

SUB-COMMITTEE ON HUMAN ELEMENT,
TRAINING AND WATCHKEEPING
4th session
Agenda item 3

HTW 4/3/6/Add.1
28 October 2016
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VALIDATED MODEL TRAINING COURSES

Draft revised model course 1.30 on On-board assessment

Note by the Secretariat

SUMMARY

<i>Executive summary:</i>	This document provides the report of the Review Group relating to the draft revised model course 1.30 on On-board assessment
<i>Strategic direction:</i>	5.2
<i>High-level action:</i>	5.2.2
<i>Output:</i>	5.2.2.3
<i>Action to be taken:</i>	Paragraph 2
<i>Related document:</i>	HTW 4/3/6

General

1 Attached in the annex is the draft revised model course 1.30 on On-board assessment referred to in document HTW 4/3/6.

Action requested of the Sub-Committee

2 The Sub-Committee is invited to consider the information provided and to take action, as appropriate.

ANNEX

**DRAFT REVISED IMO MODEL COURSE 1.30 ON
TRAINING COURSE FOR INSTRUCTORS**

**MODEL
COURSE
1.30**

**ON-BOARD
ASSESSMENT**

2016 Edition

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INTERNATIONAL MARITIME ORGANIZATION
4 Albert Embankment, London SE1 7SR

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Foreword

[To be inserted by the Secretariat]

KITACK LIM
Secretary-General

Introduction

■ Purpose of the model courses

The purpose of the IMO model courses is to assist training providers and their teaching staff in organising and introducing new training courses, or in enhancing, updating or supplementing existing training material where the quality and effectiveness of the training courses may thereby be improved.

It is not the intention of the model course programme to present instructors with a rigid "teaching package" which they are expected to "follow blindly". Nor is it the intention to substitute the instructor's presence with audio-visual or programmed material. As in all training endeavours, the knowledge, skills and dedication of the instructors are the key components in the transfer of knowledge and skills to those being trained through IMO model courses.

Because educational systems and the cultural backgrounds of participants in maritime subjects vary considerably from country to country, the model course material has been designed to identify the basic entry requirements and participants' target group for each course in universally applicable terms, and to specify clearly the technical content and levels of knowledge and skill necessary to meet the technical intent of IMO conventions and related recommendations.

In order to keep the training programme up to date in future, it is essential that users provide feedback. New information will provide better training for any person conducting in-service assessment of competence of seafarer on board. Information, comments and suggestions should be sent by e-mail to the Head, Maritime Training and Human Element, International Maritime Organization (htw@imo.org).

■ Use of the model course

To use this model course, the instructor should review the course plan and detailed syllabus, taking into account the information provided under the entry standards specified in the course framework. The actual level of knowledge and skills and the previous technical education of the participants should be kept in mind during this review.

Any areas within the detailed syllabus which may cause difficulties because of differences between the actual participant entry level and that assumed by the course designer should also be identified. To compensate for such differences, the instructor is expected to delete from the course, or reduce the emphasis on, items dealing with knowledge or skills already attained by the participants. The instructor should also identify any academic knowledge, skills or technical training which participants may not have previously acquired.

By analysing the detailed syllabus and the academic knowledge required to allow training in the technical area to proceed, the instructor could design an appropriate pre-entry course, or alternatively, include the elements of academic knowledge required to support the technical training elements concerned at appropriate points within the course.

Adjustment of the course objectives, scope and content may also be necessary if a national and/or industry requirements obliges the participants completing the course to undertake duties which differ from the objectives specified in the STCW Code which are set out in the model course.

Within the General Outline and Timetable (Part B) the course designers have indicated their assessment of the time that could be allotted to each area of learning. However, it must be appreciated that these allocations are for indicative purposes only, and assume that the participants have fully met all entry requirements of the course. The instructor should therefore review these assessments and may need to re-allocate the time required to achieve each specific learning outcome. In some cases, the entry level and specific needs of the course participants may warrant a significant extension of the time allocated.

■ Lesson plans

Having adjusted the course content to suit the participant intake and/or revised any of the intended learning outcomes, the instructor should draw up lesson plans based on the detailed syllabus. The detailed syllabus contains specific references to textbooks or teaching material suggested for use in the course. Where no adjustment has been found necessary in the learning outcomes of the detailed syllabus, the lesson plans may simply consist of the detailed syllabus with keywords or other reminders added to assist the instructor in presenting the material.

■ Presentation

The presentation of concepts and methodologies must be repeated in various ways until the instructor is satisfied that the participant has attained each specific learning outcome. The syllabus is laid out in a learning outcome format, and each outcome specifies what the participant must be able to know, understand and/or do.

■ Evaluation or assessment of participants' progress

The nature of this course involves all the participants and the instructors in an on-going process of individual and group evaluation. No specific guidance on the assessment of participants has been included since this forms part of the subject matter of a large part of the course. The progress of participants can be judged from the outcome of the various activities undertaken by them, which will indicate if further explanation or clarification of any topic is needed. The final activity also affords participants the opportunity to give both an overall evaluation of the course and their own progress and to give instructors feedback about participants' attainment of learning outcomes. Generic guidelines on evaluation/assessments are given in Part E of the course.

■ Implementation

For the course to run smoothly and to be effective, considerable attention must be paid to the availability and use of:

- properly qualified instructors;
- support staff;
- rooms and other training locations;
- equipment, e.g. multimedia aids and simulators;
- textbooks, technical papers; and
- other reference material.

Thorough preparation is the key to successful implementation of the course. IMO has produced "Guidance on the implementation of model courses", which deals with this aspect in greater detail and is included as an attachment to this course.

■ Structure

The standards of competence that have to be met by seafarers are defined in Part A of the International Code on the Standards of Training, Certification and Watchkeeping for Seafarers (STCW Code). This IMO model course has been developed to support the implementation of the STCW Convention, 1978, as amended and, in particular, regulation I/6 and section A-I/6 of the STCW Code.

Part A provides the framework for the course, its aims and objectives and notes on suggested teaching facilities and equipment. A list of useful teaching aids, IMO references and textbooks is also included.

Part B provides an outline of lectures, demonstrations and exercises for the course. A suggested timetable is included, but from the teaching and learning perspective, it is more important to ensure that the participants achieve the intended learning outcomes of the course, rather than strictly adhering to a timetable. Also included in this section are some guidance notes and additional explanations.

Part C gives the detailed outline. It is written as a series of topics with specific intended learning outcomes, detailing what a participant is expected to be able to know, understand and/or do as a result of the teaching and training. The expanded learning outcomes follow the format of the STCW Code and are defined by standards of knowledge, understanding and proficiency. IMO references, textbook references and suggested teaching aids are included to assist the instructor in designing lessons.

Part D gives guidance notes and additional explanations to the instructor on the topics and learning outcomes listed in Part C. For the various topics, this part presents subject matter details, activities, and recommended presentation and assessment techniques.

Part E presents a generic guide for effective evaluation/assessment of course participants (details of which are provided in IMO model course 3.12).

■ Responsibilities of Administrations

Administrations should ensure that training courses delivered by training providers meet the requirements of STCW regulation I/6.

