

# Seafarer Training - Does the System Defeat Competence?

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## ABSTRACT

This paper reviews the use of competency based training (CBT) techniques in the context of seafarer education and training. It postulates that there are still many barriers to overcome before the key objective of STCW 95 is achieved.

STCW 78 focused on what seafarers needed to know to be deemed competent. Courses tended to be academic in nature, classroom based, teacher centred, with assessment based around formal written exams. Post STCW 95 the emphasis of training is supposed to be on what seafarers need to be able to do. Courses should be practical in nature, activity based, student centred, with assessment based around the demonstration of acquired skills. Empirical evidence points to the fact that there is some way to go before the post STCW approach is achieved.

The paper illustrates how marine administrations can, through their systems to approve training, focus on matters which make the use of CBT difficult if not impossible. The IMO model courses have some value as guides but the way they are used in many circumstances also makes the use of CBT techniques unlikely. The structured, term/semester based approach to the delivery of learning taken by most educational institutions also acts against the easy use of CBT. Also some academics argue that CBT and degree level studies are not readily compatible approaches to learning.

The paper concludes with a brief discussion of what could be done to remedy the situation so that the competence of seafarers can continue to be improved.

## 1. Introduction

For many years educationalists have utilised objectives to define what students should be able to do on completion of the learning experience. Having defined what they should be able to do educationalists also devise valid and reliable ways to test that students can do what they are supposed to be able to do. Over the years this approach has had a number of names including Criterion Referenced Training, Learning by Objectives, and now Competency Based Training (CBT). In an educational sense CBT is not new so why is it now important to maritime education institutions?

STCW 78, failed for a number of reasons, one of which was that, in an educational sense, it loosely described what a seafarer had to know to be deemed competent. Knowing something and doing something are two different things - I know the theory of ship handling but that does not mean I can actually handle a ship. The test for knowledge alone can be separate from the test for doing (competence) but the test for doing (competence), by default, incorporates the test for knowledge. The test for knowledge alone is not a valid test for doing (competence). The international standard, STCW 78, only described what seafarers needed to know. It is therefore not surprising that maritime education institutions and marine administrations responsible for issuing certificates of competency focussed on what students knew rather than what they could actually do. In simple terms a Certificate of Competency was a misnomer, it was really a Certificate of Knowledge!

STCW 95, in educational terms, is a welcome change as it should finally bring maritime education into line with accepted educational practice however, for many institutions CBT requires both a radical change in thinking and a radical change to the way teaching and assessment occurs. This is the educational challenge posed by STCW 95 that many institutions and marine administrations have still not fully embraced.

Implementing CBT to meet STCW 95 requires institutions to go back to the educational basics and this, of course, requires staff who are properly conversant/trained/educated in curriculum design. STCW 95 is not a

curriculum and for valid training to occur it needs to be massaged and expanded into a coherent course curriculum document. From this it is then necessary for the teaching staff to use their educational skills to determine the most appropriate way for students to achieve the required competencies and, importantly, how they are assessed to ensure the competencies are achieved (Lewarn, 1999). Somewhat obvious - yes; but unfortunately there are impediments.

This paper postulates that there are both marine administration system and education system impediments which militate against the fully effective implementation of the CBT concept espoused by STCW 95. The evidence for this view is empirical and primarily based around discussions with IAMU and AMETIAP colleagues as well as a benchmarking study conducted during 2002 for PETRONAS Malaysia.

## **2. Competency Based Training**

CBT focuses on skills and competence. Particular importance is placed on the way in which competence in newly learned skills is demonstrated and assessed. This can pose a challenge to the more traditional approaches of teaching and learning which are still common in many maritime education institutions. Emphasis must be on what seafarers need to be able to do, courses should be practical in nature, activity based, student centred whereby students take greater responsibility for their own learning, and with assessment based around the demonstration of newly acquired skills.

CBT recognises that skills may be acquired in different ways over different lengths of time. In some countries workplace learning is integrated into the national education system. This is achieved using national training packages, trained assessors in the workplace and formal processes to recognise workplace learning when students undertake campus based learning. This approach has caused education institutions to re-evaluate how courses are structured and assessed so that the flexibility of CBT can be maximised for students.

