of dignity and purpose; not only to generate new knowledge, but to channel that knowledge to humane ends; not merely to study government, but to help shape a citizenry that can promote the public good” [15], then the issue remains as to how to specifically share these practices and help inform a wider collective of maritime education and training programs. IAMU member institutions are different sizes, with different student bodies, different accrediting missions, different regulatory overseers and different accrediting agencies, and to espouse a shared commitment to “shape citizenry that can promote the public good” may be a tall order.

Yet, I argue that precisely because we are maritime universities and academies that have joined an international organization dedicated to “developing a comprehensive Maritime Education System for following generations” [16] as stated in the IAMU mission, we have an obligation to educate for social responsibility. This is especially the case given the unique nature of the maritime environment which is not explicitly bound by statist demarcations. If environmental stewardship is defined as “the responsibility for environmental quality shared by all those whose actions affect the environment” [17], then maritime education must necessarily embrace maritime stewardship.

The theoretical underpinnings of these claims can perhaps be deepened by turning to the work of the oceanic historian Philip Steinberg. In “Lines of Division, Lines of Connection,” he first writes that “because the modern system of competitive capitalist

production governed by multiple, sovereign states encourages territorialization, or spatial enclosure, as a means of commodifying and guaranteeing rents from resources, the modern era has been characterized by a number of proclamations and events that generally are perceived as drawing lines designed to foster the enclosure, possession, and management of ocean space” [18]. Among these proclamations, Steinberg includes various provisions of the 1982 UN Convention on the Law of the Sea, including both its regime of Exclusive Economic Zones and its regime for management of the International Seabed Area. Steinberg contends that “the overarching norm present through the history of ocean government is one of stewardship. Spaces that are stewarded may not be possessed in full as alienable property. Yet individual social actors – or communities of actors – may in their capacity as stewards to temporarily appropriate, manage, and even transform the stewarded space in order to ensure that it continues to serve specified social ends” [19]. At different times, he writes, “stewardship has been operationalized by one actor over all known ocean space, by individual actors in their discrete, parceled domains, and collectively by a community of actors. It had been implemented for a range of ends, from military mobility to the conservation of the ocean’s living resources.” Moreover, “debates in modern ocean governance generally have revolved around who should compose the community of stewards and to what ends stewardship should be exercised, rather than being attempts at drawing lines to generate extreme relations of exclusion or connection.” And finally, “Oceans may connect or divide, or they may be implicated in more radical strategies for the social organization of space that lie outside the norm of state stewardship that traditionally has guided social intervention in marine space” [20].

5. CONCLUSION

Perhaps, then, MET and IAMU institutions are in a unique position to participate in the social organization of maritime stewardship that lie “outside the norm of state stewardship that traditionally has guided social intervention in marine space.” What may energize an environmental sensibility within MET practices is not a transparent and explicitly political engagement (with industry, with government, with environmental lobbyists, although this is certainly part of it), but rather a use of power to influence and guide behavior. A global awareness begets global stewardship which begets the greening of maritime education; not because we necessarily begin at the juncture of answering to marine environmental threats but because we inhabit and create the context which inspires and motivates students to act in the service of environmental well-being.

APPENDIX I: CAL MARITIME IW-SLO RUBRIC FOR GLOBAL AWARENESS/GLOBAL STEWARDSHIP

Analytic Rubric for Global Stewardship			
	Initial (1-2)	Satisfactory (3-4)	Exemplary (5-6)
Spectrum of Knowledge: How much knowledge does the student demonstrate in understanding one's self in relation to the complex identities of others, their histories, and their cultures?	<p>Limited spectrum of knowledge:</p> <ul style="list-style-type: none"> • mentions some issue(s) involving global concerns and problems, but does not discuss these areas in a meaningful way • contains some evidence of self-reflection in the area of global issues • demonstrates superficial reflection and reveals little or no questioning of established views • has knowledge of cultural differences, but is unable to establish connections with other concepts 	<p>Fair to good amount of knowledge in field of study:</p> <ul style="list-style-type: none"> • thoughtfully analyzes situations in which global issues have played an important role • begins to investigate connections between areas of controversy and to extrapolate meaning from specific examples • applies learning in global issues to issues that arise in everyday life • contemplates the impact of personal choices and social action in the context of interpersonal and broader societal spheres • demonstrates some awareness of cultural, political, economic, and religious differences of the people of the world 	<p>In-depth knowledge with extensive variety of resources:</p> <ul style="list-style-type: none"> • creatively and comprehensively articulates approaches to global issues, citing specific evidence • demonstrates an ability view multiple sides of these issues • constructs independent meaning and interpretations • presents well-developed ideas on the role of global issues in both private and public life • demonstrates a sense of the diverse aspects of culture, politics, economics, and religion
Understanding of Responsibilities: Does the student demonstrate an understanding of the responsibilities associated with promoting welfare of state, country, whole of humanity, and planet?	<p>Lack of understanding of basic global issues, concerns and problems:</p> <ul style="list-style-type: none"> • lacks awareness of individual's connection to global society and community • fails to understand how global issues and social responsibility manifest concretely in one's own personal choices, including decisions on when and how to act 	<p>Good grasp of global issues, concerns and problems:</p> <ul style="list-style-type: none"> • shows some awareness of individual's connection to global society and community • begins to understand how global issues and social responsibility manifest concretely in one's own personal choices, including decisions on when and how to act 	<p>Deep and comprehensive understanding of global issues, concerns and problems:</p> <ul style="list-style-type: none"> • clearly understands individual's connection to global society and community • fully understands how global issues and social responsibility manifest concretely in one's own personal choices, including decisions on when and how to act