Part A: Course framework

■ Aims

This course is primarily intended for any person conducting in-service assessment of competence of a seafarer on board. These would usually comprise senior shipboard officers (management level) but may also be suitable for shipboard personnel at operational level or experienced shore-based instructors with sufficient on-board expertise.

The course is of limited duration and therefore cannot be considered as providing comprehensive assessor training, which would take much longer. However, the course does include the many principles of developing and implementing a shipboard assessment system.

In the introductory part, the course reviews IMO model courses, their purpose and usage.

In subsequent parts, the course expands on the development of a competence-based assessment system and identifying and selecting performance measures and standards.

The main part of the course deals with the techniques of conducting the assessment and developing a performance improvement plan.

The learning style of the course is participative. About 45% of the course time is allocated to exercises. It is recommended these exercises be performed in groups of four or five participants.

■ Objectives

Participants successfully completing the training course on shipboard assessment should be capable of undertaking all of the responsibilities expected of assessors within their field of expertise. They will be familiarized with the concepts generally taken into account when developing a suitable assessment package for a particular type of ship.

The model course aims at transferring knowledge and skills for participants to administer, supervise and monitor training and assessment of seafarer competence in accordance with the provisions of section A-I/6 of the STCW Code.

A participant successfully completing the course will be able to:

- .1 apply the international provisions concerning the training and assessment of officers and ratings on board ships;
- .2 apply the international provisions in the context of national law;
- .3 determine effective assessment methodologies; and
- .4 organize, administer and conduct on-board assessment.

■ Entry Standards

Fluency in both the spoken and written language in which the assessment will be conducted is essential.

No specific entry standards are required of participants to this training course. However, individuals completing the course will need to have an appropriate level of knowledge and understanding of the competence to be assessed in order to conduct in-service assessment of a competency of a seafarer, as set out in section A-I/6, paragraph 6 of the STCW Code.

■ **Course certificate**

On successful completion of the course and with appropriate verification that a course participant has achieved the intended learning outcomes, a certificate may be issued certifying that the holder has successfully completed a course of training in the establishment, administration and conduct of on-board assessments of seafarers for certification in accordance with the provisions of the STCW Convention, 1978, as amended.

■ **Course intake limitations**

The optimum intake of course participants should be limited to a maximum of 20, and have no more than four to five participants in each group. This allows each participant to benefit from the expertise of the facilitators/instructors and also to be able to participate fully in the course activities.

■ **Staff requirements**

The course should be conducted by experienced facilitators/instructors who should have the necessary background and knowledge of competence-based assessment. At least one, who would normally be the lead facilitator/instructor, should be competent in the field of assessment and assessor development.

■ **Teaching facilities and equipment**

A classroom conducive to learning and suitable for different room arrangements is required. Additional rooms may be needed for group work so as to have a separate work place for each group.

The main room should be equipped with requisite training materials such as multi-media equipment, marker board and flipchart. The availability of other smaller rooms (each equipped with a flip chart, tables and chairs) for group activities is recommended. Access to bridge and engine room simulators will be helpful in carrying out some of the activities.

For the purpose of conducting interactive simulation exercises, where possible, appropriate equipment should be available for communication between group rooms and a separate room where the instructors can operate from.

Unlike in shore-based education and training institutions, there may be limited teaching facilities and equipment on board. If the course is run in this latter context, account should be taken of the working environment on-board and arrangements should be made for the provision of appropriate work spaces for the course.

■ **Teaching aids (A)**

A1 Instructor manual (Part D of the course)

A2 Videos:

- V1 IMO – Safer Shipping and Cleaner Oceans (IMO Sales No.202)

- V2 Setting a New Course: An Introduction to the Revised STCW Convention (Code No.538)
- V3 On-board Training Design (Code No. 489)
- V4 STCW and Flag State implementation (Code No.629)
- V5 Training, Mentoring and Assessment On Board, Edition 2 (Code No. 1217)
- V6 STCW 2010 – The Manila Amendments (Code No. 1113)
Available from: Videotel Marine International Limited
84 Newman Street
London W1T 3EU, UK
Tel: +44 (0) 20 7299 1800
Fax: +44 (0) 20 7299 1818
E-mail: sales@videotel.com
URL: www.videotel.com

Audio-visual examples listed above may be substituted by other similar audio-visual material at the discretion of the training provider and administration.

■ Bibliography (B)

- B1 Fletcher, Shirley, *Competence-Based Assessment Techniques* 2nd ed (London, Kogan Page, 2001) (ISBN 9780749434229)
- B2 Fletcher, Shirley, *Designing Competence-Based Training* 2nd ed (London, Kogan Page, 1997) (ISBN 9780749421960)
- B3 Holder, Len, *Training and Assessment on Board* 4th ed (London, Witherby & Co Ltd, 2011) (ISBN 9781856094511)
- B4 P. Race, S. Brown and B. Smith, *500 Tips on Assessment* 2nd ed. (London, Routledge Falmer, 2005) (ISBN 9780415342791)
- B5 International Shipping Federation, *ISF On Board Training Record Book for Deck Cadets* 3rd ed. (London, International Shipping Federation, 2012)
- B6 International Shipping Federation, *ISF On Board Training Record Book for Engineer Cadets* 3rd ed (London, International Shipping Federation, 2013)
- B7 International Shipping Federation, *ISF Guideline on the IMO STCW Convention including the 2010 'Manila Amendments'* 3rd ed. (London, International Shipping Federation, 2012)
- B8 Videotel, *STCW 2010 – The Manila Amendments* (London, Videotel) (Code No. 1113)
- B9 Videotel, *Training Mentoring and Assessment On Board, Edition 2* (London, Videotel) (Code No. 1217)

Secondhand copies of out of print books may be available from the Warsash Nautical Bookshop, 6 Dibles Road, Warsash, Southampton SO31 9HZ, UK. Tel: +44 1489 572 384 Fax: +44 1489 885 756 Email: orders@nauticalbooks.co.uk URL: www.nauticalbooks.co.uk

■ IMO references (R)

- R1 The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended (STCW Convention)
- R2 Amendments to the 1974 SOLAS Convention concerning Radiocommunications for the Global Maritime Distress & Safety System (IMO Sales No. 156E)
- R3 ISM Code (IMO Sales No IC117E)
- R4 MSC/Circ. 853 Guidance on Shipboard Assessments of Proficiency

■ Computer-based programs (C)

- C1 Videotel, On-board Trainer and Assessor Training Course (London, Videotel) (Code No. 868)
- C2 VIDEOTEL, SETSPLUS (Seafarers Evaluation and Training System Plus) Version 6000 (London, Videotel) (Code No.9000)
- C3 VIDEOTEL, Training Mentoring and Assessment On Board Edition 2. (London, Videotel) (Code No. 1217)
- C4 Seagull, AS, Assessor-on-board course. (Gamlevien 36, Po Box 1062, N-3194 Horten, Norway. Tel: +47 330 30 910. Fax: +47 330 46 279)

Examples listed above may be substituted by other similar products at the discretion of the training provider and administration.