Recognition of prior learning is a key point of CBT. It is predicated on the simple concept that once competence has been demonstrated and assessed that skill has been learned. This implies that assessors are competent to assess ie trained and experienced, and assessment techniques are valid and reliable ie the assessment tests what is purports to test and that test results are consistent over time.

In an educational sense CBT concepts are not new in that they emphasise what the student should be able to do on completion of a learning process, how students should be assessed to demonstrate that learning has occurred, and what standard should be used to determine competence. These simple educational concepts also underpin STCW 95 however, much of the evidence to date seems to indicate that both attitudes and systems are still relatively inflexible. This can be interpreted to mean that full implementation of STCW 95/CBT concepts into seafarer education is still some way off.

## **3. Marine Administration Constraints**

Marine administrations are responsible for the implementation of STCW 95. In the context of seafarer training they are responsible for approving training institutions including staff, facilities and equipment, as well as courses. In addition they are also responsible for auditing approved institutions. It is within these systems that clashes between current education practice and administrative interpretations can be observed.

Marine administrations approach their responsibilities in quite different ways eg Australia, Japan, Malaysia and USA approved seafarer training systems are quite different. Whilst these differences reflect national needs and interpretations of STCW 95, in an educational sense it raises some interesting anomalies.

Both Australia and USA provide 'front end' education which includes all competencies required by STCW 95 to the highest level as well as the sea service necessary for the first watchkeeping certificate. In Australia the marine administration accepts completion of the course as the primary measure of competence but 'audits' graduates by conducting an oral assessment of each graduate before issuing a certificate of competency. In USA students who have successfully completed their course are required to also undertake additional, written marine administration examinations before a certificate of competency is issued. In this latter case students appear to be assessed twice on the same competencies. Why: what has happened to the recognition of prior learning?

In Malaysia seafarer students also undertake 'front end' education which includes all competencies required by STCW 95 to the highest level as well as some sea service. However, having completed their sea service for

each level of certificate of competency these students are required to undertake further courses and examinations before attempting the marine administration oral examination. These certificate of competency preparation courses, which can be 6 months in length, repeat the competencies covered in the 'front end' course as well as those they have been using at sea. Why: what has happened to the recognition of prior learning?

STCW 95 requires a minimum of 12 months sea service before a trainee deck officer/cadet can attempt the first watchkeeping certificate of competency. The Australian marine administration requires a minimum of 18 months sea service. Why: is it conservatism, tradition or lack of understanding of modern education techniques?

Some countries recognise time aboard training ships and training time in simulators as counting towards sea service requirements. In some cases this sort of highly structured practical training may be counted by marine administrations at, say, double time. This reduces the actual time spent aboard an operational commercial vessel well below the STCW 95 12 months. Why: is it because some marine administrations can see the value of such training being much greater than the traditional at sea training?

From an educators viewpoint this leads to an obvious question. Just what is the purpose of sea service? Is it to gain experience of real life shipping; is it to learn and practice skills which cannot be readily learned or practiced elsewhere; is it to demonstrate skills learned; is it tradition? Most trainees undertake some form of structured learning program whilst at sea, frequently a training record book, but there is much evidence to suggest this is not taken as seriously as it should be. STCW 95 promotes the idea of "assessment of evidence obtained from one or more of the following: approved in-service experience .." It also suggests that "any person conducting in-service assessment of competence of a seafarer .. shall .. have received appropriate guidance in assessment methods and practice .." (IMO, 1996). This approach promotes the concepts of CBT but marine administrations appear very reluctant to support increases in the use of formal workplace assessment of competence beyond the rather traditional training record book approach. Why: if STCW 95 can embrace the concepts of CBT what is it that marine administrations find so difficult?

