Beyond rules, knowledge and skill

M. E. Manuel
World Maritime University, Sweden

Abstract

This paper refers to a study, conducted in the context of a dissertation at the World Maritime University, about the place of the affective domain in maritime education. The study found, through a survey, case studies and a review of the literature, that this domain is considered very important in the industry. Very different methods and standards are currently employed in attempts to achieve educational objectives in this domain. Conclusions drawn include recognition that maritime education and training institutions (METI) need to specify these objectives and create a climate in which seafarers are trained beyond compliance for a culture of excellence and possession of desirable attitudes and values. It is recommended that associations such as the International Association of Maritime Universities (IAMU) lead the way in seeking to benchmark best practices in this context and stimulate the global Maritime Education and Training (MET) community to commit to this as a basis for any future legislation or setting of global standards in this domain.
Keywords: affective education, safety culture, educational objectives, attitudes, values, ethics.

1 Introduction

It is indisputable that good education and training in any industry is critical to the success of that industry. Like all other industries, the maritime industry has to educate and train human resource to accepted levels of the industry; and with changing times, knowledge and innovations, people already in the field ought to have their knowledge updated regularly.

By nature of its business, the maritime industry has the added dimension of being a truly global enterprise. In spite of this, however, global harmonization of maritime education and training standards have long been a challenge. The industry, to a greater degree than most, has to base its success on people with

very varied national, cultural and other backgrounds, cooperating efficiently in excellent teamwork. Again, unlike most other industries, repercussions of a deviation from the "learned" principles often have major and disastrous consequences, which tend to gain negative global attention to the detriment of the industry.

With respect to the training and education of seafarers, an emphasis has been placed on knowledge and skill acquisition over the years. Ideally, however, three domains should form the objectives of an educational system: cognitive, psychomotor and affective, Bloom [1]. STCW 78 lays emphasis on what seafarers have to know to be deemed competent. STCW 95 focuses on what seafarers should be able to do [2]. Beyond this is another level – the kind of people seafarers should be, or a focus on knowledge, ability and willingness to behave appropriately under all conditions.

There is a perception that the affective domain is largely ignored in current global MET practices. At best it is done, but is not specifically acknowledged – certainly not at the level of a global standard. Proponents of this view, suggest that attitudes/values/ethics do matter and that there is a need for the maritime industry to address the affective domain of education specifically – emphasise on it as much as it has emphasized on the cognitive and psychomotor domains.

A brief study was carried out at the WMU (in the context of a dissertation) to find out to what extent the affective domain is considered relevant to the industry, and whether current training methodologies cover this domain. A valid question raised is whether the evolution of the industry vis-à-vis current status and trends require education beyond cognitive and psychomotor skills. If this is indeed required, what is being done in the industry to meet this need?

2 The safety culture

Attitude, a concept covered by the affective domain underlies culture. It is not easy to define exactly what culture is.

"Although 'culture' is a notoriously complex concept, it can be broadly defined in terms of the shared practices, mental habits and norms which shape people's identities and influence their attitudes and behaviours. These practices, habits and norms are generated and assimilated by people in a variety of settings including, in the context of particular national or ethnically-based cultures (i.e. in terms of traditional practices and language), but also in particular institutional/organisational settings and professional contexts. All cultures are generally seen by academic commentators [3] as being subject to change, contestation and re-formulation over time, rather than being fixed and static."

Culture affects perception of risk, safety and appropriate behaviour. The importance of culture in the maritime industry is accentuated by the increase in the global supply base of manpower. Few ships today are manned by crew from one country. Arguably nationality is one of the more superficial of cultural identifiers. Even where the crew are from one country, culture in a wider sense separates people in attitudes based on other factors such as gender, experience, age, or education.

It would be therefore necessary to truly identify what attitudes are desired and then to strive to achieve them at all levels of the industry; essentially starting with education and training of all the industry's human resource. The executor of this education and training need not be only the Maritime Education and Training Institutions (METI), but they certainly would have a prominent role.