■ Internet website references (W)

- W1 DNV-GL – Understanding STCW, incl. latest Amendments
<https://www.dnvgl.com/training/understanding-stcw-incl-latest-amendments-52772>
- W2 ILO Sector Activities: Shipping, ports, fisheries and inland waterways sector
<http://www.ilo.org/global/industries-and-sectors/shipping-ports-fisheries-inland-waterways/lang--en/index.htm>
- W3 NORMLEX Information System on International Labour Standards
<http://www.ilo.org/dyn/normlex/en>
- W4 Poseidon Navigation Simulator
<http://www.poseidon.no/index.php/simulation/navigation-simulators>
- W5 IMO – STCW 2010 Manila Amendment Bibliography
<http://www.imo.org>

Details of distributors of IMO publications that maintain a permanent stock of all IMO publications may be found on the IMO website at <http://www.imo.org>

Part B: General Outline

■ Lectures

As far as possible, lectures should be presented within a familiar context and should make use of practical examples. They should be well illustrated with diagrams, photographs and charts where appropriate, and be related to matters learned during seagoing time.

An effective manner of presentation is to develop a technique of giving information and then reinforcing it. For example, initially inform the course participants briefly what is going to be presented to them; then cover the topic in detail; and, finally, summarize what you have told them. The use of appropriate presentations using multi-media with visual projection and the distribution of copies of presentations as participant handouts contribute to the learning process.

■ Course Outline

The tables that follow list the competencies and areas of knowledge, understanding and proficiency, together with the estimated total hours required to achieve the learning outcomes. Instructors should note that the suggested timings are for indicative purposes only, and are not intended to be definitive. The proposed time table should be adapted to suit individual groups of course participants depending on their experience, ability and equipment.

	Subject Area	Course hours	Lecture	Practical activity
1.	Course introduction	1.0	1.0	-
2.	Process overview	1.0	1.0	-
3	IMO and its contribution to training	1.0	1.0	-
4	Purpose of the course	0.5	0.5	-
5	Development of shipboard assessment system	1.5	1.5	-
6	Development of competence-based assessment	2.0	1.0	1.0
7	The on-board assessment	1.5	0.5	1.0
8	Identify performance objectives	2.5	0.5	2.0
9	Select performance objectives for on-board assessment	2.0	1.0	1.0
10	Determine performance measures and standard	3.0	1.0	2.0
11	Prepare assessment package	2.0	2.0	-
12	The assessment process	11.0	5.0	6.0
	12.1 Preparation for the assessment	(2)	(1)	(1)
	12.2 Conduct pre-assessment briefing	(3)	(2)	(1)
	12.3 Observe candidate's performance and record the results	(3)	-	(3)
	12.4 Evaluate the process and determine the assessment outcome	(1)	(1)	-
	12.5 Assessment debrief	(2)	(1)	(1)
13	Development performance improvement plan	2.0	1.0	1.0
Total		31	17	14

Note: Teaching staff should note that timetables are suggestions only as regards sequence and length of time allocated to each topic. The time table should be adapted, as appropriate, by instructors to suite individual participant groups depending on their experience and ability as well as the number of instructors and the equipment available.

Period/Day	Day 1	Day 2	Day 3	Day 4	Day 5
1st Period (2 hours)	1 Course introduction 2 Process overview	7 The on-board assessment • Practical activity (7.8) 8 Identify performance objectives	10 Determine performance measures and standards • Practical activity (10.2 and 10.3)	12 The assessment process (Continued) 12.2 Conduct pre-assessment briefing	12 The assessment process (Continued) 12.4 Evaluate the process and determine the assessment
Break					
2nd Period (2 hours)	3 IMO and its contribution to training 4. Purpose of the course 5 Development of shipboard assessment system	8 Identify performance objectives (Continued) • Practical activity (8.2 and 8.3)	11 Prepare assessment package	12 The assessment process (Continued) 12.2 Conduct pre-assessment briefing (continued) • Practical activity (12.2.2) 12.3 Observe the candidate's performance and record	12 The assessment process (Continued) 12.5 Assessment debrief • Practical activity (12.5.2)
Meal Break					
3rd Period (2 hours)	5 Development of shipboard assessment system(Continued) 6 Development of competence-based assessment	9 Select performance objectivities for on-board assessment • Practical activity (9.2)	12 The assessment process 12.1 preparation for assessment • Practical activity (12.1.2)	12 The assessment process (Continued) 12.3 Observe the candidate's performance and record (continued) • Practical activity (12.3.2)	13 Development performance improvement plan
4th Period (1 hour)	6 Development of competence-based assessment (Continued) • Practical activity (6.17)	10 Determine performance measures and standards			

Instructors should note that the hours for lectures and exercises are suggestion only as regards sequence and length of time allocated to each topic. These factors may be lecturers to suit individual groups of participants depending on their experience, ability, equipment and staff available for teaching.

Part C: Detailed Outline

The detailed teaching syllabus is presented in a learning outcome format in which the outcome describes what the participant must do to demonstrate that knowledge, understanding and proficiency have been transferred.

All outcomes are understood to be prefixed by the words, "The expected learning outcome is that the participant should be able to...."

In order to assist the instructors, references are shown against the learning outcomes indicating those parts of the instructor manual and other references that the instructor may find useful in preparing and presenting course material.

The abbreviations used are:

- An. Annex
- Ap. Appendix
- Art. Article
- Ch. Chapter
- Fig. Figure
- p., pp. Page, pages
- Para. Paragraph
- Reg. Regulation
- Sec. Section
- Ta. Table

The following are examples of the use of references:

"R1 – Reg. II/3" refers to Regulation II/3 of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended;
"A1" refers to the Instructor Manual in Part D

Knowledge, understanding and proficiency		IMO Reference	Textbooks, Bibliography	Teaching Aids
1	Course introduction (1 hour) .1 explain the scope and objective of the course .2 explain the relationship of this course with other IMO model courses .3 explain that use is made during the course of individual and group activities to develop skills in preparing assessment material .4 explain the need to supplement what is learnt during the course with practical experience in developing assessment material and conducting assessments .5 state that Part D not only contains material necessary to the course, arranged according to subject areas, but is also intended to serve as a reference manual	R1 Sect. A-I/6 R4	B7	A1 Sect.1
2	Process overview (1 hour) .1 state that the process must ensure that candidates meet all minimum national and international requirements .2 state that the process must test knowledge, understanding and skills actually required for the competency concerned .3 state that assessment must be properly administered .4 state that the process must apply the same minimum standard at all locations and at all times until standards are changed .5 state that the process should allow candidates to appeal against decisions of the assessor .6 state that the process must be secure as to actual assessment content .7 state that the process must ensure that approved assessment remains up-to-date and valid .8 state that the assessment process must comply with quality standards as stipulated in regulation I/8 of the STCW Convention	R1 Sect. A-I/8		A1 Sect.2
3	IMO and its contribution to training (1 hour)			A1 Sect.3 V1
	.1 explain the reasons for the establishment of the International Maritime Organization .2 explain the purpose of IMO .3 describe briefly the structure of IMO .4 explain how ship standards are maintained			W5