Knowledge: The ability to demonstrate an awareness of diversity in global culture and environment.

Understanding: The ability to demonstrate an understanding of the responsibilities associated with promoting welfare of state, country, whole of humanity, and planet.

Scoring

Exceeds standard (total points 10 - 12)

Meets standard (total points 7 - 9)

Approaches standard (total points 4 -6)

Begins standard or absent (total points 1 -3)

REFERENCES

- [1] Reich, C. The Greening of America. <http://www.superseventies.com/greening.html>
- [2] Friedman, T. *Hot, Flat and Crowded*. Picador. 2008.
- [3] International Maritime Organization. "Knowledge Centre: Current Awareness Bulletin"
<http://www.imo.org/KnowledgeCentre/CurrentAwarenessBulletin/Documents/CAB%20172%20February%202011.pdf>.
- [4] Environmental Ship Index, June 2010.
http://www.wpci.nl/projects/environmental_ship_index.php
- [5] Environmental Ship Index, June 2010.
http://www.wpci.nl/projects/environmental_ship_index.php
- [6] Environmental Ship Index, June 2010.
http://www.wpci.nl/projects/environmental_ship_index.php
- [7] International Maritime Organization. "Knowledge Centre: Current Awareness Bulletin"
<http://www.imo.org/KnowledgeCentre/CurrentAwarenessBulletin/Documents/CAB%20172%20February%202011.pdf>.
- [8] Wapner, P. "Greenpeace and Political Globalism" *The Globalism Reader*. Lechner and Boli, eds., Blackwell Publishing (2000) pp 415 – 422
- [9] Wapner, P. "Greenpeace and Political Globalism" *The Globalism Reader*. Lechner and Boli, eds., Blackwell Publishing (2000) pp 415 – 422
- [10] Wapner, P. "Greenpeace and Political Globalism" *The Globalism Reader*. Lechner and Boli, eds., Blackwell Publishing (2000) pp 415 – 422
- [11] McTihge C.M. "Education for Personal and Social Responsibility: Applying the Life of the Mind to the Work of the World." *Diversity and Democracy: Civic Learning for Shared Futures*. Vol 14, No. 1 Winter 2011. Pp. 1-4
- [12] Robert Franco. "From Service to Science in the Energy-Climate Era" *Diversity and Democracy: Civic Learning for Shared Futures*. Volume 13, No. 5 Fall 2010 pp. 18
- [13] Benton, G. "Globalized Trends in Outcomes-Based Pedagogical Reform and Potential Implications for Maritime Education and Training", *Proceedings of the Annual General Assembly of the International Association of Maritime Universities*. 2010. pp 321-332.
- [14] McTihge C.M. , "Education for Personal and Social Responsibility: Applying the Life of the Mind to the Work of the World." *Diversity and Democracy: Civic Learning for Shared Futures*. Vol 14, No. 1 Winter 2011. pp. 1-4
- [15] Boyer, E. College: *The Undergraduate Experience in America*. Harper Collins, 1987.
- [16] <http://www.iamu-edu.org/WhatssIAMU/tabid/4323/language/en-US/Default.aspx>
- [17] Environmental Protection Agency. <http://www.epa.gov/stewardship/>
- [18] Philip E. Steinberg. "Lines of Division, Lines of Connection: Stewardship in the World Ocean." *The Geographic Review* 89 (2) April 1999.
- [19] Philip E. Steinberg. "Lines of Division, Lines of Connection: Stewardship in the World Ocean." *The Geographic Review* 89 (2) April 1999.
- [20] Philip E. Steinberg. "Lines of Division, Lines of Connection: Stewardship in the World Ocean." *The Geographic Review* 89 (2) April 1999.