The result in any attempt to streamline the activities of an industry would vary from individual to individual and organisation to organisation. Kelman [4], in regard to attitudes and how they motivate actions, sees three levels of compliance, identification and internalisation. This has some similarity to Mathiesen's conception of the three cultures that characterise the maritime industry [5,6] – evasion, compliance and safety cultures. To these three Sudhakar [7] adds the "uninformed culture".

2.1 Uninformed culture

In this culture there are gaps in knowledge about the requirements of a safe operation. There is possibly a perception that increased focus on safety actually increases accident risk.

2.2 Evasion culture

Those in industry who have this attitude seek to circumvent rules for economic gain. Quality is sacrificed based on the belief that it costs too much. All means are employed to maximise profits by minimum compliance with existing regulations, be they national, regional or international. This kind of culture thrives on a perception of an adversarial relationship between the regulators/enforcers and the organisation. The "them versus us" attitude means that all means are used to "win" at the expense of regulations.

2.3 Compliance culture

Those of this culture tend to actively comply with the existing regulatory demands. Every effort is made to meet such standards albeit probably grudgingly. Motivation to comply is often limited to a desire to avoid the unpleasant or restrictive consequences of non-compliance. Behaviour is adopted not because of a belief in content, but for the avoidance of specific punishment. In a revealing study, Kelman [4] found that "when an individual adopts an induced response through compliance, he tends to perform it only under conditions of surveillance by the influencing agent". It is obvious that if a global industry is characterised by this kind of culture there will be enormous demand on the resources for enforcement and surveillance. Unfortunately, the bulk of industry actors are in this category, an observation confirmed by a detailed and broad survey by Anderson [8]. He states with reference to the IMO's International Safety Management (ISM) code that:

"One thing that the survey confirmed is the very wide spectrum of compliance that exists across the industry. It would appear that most companies and ships which require documents of compliance and safety management certificates do

have their pieces of paper but few would actually seem to have a functioning safety management system from which all tangible benefits were being derived."

In an environment characterised by evasive and compliance cultures, it is not surprising (but regrettable) that unilateralism of legislation/enforcement as well as criminalisation of seafarers will increase. Like the evasion culture, the basic compliance culture may be characterised by an adversarial relationship with regulators and enforcers. Although trying to comply at all costs, rules and regulations are seen as burdens which are not welcome especially when the motivation for compliance is avoidance of punishment and not desire for rewards.

2.4 Safety culture

This is the culture exhibited by quality conscious industry members. This goes over and above the existing legal requirements, subsuming the compliance culture and going beyond it. Behaviour is congruent with a basic value system. This corresponds to the higher levels of Bloom's taxonomy in the affective domain – valuing, organisation and characterisation. The pursuit of excellence and quality is done for its own sake in the belief that it is the ethical thing to do and is the best way to achieve long-term economic sustainability. Industry standards, which sooner or later became law, are set by proponents of this culture – setting benchmarks ahead of legislation. This mindset is by far the most progressive and what the industry needs. Those who practise this kind of culture have identified with and internalised values that make them act consistently in an appropriately safe and ethical manner. It will necessarily mean compliance with the existing regulations, but from a motivation of genuine respect for the underlying values and not necessarily by fear of the consequences of non-compliance.

All the definitions and comments regarding culture in the literature stress attitude. Ultimately it is the attitude of individuals at all levels that shape the organisational culture. The challenge is to determine how these individuals get these attitudes and whether such attitudes and the behaviours they lead to, can be influenced in any way by the system of education they go through. As shown in Figure 1, if METI operate in, and seek to inculcate, a culture that influences the values and attitudes of their students with respect to global maritime goals, these will in turn (dependant on "attitude conviction") lead to observable behaviours that help to achieve and reinforce the desired safety culture.

An analogy can be drawn between the industrial cultures described and those prevailing in the MET setting.