	.5 describe IMO's involvement with the establishment of standards of training and assessment for seafarers .6 explain the purpose of IMO model courses .7 outline the range of subject covered by model courses .8 summarize and explain the latest amendments to the STCW Convention .9 state that specific requirements for the training and assessment of seafarers are stipulated in Regulation I/6 and Regulation I/14 of the STCW Convention		B7 W5	V2
4	Purpose of the course (0.5 hours) .1 describe intended learning outcomes for this course .2 explain the competences required to be assessed for as stipulated in the STCW			A1 Sect.4
5	Development of shipboard assessment system (1.5 hours) .1 explain what is meant by: - education - training - a learning system - performance - assessment .2 explain the purpose of assessment .3 explain the methods of assessment .4 describe situations where training and assessment should be of benefit .5 explain the difference between symptoms and causes when applied to performance at work .6 describe the effect of learning on the person .7 explain areas in which training can improve performance .8 determine required job performance, given relevant information .9 identify training needs from given information or from observation .10 determine whether a performance gap could be closed by training .11 discuss how attitudes might be changed .12 explain what is meant by knowledge, understanding/comprehension and application .13 explain what is meant by the cognitive domain		B4	A1 Sect.5 V3 V4 V3

	.14 explain what is meant by the affective domain .15 explain what is meant by the psychomotor domain .16 determine additional knowledge and skill required in a given case .17 discuss the value of issuing assessment criteria to those being assessed .18 discuss the constraints and issues to be considered by the shipboard assessor			
6	Development of competence-based assessment (2 hours) .1 explain the difference between knowledge-based, skill-based and competence-based assessment. .2 discuss the factors which influence the choice of assessment method .3 list the factors common to all assessment systems .4 explain the purpose of "traditional assessment" .5 explain the purpose of "competence-based assessment" .6 discuss how the assessment process operates .7 explain what makes competence-based assessment different from other forms of assessment .8 explain the implications of introducing competence-based assessment .9 state that an assessor's role is to plan, manage and control the assessment process .10 describe the qualities essential to be a successful assessor .11 discuss behaviours of individuals being assessed, which influence assessment methods .12 select suitable assessment methods for specified subject areas .13 describe the role of the assessor in the various assessment methods .14 generate documented procedures for conducting assessments	R1 Sect. A-I/6	B1, B13 B3 B3	A1 Sec.6 Activity

7	The on-board assessment (1.5 hours) .1 define shipboard assessment .2 define performance objective .3 define performance measure .4 define performance standard .5 list the issues to take into account when preparing and conducting shipboard assessment .6 state that shipboard assessment should be carried out in accordance with regulation I/6 of the STCW Convention and section A-I/6 of the STCW Code .7 list the stages in developing shipboard assessment methods .8 design a feedback form for monitoring the process	R4 R1 Reg. I/6, Sect. A-I/6		A1 Sect.7 Activity
8	Identify performance objectives (2.5 hours) .1 state that identifying performance objectives involves the following three sub-steps: .1 determine the critical performance objectives by considering the consequences of performance failure with respect to: - personal injury and loss of life; - environmental damage and pollution; and - economic costs. .2 review available resources to identify performance objectives, including: - STCW tables of standards of competence; - approved Training Record Books; - ship's operating procedures; - international, national and local regulations; - company instructions and procedures; - technical equipment and technical equipment manuals; - task analysis; and - subject matter expert advice. .3 ensure that performance outcomes are tied to STCW competences .2 perform a task analysis .3 write detailed learning outcomes that demonstrate competence	R4 R1	B5 B6	A1 Sect.8 Activity Activity

9	Select performance objectives for on-board assessment (2 hours) .1 state that the performance objectives for on-board assessment should be selected by reviewing the following four general factors; .1 the safety implications of conducting the assessment .2 the current shipboard operating conditions, including: - environmental conditions; - location; - equipment status; - workload; and - personnel schedules .3 the ability to establish adequate controls over shipboard operations throughout the assessment period .4 the candidate's current skill level, taking into account: - prior training; and - experience .2 generate a series of tasks to assist in shipboard assessment	R1 Sect. A-I/6 R4		A1 Sect.9 Activity
10	Determine performance measures and standards (2 hours) .1 state that the determination of performance measures and standards should involve the following three sub-activities: .1 selecting the methods of measuring the steps or components of the practical test, which may include: - observation of whether or not a step was completed - recording a value from an indicator or gauge (such as a compass); or - monitoring performance with respect to an established metric (such as time to complete a step) .2 identifying the standard corresponding to each step or component. .3 determining how the overall performance objective is met (i.e. what critical factors must be applied) .2 design an assessment specification and scoring scheme for a practical test .3 critically review methods and outcomes of an evaluation of competence	R4		A1 Sect.10 Activity Activity
11	Prepare assessment package (2 hours) .1 state that in developing an assessment package, the following may be necessary:	R4		A1 Sect.11

	- student workbook, including reference material for the candidate; - guide to assessment; - instructions for the assessor and candidate; - checklists; - worksheets; - work forms; - record of observed performance; - summary form .2 state that a scheme must be provided to determine whether the summary of observed performance allows for a determination that a specific component of a competence area of the Convention has been met by the candidate.			
12	The assessment process (11 hours) .1 state that steps involved in conducting assessment should include: - the preparation for the assessment - conducting a pre-assessment briefing with the candidate - observing the candidate's performance and recording the results - evaluating the process and determining the assessment outcome - conducting an assessment debrief	R4		A1 Sect.12 V5
12.1	Preparation for the assessment (2 hours) .1 state that preparation for the assessment involves the following sub-steps: .1 Gathering of materials - identify appropriate materials for items to be assessed - procure the necessary materials .2 Preparing the staging area - ensure a safe working environment - ensure availability of appropriate safety appliances - ascertain the need for appropriate attire .3 Preparing and arranging equipment - identify equipment to be used - ensure equipment is in good working condition - ascertain that assessment can be conducted without disrupting normal function of ship			

	.4 Conducting any necessary safety checks - ensure that there are adequate safety measures in place and that positive control of the operation is possible at all times - determine the standard safety check list for items to be assessed - involve the person(s) to be assessed in the preparation of safety checks concerning the assessment on board - take account of the weather condition during period of assessment - obtain permit to carry out assessment from master or responsible officer .5 Informing affected personnel - inform candidate and other affected personnel in advance - clarify that assessment will not interfere with shipboard routine operations - notify affected watchkeeper - confirm that candidate is ready for the assessment .2 demonstrate the preparation process for an assessment on board			Activity
12.2	Conduct pre-assessment briefing (3 hours)			
	.1 state that a pre-assessment briefing with the candidate should be conducted, which should address the following: .1 The scope (what and how much) - items to be assessed - the competences being assessed for - the method of assessment - the purpose of the assessment .2 Procedures (rules) - guidelines on the competences to be assessed for - circumstances that may require the assessment to be postponed - the time-frame - permissible and non-permissible activities - guidelines for appeals and reassessment .3 Standards and criteria (goal to be met)			