IMO model courses are, conceptually, a good idea provided they are viewed as guides upon which teachers can build to develop appropriate teaching and learning experiences. In a number of countries marine administrations have taken the view that the courses they approve must follow exactly an IMO model course. The highly prescriptive nature of model courses eg number of hours required to achieve competence, is at odds with the CBT approach espoused by STCW 95 and the following is an illustration of the problems which can arise. In the relatively recent past Australia had been successfully running GMDSS course which were about a week in length but, more importantly, ensured that students were able to properly demonstrate their competence with GMDSS. The Norwegian marine administration objected to this approach and refused to recognise Australian GMDSS certificates based on the view that the course was not long enough and was not aligned with the IMO model course. As a consequence, the Australian marine administration decided that rather than argue the CBT case it would require Australian GMDSS courses to be 2 weeks in length. Norway then agreed to accept Australian GMDSS certificates. The fact that the real issue is competence, not course length, was apparently lost on two marine administrations which were very deeply involved in the preliminary work for STCW 95. Model courses also date very quickly and, at present, there is no systematic updating process. The dangers of relying on model courses should be self evident to all.

#### **4. Education System Constraints**

Most education systems work on courses (programs) in years, subjects (courses) in semesters, terms or blocks with a designated number of hours per week being allocated to specific subjects. This assumes that a student needs 'x' amount of time to achieve 'y' outcomes. Whilst this approach may have some validity for the more traditional approach to the delivery of teaching and learning it does not make the proper implementation of CBT particularly easy. Most education institutions have set assessments at set times however, few institutions have systems which allow students to attempt assessments for competence when they consider themselves to be ready. This latter CBT approach is not easy to manage, goes against the structural approach to education expected by both faculty and students, and continues to encourage a teacher centred approach to learning. What is needed is a paradigm shift to a far more flexible approach to teaching and learning. The old paradigms are increasingly irrelevant and are being replaced by new paradigms. These fundamental shifts in education are reflected by Inglis et al (1999) and are summarised in Table 1 (Lewarn, 2002).

**Table 1. Old and New Paradigms in Higher Education**

<b>Old Paradigm</b>	<b>New Paradigm</b>
Take what you can get	Courses on demand
Academic calendar	Year round operations
University as a city	University as an idea
Terminal degree	Lifelong learning
University as ivory tower	University as partner in society
Students 18-25 years old	Students all ages
Books primary medium	Information on demand
Tenure	Market value
Single product	Information reuse/exhaust
Student as necessary evil	Student as customer
Delivery in classroom	Delivery anywhere
Multicultural	Global
Bricks and mortar	Bits and bytes
Single discipline	Multi-discipline
Institution centric	Market centre
Government funded	Market funded
Technology as an expense	Technology as a differentiator

CBT is part of the new paradigm and requires an output based approach to teaching and learning systems rather than the more traditional input based approach most commonly found in use today.

## **5. Conclusion**

STCW 95 has almost certainly improved the quality of seafarer education and training particularly in relation to the educational practices of institutions and faculty. However, it is evident that there is a range of conflicts between the CBT concepts espoused by STCW 95, the understanding and interpretations adopted by marine administrations, and modern approaches to teaching and learning.

If it is assumed that STCW 95 properly defines what competencies seafarers should possess, then education institutions should be focused on how such skills and competencies are gained and assessed, whilst marine administrations should be focused on ensuring the teaching and learning system produces skilled and competent graduates. Whilst the marine administration can perform its function in a wide variety of ways including approval processes, audits, random testing, oral testing etc it is postulated that marine administrations should not prescribe how competence is achieved and assessed. This is the task of education institutions and their faculty and is consistent with the approach taken by STCW 95.

The boundaries between marine administrations and education institutions need better definition so that educators can educate and marine administrations can focus on quality control to assure competence. Specific course content, course length, delivery techniques and assessment techniques are not the business of marine administrations. In simple terms better definition of who does what could further improve the effectiveness of STCW 95.

Empirical evidence points to a level of dis-satisfaction by educators as they seek to move towards a more output driven model of education. This dis-satisfaction is partly caused by the overly restrictive and prescriptive approaches taken by marine administrations and the relative inflexibility of the input driven model of education still most commonly found in use today.

Does the system defeat competence? Defeat: probably not. But it does reduce the potential effectiveness of teaching and learning in a CBT environment. The system impediments identified in this paper are worthy of more rigorous research if the philosophy espoused by STCW 95 is to be achieved.

## **References**

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