- An MET system that falls short of STCW will lead to the "production" of officers, and by extension, key personnel in industry who lack the basic knowledge and skills. Such personnel are the building blocks of an "uninformed culture" in shipping.
- A system that meets the minimum standards as required by STCW, may produce personnel who have a compliance mentality and perfunctorily work to get by with minimum standards, seizing on every opportunity to

evade the regulations when motivated by other factors e.g. financial gain. This results in an evasion culture. Where the individual is so inclined and the organisational culture facilitates this, this can be evidenced by a compliance culture. Evasion may then be avoided, but no effort is made to work beyond the requirements.

- The best systems seek to train beyond knowledge and skill and ingrain into seafarers, a culture of values and commitment to ideals that see such seafarers identify fundamentally with the global goals. Such systems produce personnel who are driven by excellence and are only satisfied with continuous efforts to improve, no matter the status quo of global regulation. These form the building blocks of a safety culture.

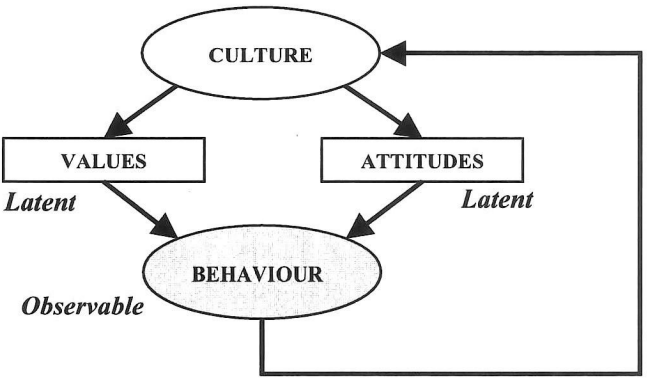

Figure 1: Relationship between the elements of culture.

It is appreciated by many that the need for this latter kind of seafarer is real and that attitudes are as necessary as knowledge and skill in achieving and maintaining the needed safety culture and efficiency. Ho [9], puts it succinctly: "Speaking English is no longer enough. Knowing maritime technology is no longer sufficient. Reading the manuals is not adequate. Applying traditional management techniques is no longer applicable. The unforgiving demands for excellence and compliance will require training and education beyond skills. What we need is to develop the Seafarer of the Future who is mature, responsible, well-rounded, has a fundamental strength of character, is empowered and aware of how his actions affect the whole".

The situation is analogous to how prior to the ISM Code, shipping companies were guided by numerous rules and regulations. As important as these were and still are, the industry recognised that they were not enough and that, (in the words of the ISM Code preamble) "in matters of safety and pollution prevention it is the commitment, competence, attitudes and motivation of individuals at all levels that determines the end result" [10]. Similarly it would appear that beyond knowledge, skill acquisition and "simple" compliance with the regulatory requirements of STCW, education and training needs to "grow" the kind of officer who is suitable for a diverse, dynamic and challenging industry.

Knowledge and skills alone can never guarantee performance. When MET at a global level is characterised by the "safety culture" mentality, it will complement the ISM's "top-down" approach to achieve a safety culture with the needed "bottom – up" approach.

3 The affective domain

In the dissertation study, the affective domain (of attitudes, values and ethics) was broadly defined as covering those issues that relate to, arise from or influence feelings or emotions [11] or an individual's inclination to act or refrain from acting in a certain manner due to personal convictions, quality of character and conscience. In this context, the domain is deemed to include such values as honour, rule keeping, responsibility, loyalty, truth, integrity, security, environmental and safety consciousness, respect for social order, respect for the dignity and right of others, social interaction and similar values. Educational objectives in this domain are defined by Bloom *et al* as "objectives which emphasise a feeling tone, an emotion or a degree of acceptance or rejection. Affective objectives vary from simple attention to selected phenomenon to complex but internally consistent qualities of character and conscience" [12].
There are varied definitions for and a wide range of words used to describe affective education. In 1994, a conference in Europe to discuss this domain, as it was evidenced in different educational systems in Europe, came up with the following definition:
"By affective education is meant that part of the educational process that concerns itself with attitudes, feelings, beliefs and emotions of students. This involves a concern for the personal and social development of students and their self-esteem ... A further important dimension goes beyond the individual students and concerns the effectiveness of their relationships with others, thus interpersonal relationships and social skills are recognised as central to affective education" [13].