	- the acceptable level of knowledge, understanding and proficiency, as per the STCW competence tables - any other criteria, including for safety .4 Outcome and consequences of the assessment - the form or manner by which the outcome will be made known to candidate - the need to agree on the candidate's strengths and weaknesses - the expected consequences of the outcome (for example, the need for the candidate to be re-assessed or sent for further training) - the documents involved in recording the outcome (for example, the Training and Assessment Record Book) .2 conduct a pre-assessment briefing		B5, B6	V2 Activity
12.3	Observe the candidate's performance and the results (3 hours)			
	.1 state that throughout the assessment, the following should be noted: .1 Avoiding coaching - refrain from giving guidance/hints/tips to candidate - ensure performance is candidate's own effort .2 Remaining objective - keep within the scope and guidelines of assessment - avoid personal opinions that are subjective - take account of conditions beyond the control of the candidate which may affect his/her performance - exercise impartiality - be specific and clear in instructions - direct observation on candidate's performances rather than on candidate himself/herself - avoid being influenced by candidate's behaviour such as arguing and pleading .3 Maintaining positive control of the situation - keep out unwarranted interference		B6 B6	

	- maintain a conducive environment for assessment - ensure timely intervention when potentially hazardous situations arise - stick to allocated time-frame .4 Ensuring realistic assessment conditions and providing appropriate information - create scenarios that are as realistic as possible when actual conditions are not present e.g. responding to emergencies etc. - disseminate relevant information to ensure that candidate is not put at a disadvantage .5 Avoiding unnecessary interference - allow candidate to complete the task uninterrupted - abide by the time-frame for each task to prevent disruption on subsequent tasks .6 Maintaining records in accordance with the assessment guidelines - record the assessment in the approved Training and Assessment Record Book - record the assessment in the candidate's training record book where appropriate .2 observe and assess a candidate's performance			Activity
12.4	Evaluate the process and determine the assessment outcome (1 hour) .1 state that during observation of candidates, their performance should be evaluated and the assessment outcome should be determined, covering the following steps: .1 Recording the performance for each individual performance step, including taking note of areas to be improved .2 Applying the evaluation instructions as stipulated in the competence tables of the STCW Code, paying attention to the required criteria for evaluating competence .3 Determining the outcomes and immediately documenting the results			
12.5	Assessment debriefing (2 hours)			

	.1 state that an assessment debrief should be conducted with the candidate as soon as possible, taking into account the following guidelines: .1 Focus on positive outcome first - outline candidate's satisfactory performances - avoid making statements/comments that will demoralize the candidate .2 Identify areas needing improvement - make references to areas where performances were not up to expectation, based on factual observation - discuss ways in which candidate can improve on the performances in order to satisfy the competence requirement .3 Specify the assessment results - inform candidate of the assessment result (i.e. whether he/she has been assessed as "PASS" or "FAIL") .4 Close with a recommendation .1 recommend necessary action for the candidate to improve, including: - more exposure to a particular task - further or refresher training - reference to material to gain knowledge - need for closer supervision or coaching - if appropriate, specify minimum period before the next assessment of the failed task .2 conduct a post-assessment debriefing			Activity
13	Development performance improvement plan (2 hours) .1 explain the purpose of developing the performance improvement plan .2 state that it is necessary to determine the need for such a plan for each candidate .3 state that the plan is not required if the following three conditions are met:	R4		A1 Sect.1

	- the assessment was conducted according to an agenda or schedule - the assessment appeared fair and valid - the candidate passed without any areas for improvement being identified			
.4	state that it is necessary to allocate some time to review and analyse the assessment process and outcome, taking into consideration: - the candidate's results - how the results compare with prior assessment results - the extent to which the assessment accurately reflected realistic shipboard operations			
.5	state that if any of the three conditions identified in 13.3 is not met, a preliminary improvement plan must be prepared, which may address: - areas of additional training for the candidate - changes of her/his contribution to shipboard procedures and tasks - changes in the use of ship equipment - changes in the assessment process			
.6	state the need to communicate (face to face) with the candidate and/or ship master/designated person/management representative the contents of the performance improvement plan			
.7	recognize that there may be a need to revise the plan before finalizing it			
.8	state that the documents with the recommendations must be written and signed			

Part D: Instructor Manual

■ Introduction

The instructor manual provides guidance on the material that is to be presented during the course, and has been arranged under the thirteen main subject areas identified in the course outline, timetable and detailed syllabus (Parts B and C). The course material reflects the qualifications of instructors, supervisors and assessors as specified in section A-I/6, paragraphs 3, 4 and 6 of the STCW Code.

This course comprises lectures, discussions and series of demonstrations with full involvement by the participants of how various assessment techniques could be applied to conduct competence-based assessment on board ships. This involves:

- Short presentations of assessment techniques, with explanations of practical implications.
- Applications of competence-based assessment techniques by the course instructors and by the participants.
- Discussions.
- Workshops, with task-solving and interactive exercises.

While the course manual as well as the teaching aids facilitate the planning and conduct of the course, the instructors may need to prepare their own inputs on an ad hoc basis. This requirement follows from the fact that circumstances, particularly the composition of the group of participants, will be different each time the course is conducted. The input, therefore, must be adapted according to the particular conditions prevailing for each course in order to achieve both the general objectives and the detailed learning outcomes of each session.

It is important to recognize that since this course is for the training of assessors, it should be itself a model of good practice. Participants should be allowed to observe good preparation, exercises and group-work practice. There will be many opportunities for the instructor to employ the course itself as a vehicle to discuss the relevance and implications of certain learning outcomes.

The main purpose of using learning outcomes is to define clearly what the participant should be able to do in a specified area of knowledge or skill upon completion of the course. In some instances, considerable work will be necessary; in others, the time required might be minimal. This is governed by the abilities and experience of the participants.

The course outline and provisional timetable provide guidance on the time allocation for course elements. Every effort has been made to ensure the reliability of the time allocations, which are for guidance only. However, because of differences in the backgrounds, experience and abilities of the participants comprising each class or group, the actual time for each subject area could vary even if the same instructional team is used. This is especially true in respect of time allocated to practical activities. Where group activities are involved, group dynamics will vary significantly as the compositions of the groups are to be changed during the course, to prevent the members of a group repeatedly relying on the same person to lead their discussions. The detailed teaching syllabus should be carefully studied and appropriate lesson plans or lecture notes compiled. An example of a lesson plan is set out on page 67. Each lecture should commence with an explanation of the learning outcomes intended to be

achieved, and at the end of each lecture, the participants should be guided in further reading and any activity they should undertake. Questions arising from activities must be given priority at an appropriate time.

The learning outcomes of every session should be made known, and their achievement discussed with the participants at frequent intervals. Monitoring the achievement of outcomes and taking remedial action are an important part of managing any learning process.

As far as possible, sessions should be presented within a context which is familiar to participants and use should be made of practical examples. Trainers should illustrate these examples well and are encouraged to use the recommended teaching aids and prepare appropriate exercises. Some exercise examples, which are intended to raise the participants' awareness of the scope and value of the course, have been included in section 12. It should be noted that alternative exercises should be developed by instructors, based upon other IMO model courses and their own experiences to enhance awareness.

The presentation of the various subject areas should be done in such a way that those taking part in the course are involved in an interactive manner during the lecturing and tutorial process. Lecturers should encourage questions from the participants and encourage all participants to respond to the question raised.

The lectures should aim at conveying as much practical information as possible to the participants, in order to develop their knowledge of and their skills in the tasks they will be expected to carry out.

The course contains a series of exercises, some of which are linked, the output of which cover the learning outcomes of that particular subject area. The exercises in Section 12 of the course is an examination of the application of the knowledge and skills acquired during the course.

The teaching methods of dictation and student note taking should be avoided, and handouts for additional study should be prepared and distributed, as required, to enhance the learning outcome.

Further background material to the development of the programme is contained in the materials listed in Part A.

Guidance notes

1) Course introduction (1 hour)

■ Subject matter details

The purpose of this section is to introduce the course as part of the overall IMO training strategy to improve the training and certification standards of seafarers as well as port state control officers. The target group of participants for this course are those persons who will conduct in-service assessment of competence of seafarers on board. It is intended to be used in qualifying for certification under the STCW Convention, 1978, as amended (hereinafter referred to as the "STCW Convention"). Reference should be made to section A-I/6 of STCW Code.

The participants should be advised that, during the course, the lectures will be supplemented by individual and group activities involving such matters as competence-based assessment techniques. While the course aims at familiarizing participants with the various methods that may be used to assess the competency of participants on board, it is essential that practical experience is gained under the supervision of an experienced shipboard assessor. However, the difficulties that may be encountered in assessing the competence of seafarers are similar, whatever discipline is involved, and particularly so when the assessment is carried out on board.

■ Recommended presentation and assessment techniques

Instructors should present the scope and objective of the course and also explain the relationship of this course with other related IMO model courses such as the training course for instructors (MC 6.09), the training course for simulator trainers and assessors (MC 6.10) and the training course on assessment and examination of seafarers (MC 3.12).

Written or oral examination and/or assignments may be suggested as the preferable way to assess the participants' knowledge and competence.

2) Process overview (1 hour)

■ Subject matter details

This section is intended to introduce participants to the competence-based assessment process, outlining briefly the various components of the total assessment process. It is not intended that the matters raised in this section are treated in depth; however, it is important at this stage of the course that questions arising from the presentation are dealt with in a substantive way so as to generate a good rapport between the participants and the instructor, and between the participants themselves.

Instructors should stress that the assessment process must comply with quality standards system requirements stipulated in regulation I/8 of the STCW Convention.

Introduction

While a number of differing processes may be employed to satisfy the requirements of the STCW Convention, it must be ensured that candidates for certificates of competency under this Convention meet all national and international requirements, including those relating to minimum age, medical fitness, experience and standards of competence.

International law

Requirements of international law are contained in conventions and protocols: these may be bilateral in certain instances but in the main they are multilateral treaties between States.

By becoming a Party to these convention and protocols States bind themselves to comply with all requirements of such conventions and to take all steps that are necessary to give full and complete effect to them.

National legislation

International law is given effect by the State by incorporating all necessary measures into their national law, rules, regulations, administrative orders and instructions.

It is, therefore, essential to the process of training, examination and certification that the national legislation provides all necessary authority to ensure that certificates are only issued to those who are properly qualified and further prohibits ships from sailing without the requisite complement of certificated personnel.

Examples of national laws which typically provide the necessary legal framework covering the documentation, training, examination and certification of seafarers may be consulted on application to any maritime administration.

Competency

The objective of requiring seafarers to hold appropriate certificates is to ensure that they are competent to safely carry out all tasks associated with their functions on board.

Competency is defined as the ability to perform a task adequately, and in the case of seafarers the range of tasks involved may be considerable.

In most countries the syllabi for the examination of seafarers for certificates of competency have in the past been drawn up simply on the basis of experience-related lists of topics, without a great deal of attention being necessarily expended on defining the precise level of knowledge, the degree of skill and the type of behaviour which should be required of candidates to ensure that they will safely and efficiently perform the duties that they will be called upon to undertake. However, before the competency of seafarers can be evaluated, exactly what is being evaluated must be identified as precisely as possible.

The STCW Convention

The STCW Convention uses the concept of "competence" for various functions at each level of certification as the basis for certification. The Convention contains specific criteria detailing the standards of knowledge, understanding and proficiency to be achieved in each element of competence. The STCW Code establishes uniform standards, for example:

STCW Code, Chapter III

Section A-III/3:

Mandatory minimum requirements for certification of chief engineer officers and second engineer officers on ship powered by main propulsion machinery of between 750kW and 3,000 kW propulsion power

Standard of competence

- Every candidate for certification as chief engineer officer and second engineer officer of seagoing ship powered by main propulsion machinery of between 750 kW and 3,000 kW power shall be required to demonstrate ability to undertake, at management level, the tasks, duties and responsibilities listed in column 1 of table A-III/2.
- The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-III/2. This incorporates, expands and extends in depth the subjects listed in column 2 of table A-III/1 for officers in charge of an engineering watch in a manned engine-room or designated duty engineers in a periodically unmanned engine-room.

- Bearing in mind that a second engineer officer shall be in a position to assume the responsibilities of the chief engineer officer at any time, assessment in these subjects shall be designed to test the candidate's ability to assimilate all available information that affects the safe operation of the ship's machinery and the protection of the marine environment.
- The level of knowledge of the subjects listed in column 2 of the table A-III/2 may be lowered but shall be sufficient to enable the candidate to serve in the capacity of the chief engineer officer or second engineer officer at the range of propulsion power specified in this section.
- Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall take into account the relevant requirements of this part and the guidance given in Part B of this code.
- The administration may omit knowledge requirements for type of population machinery installations for which the certificate to be awarded shall be valid. A certificate awarded on such a basis shall not be valid for any category of machinery installation which has been omitted until the engineer officer proves to be competent in these items. Any such limitation shall be stated on the certificate and in the endorsement.
- Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence tabulated in columns 3 and 4 of table A-III/2.

Near-coastal voyage

- The level of knowledge, understanding and proficiency required under the different sections listed in column 2 of table A-III/2 and the requirements of paragraph 2.1.1 and 2.1.2 of regulation III/3 may be varied for officers of ships engaged on near-coastal voyages, as considered necessary, bearing in mind the effect on the safety of all ships which may be operating in the same waters. Any such limitation shall be stated on the certificate and in the endorsement.

It should also be observed that the STCW Convention deals solely with the qualifications of shipboard personnel and does not prescribe minimum levels of manning. International provisions for manning are contained in SOLAS regulation V/14 with further guidance provided in IMO Assembly resolution A.1047(27) on Principles of Minimum Safe Manning.