4 Research questions and methodology

Questions addressed in the study were:

1. Of what relevance is training in the affective domain in the maritime industry?
2. Do current training and educational systems address training in this domain?
3. How can existing methodologies of teaching, assessing and certifying education in the affective domain be optimised (or incorporated if non-existent)?

Questionnaires were designed to solicit information regarding the first two research questions.

The questionnaires were targeted at specific MET institutions and other identifiable and relevant bodies. The criteria for choosing the institutions were:

- perceived leadership and input in industry;
- regional representation;
- role of nation or region in manpower provision and/or training.

In developing the final questionnaires, pilot questionnaires were sent to 13 MET students of the World Maritime University, 10 other students of the same institution with varied backgrounds and countries of origin and 2 professors. Amendments were made to the final questionnaires based on comments from the pilot.

In addressing the third research question a critical analysis was made (using library and web based resource as well as interviews) of existing views and ideas expressed by different writers and the industry as a whole. Some case studies were used to further examine the relevance of attitude training in the maritime industry. Conclusions were drawn based on all of the above and recommendations made in the light of the findings.

This paper does not seek to imply that the current training emphasis on competence is misplaced. The author is of the firm view that there are many positive attainments in the STCW with its emphasis on cognition, skills and demonstrated ability. What the study seeks to do is to discuss the inclusion of the affective domain (in a more specific way) in the consideration of competence. The basis of this is the argument that all the knowledge and ability is irrelevant and practically limited in use if individuals, for one reason or the other, will not or are unable to use them.

5 Study findings

Below are sample responses from the questionnaire (limited due to the necessary brevity of this article). The full dissertation – "Beyond rules, skills and knowledge: maritime education and training for optimised behaviour" – with more detailed survey results and case studies, is available in the WMU library.

- *A lack of attitudinal and ethics training is detrimental to the maritime industry*
- *Are there standards (international or national) used specifically for affective objectives in the institution? If yes, what is this standard?*

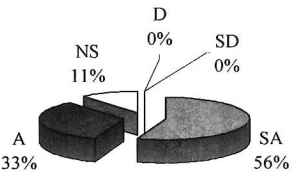

Figure 2: Value of training in attitudes. SA – Strongly agree; A – Agree; NS – Not sure; D – Disagree; SD – Strongly disagree.

50% of respondents answered "NO"
50% answered "YES"

22% of all respondents mentioned STCW as the relevant standard
17% of all respondents mentioned ISO (some together with STCW)
39% mentioned national standards. Of these almost 71% (28% of total) mentioned national standards as being the only relevant standard.

6 Conclusions drawn from study

With regard to the first two research questions, both the survey results and the analysis of the literature (including a number of case studies) indicate an emphatic agreement that affective objectives are important and relevant to the needs of the maritime industry and that METI have a significant role in fostering these objectives in prospective and practising seafarers. The survey and literature show that a wide variety of methods are used to try to achieve these objectives. These range from classroom lectures/seminars to paramilitary training and other extra-curricula activities. Standards mentioned include STCW 95, ISO and various national standards. The use of the STCW is debatable since this convention is not considered by others to address the domain with the specificity being researched. The same applies to the ISO. What emerges clearly is that there is no uniform global standard for the affective domain. Considering the importance of the domain, as revealed by the study, and the resources put into this by some institutions and companies, it is obvious that the possibility of having such a global standard (possibly in the context of STCW) must be explored.

7 Role of the International Association of Maritime Universities (IAMU)

With the introduction of STCW 95, the IMO is, to a large extent, meeting the challenge of education and training. However, in this diverse world, there is a limit to what can be legislated at an international level. Issues of sovereignty and national preferences are hurdles that the organisation has to contend with. In that context, the STCW 95 can only be the minimum standards to which all agree. As has been said, "it is a skeleton to which national administrations should add flesh" [14]. In the absence of such global educational and training standards, METI should add to the skeleton and thereby stimulate the global industry's demand for quality, with respect to right attitudes, till the point where STCW 95 can be legislated as a standard.