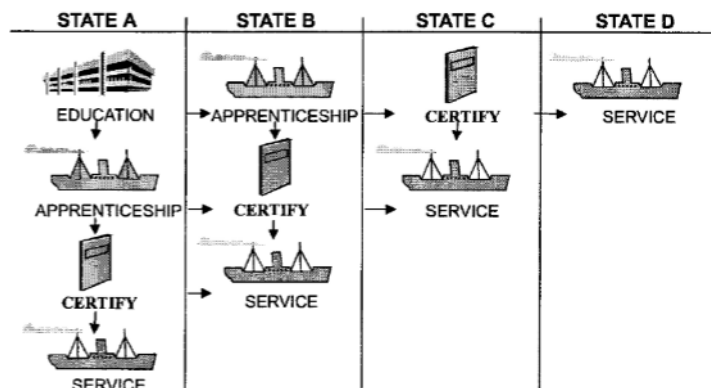
Training and assessment

Under the STCW Convention regulation I/6 and section A-I/6 of the STCW Code, all training and assessment of seafarers is required to be administered, supervised and monitored. Moreover, the trainers and assessors have to be appropriately qualified. Further, regulation I/8 and section A-I/8 require quality standards to be applied to all training and assessment activities.

Qualification process

The revised STCW Convention gives a range of possibilities with regards to the qualification process. In theory, a seafarer may complete his/her education in State A, do his/her sea service and/or participate in in-service training in State B, get his/her certificate from State C, and serve aboard a ship in State D. Such a qualification process will only work if the different States involved are confident that the education and training systems in other States are compliant.

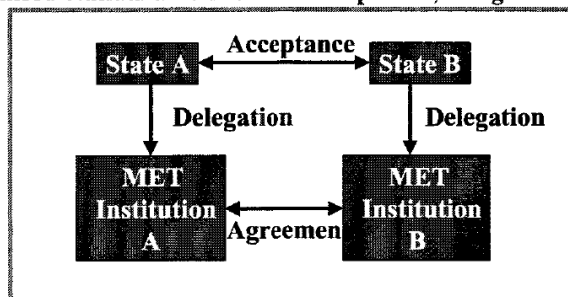
STCW Qualifying Process



There is a need for a common standard to make the qualification process work in accordance with the STCW Convention's intentions. Such a recognized standard may serve as a basis for acceptance from the other States with regards to the maritime educational and training system. The standard could also facilitate delegation of responsibility to individual maritime education and training institutions. Moreover, agreements on cooperation may be facilitated.

Common standard?

Recognised standard as basis for acceptance, delegation or agreement



■ Recommended presentation and assessment techniques

For this topic, it is recommended that instructors present a competence-based assessment process aimed at determining the competency of seafarers per a quality standards system. It is suggested that written or oral examination or assignment may be the preferable way to assess the participants' knowledge.

3) IMO and its contribution to training (1 hour)

■ Subject matter details

This section covers how IMO establishes and maintains the standards of training and assessment of seafarers.

Video V1 provides a useful introduction to the role and achievements of the IMO, and V2, B5 Chapter 21 and B8 all give a summary of the amendments in STCW Conventions.

The purpose here is to introduce the course as an essential part of the overall IMO strategy to improve maritime training and certification standards for seafarers.

The IMO Model Courses listed below are designed to address the competences specified in the STCW Convention. Each of these courses calls for the assessment of competence in one way or another.

The criteria to be used in evaluating competence are specified in the STCW Code. This is covered at a later stage in this course.

List of IMO Model Courses for which assessment is an essential part

- | | |
|------|--|
| 1 | Officer in Charge of a Navigation Watch |
| 2 | Master and Chief Mate |
| 3 | Officer in Charge of an Engineering Watch |
| 4 | Chief Engineering Officer and Second Engineering Officer |
| 5 | Navigation at the Operational Level: Radar Navigation, Radar Plotting, and |
| ARPA | |
| 6 | Navigation at the Management Level: Radar, ARPA, Bridge Teamwork and |
| SAR | |
| 7 | Proficiency in Fire Prevention and Firefighting |
| 8 | Proficiency in Advanced Firefighting |
| 9 | Proficiency in Personal Survival Techniques |
| 10 | Proficiency in Survival Craft and Rescue Boats other than Fast Rescue Boats |
| 11 | Proficiency in Fast Rescue boats |
| 12 | Proficiency in Personal Safety and Social Responsibilities |
| 13 | Tanker Familiarization |
| 14 | Specialized Training for Oil Tankers |
| 15 | Specialized Training for Chemical Tankers |
| 16 | Specialized Training for Liquefied Gas Tankers |
| 17 | Proficiency in Elementary First Aid |
| 18 | Proficiency in Medical First Aid |
| 19 | Proficiency Medical Care |
| 20 | Crowd Management, Familiarization and Safety Training for Personnel
Providing Service to Passenger Spaces |
| 21 | Crisis Management and Human Behaviour Training |

It must be emphasized that while many administrations also examine candidates for certificates valid on fishing vessels and for certificates valid in inland waters as well as for certificates for the operation of radiocommunication equipment, this course mainly focuses on the certification of masters and officers on ships on international voyages. However, the same principles of on-board assessment may be applied to ratings and to those on ships on domestic or coastal trade, as required to ensure uniform standards of competence of all seafarers on all routes and seaways. Therefore, the course can be readily adapted to the training of assessors in any discipline by substituting material specific to the discipline concerned in the various activities undertaken during the course.

In this section it should be stressed that IMO model courses cover a wide range of subjects from the support level to the management level; some are technical and some purely administrative. They include a wide variety of topics for both seagoing and shore-based personnel.

The briefing should further emphasize that the STCW Convention requires a minimum standard of competence in the task to be performed. For this reason, the training and assessment of seafarers is required to be in compliance with regulation I/6 of the STCW Convention.

When implementing competence-based assessment on board the ship an assessor should approach such task with sufficient flexibility in order to meet the requirements of good practice of on-board assessment under the particular circumstances. The structure and content of this course is designed with the above firmly in mind.

■ Recommended presentation and assessment techniques

It is suggested that the written or oral examination or assignments may be the preferable way to assess the participants' knowledge.

4) Purpose of this course (0.5 hour)

■ Subject matter details

This section of the course aims at familiarising the participant with the basic structure of certification embodied in the STCW Convention that emphasizes competence-based assessment on board ships.

The objective is to allow participants to gain an insight into the value of practical training during seagoing service performed during various voyages in various types of ships, and how competency gained from such training can be assessed. The knowledge, understanding and skills which are required of shipboard assessors should include:

- Awareness of the Value of Training and Assessment
- Substantive Subject Matter Knowledge
- Assessment Skills
- Diagnostic and Managerial Skills
- Appropriate Attitudes to Training and Assessment

■ Recommended presentation and assessment techniques

The aim of the exercises and group activities later in the course is for participants to devise a list of actions required for the implementation of shipboard assessment and of the skills which the participants find they must acquire, i.e. their own training needs. These should be seen as the individual intended learning outcomes of participants. Subsequently, the instructor should demonstrate the plan for the current course, and point out how it corresponds to the needs identified from the exercises. Reference should be made to the variety of competences required in STCW Convention.