Associations and groupings of educational institutions (IAMU is one such prominent grouping) are often not as limited in their decision making by governmental pressure as the IMO probably is. They remain ideal fora within which these issues can be discussed, clear conclusions reached, practices benchmarked and standards set on a voluntary basis. It is often the case, that when practice becomes the norm in such associations, such practices are more easily transferred as a legal standard to the global industry. There is certainly no denying the strength and influence of associations such as IAMU.

8 New trends

New products such as Affective Computing and Affective Learning Technology that are designed for the affective learning domain are appearing. An example is the work of a research group in the Massachusetts Institute of Technology [16]. Most of these products are well beyond the research phase and are being used in many industries. Other examples are products by companies such as SimuLearn, WILL Interactive and Insight Experience, which are marketing products relating to the affective domain, including ethics, teamwork, innovation, leadership, conflict management and motivation [15]. These kinds of products help to meet one of the major challenges in affective education – that of assessment. With such products, assessment can be made more valid and reliable.

9 Recommendations

- Further research into the affective domain and the specific objectives that should be sought.
- Benchmarking of best practices and the dissemination of these to help global MET.
- Industry to build on the foundation of such benchmarking to achieve uniform and global standards.
- Research into the use of computer based testing to allow for more valid and reliable assessment in this domain.

References

[1] Bloom, B.S., *Taxonomy of educational objectives: The classification of educational goals*, Longmans: New York, 1956.

[2] Lewarn, B., *Seafarer training – Does the system defeat competence?* Paper submitted to the 3rd General Assembly of the International Association of Maritime Universities, September 23-26, 2002, Maine, 2002.

[3] Vickers, I., Baldock, R., Smallbone, D., James, P., & Ekanem, I., *Cultural influences on health and safety attitudes and behaviour in small businesses,* HSE Books: Norwich, p. 3, 2003.

[4] Kelman, H.C., Compliance, identification and internalization; three processes of attitude change. *The Journal of Conflict Resolution*, **2**, pp. 51-60, 1958.

[5] Mathiesen, T.-C., Safety in shipping: An investment in competitiveness. *BIMCO Review 1994*, Stroudgate Plc. for BIMCO: London, pp. 56-58, 1994.

[6] Mathiesen, T.-C., Safety management and loss control. *BIMCO Review 1996*, Stroudgate Plc. for BIMCO: London, pp. 133-134, 1996.

[7] Sudhakar, U. R. P., *Promoting safety culture in shipping: Issues and strategies*. Paper presented to Institute of Marine Engineers (India) - Visakhapatnam Branch, April 15, 2005, Visakhapatnam, India, 2005.
[8] Anderson, P., *Cracking the code: The relevance of the ISM Code and its impact on shipping practices,* The Nautical Institute: London, pp. 202 – 210, 2003.
[9] Ho, D. M., *IT... all begins with people.* Digital Ship Plus, **23**, pp. 14-16, 2004.
[10] International Maritime Organisation [IMO], *International Safety Management (ISM) code,* IMO: London, 2002.
[11] Merriam-Webster collegiate dictionary. [Electronic resource]. 1996.
[12] Bloom, B.S., Krathwohl, D.R. & Masia, B.B., *Taxonomy of educational objectives: The affective domain*, Longman Group: London, 1973.
[13] Lang, P., Towards an understanding of affective education in a European context (Chapter 1). *Affective education: A comparative view*, eds. P. Lang, Y. Katz & I. Menezes, Cassell: London, pp. 3-15, 1998.
[14] Chowdhury, F. R., Personal communication, 21st February, 2005, Delegate to IMO.
[15] Adkins, S. S., Beneath the tip of the iceberg, *T+D*, **58 (2)**, pp. 28-33, 2004.
[16] http://affect.media.mit.edu/index.php.