5) Development of Shipboard Assessment System (1.5 hours)

■ Subject matter details

This section is to ensure that the relationship between assessment and other factors such as education, training, learning systems and performance is appreciated by participants.

An introductory briefing should contain a description of the "learning style" of the course by emphasizing its "participative" and "interactive" nature. The instructor should emphasize, in the introduction, the importance of the extensive group work and the exercises together with a summary of work management in groups, keeping in mind that both group work and interactive training are dealt with in detail during debriefing.

First, it is important to distinguish "education" from "training". Education usually means the preparation for careers and for life in general, which involves learning concepts, principles, problem-solving methods etc., whereas training means the preparation for specific jobs or set of tasks. The content of a training course is therefore more specialized than an educational programme. Some training courses contain supportive elements which many would describe as educational. This often applies to long courses.

The basic premise is that training involves **learning** which is designed to change the **performance of people** doing **jobs**.

The four **italized** words above – learning, performance, people, jobs - form substantial elements of the notion of "training". A strong relationship between the terms is characteristic of the nature of training.

Training courses are often said to be aimed at skill development, implying that they are not knowledge-based. However, training often requires the acquisition of knowledge in specific areas.

It is worthwhile to take each component of the definition of training and examine it more thoroughly, beginning with the last word in the definition – **jobs**. By doing this it is possible to emphasize the importance of the job to the design of learning. Further, as will be seen later, the trainer should begin the process of planning a training programme with some ideas and information about the work which has to be done.

Jobs

Jobs are made up of a number of specific tasks that people do. The number of tasks, their complexity and difficulty, and the relationship between them vary widely from job to job. The knowledge, skills and attitudes required for job performance also vary. Also there is often a range of acceptable differences in the way individuals do the same job. Nevertheless, there is usually a core of tasks and skills which are the same for a given type of job. If training is to improve job performance, the job itself must be fully understood.

People

When dealing with adults doing jobs, one must take account of the fact that the participant brings existing knowledge, skills and attitudes regarding that job to the training situation, as well as ways of learning. This necessitates paying attention not only to the aims of training, but also to the aims – and existing skills and attitudes of the **learner**.

Performance

The performance of people doing jobs relates to how well they carry out the tasks that make up their job.

When job performance is judged to be below standard, training may improve such performance. This approach to training is based on the need to improve job performance, and not on other often used reasons for training, such as informing, motivating or rewarding. Generally, there is a need to seek to improve job performance using training when:

- The employee does not know how to do all or part of his/her current job
- The employee is given new tasks requiring new knowledge, skills or attitudes
- The employee is given an entirely new job requiring new knowledge, skills or attitudes
-

Each of these may require a different training policy or strategy, or they may require no training at all, as we will see in later sessions.

Generally, training is needed when discrepancies exist between what an employee is expected to do and what he/she actually does or can do, and only then if these discrepancies can be reduced through learning. It is important to recognize the difference between the symptoms, e.g. poor performance and the causes.

Learning

The word "*learning*" generally refers to a process that creates the potential to exhibit a change of some kind in the learner. Such changes are often classified as:

Psycho-motor – physical and manipulative skills such as those required to operate equipment, a machine or an instrument.

Cognitive – the ability to recall learned materials, and the development of thinking skills.

Affective – attitudes, values and interests.

Testing

Testing is a procedure used to measure a sample of behaviour in order to discover how well a person performs, usually in comparison with others, or compared with identified performance criteria. In this context it is important that the test, in whatever form it is being used, yields consistent results by being reliable. Tests should also be valid and practical. Whilst we can only take a sample of a person's knowledge or comprehension about a topic in this way, testing methods do provide a more reliable estimate of performance than most other observational techniques, unsystematic or irregular observation being too unreliable.

With measurement of competence, we are concerned with getting a statement of performance, i.e. how much, against some established scale or rule, usually expressed in a quantitative form although it may be non-numerical. During this process information and data is being gathered but it must be systematic, valid and reliable.

Assessment

Assessment can be considered as placing an interpretation on measurement information and is usually concerned with assigning a score, mark, grade or ranking. Assessment procedures (e.g. norm-referenced assessment, criterion-referenced assessment and goal-based assessment) may be used to decide on the quality of courses, resources or curricula or the level of competence of students. Conclusions about the value of such data are more properly referred to as "evaluation". Evaluation depends upon both measurement and assessment and is concerned with the assignment of worth or merit to particular performances, behaviours, or processes.

Purpose of assessment

Trainees are assessed with a view to finding out the extent of their knowledge, understanding and skill, and how well they have learned. In general, there are several recognised main purposes for assessment, namely motivating students, grading for advancement (further studies, career, etc.), setting **standards** and providing feedback to students and teachers. The influences of such purposes on the assessment process can be varied however, and the lecturer setting the assignment, test or examination must be clear about the objectives of such assessment if it is to achieve its purpose.

Assessment is only one inter-linked part of the teaching process model (objectives, intended learning outcomes, syllabus and assessment) and it may dominate other parts of the teaching process if care is not exercised. However, it is a fact of life that without an assessment of students' performance in some form or other, they will not be motivated to put in their best effort. If practical work is not assessed or does not contribute to assessment, then students

will ignore it. The lecturer faces the challenge of selecting and creating the most effective and relevant method.

Methods of assessment

In considering the methods to be used, it is worth bearing in mind some of the factors which can contribute to a student's score:

- General level of intelligence.
- Knowledge, skills and ability in the tested area.
- Ability to understand instructions.
- Skill and experience in sitting for examinations and in answering the type of questions used.
- Guessing answers.
- Student health, fatigue, motivation, stress, memory fluctuation.
- Combining of examination results.
- Reliability of marking.

Video V4 and the booklet that accompanies the video provide useful explanations and illustrations of what assessment under STCW means in practice. V3 covers only on-board training.

■ Recommended presentation and assessment techniques

It is recommended that instructors/lecturers of this course present the differences between education, training, a learning system, performance and assessment taking into account the details above.

It is suggested that a written or oral group assignment may be the preferable way to assess the participants' knowledge.

6) Development of competence-based assessment (2 hours)

■ Subject matter details

This section aims at clarifying the difference between competence-based assessment system in comparison with knowledge-based and skill-based assessment. The objective of the activity is shown in Appendix A, Activity for Section 6, Activity 6.17

Up to the present time, most certificate of competency examinations conducted ashore have tested *knowledge* rather than *skills*. Both knowledge and skills are needed and it is on board ship that real competence must be demonstrated.

Knowledge-based assessments are usually in the form of written or oral examinations.

Skill-based assessments are usually in the form of observation of the candidate's practical knowledge.

Competence-based assessment incorporates the assessment of:

- How skills match specified standards
- Relevant knowledge and understanding
- Ability to use skills and apply knowledge and understanding in the performance of relevant tasks.

Assessment is about the collection of evidence. All forms of assessment can be included in this description - from everyday activities to the most unique and complex operational activities. The choice of assessment methods for a particular task should take into consideration factors that may influence it such as:

- assessment objectives
- qualifications of candidates
- the comparative effectiveness of different assessment methods
- constraints of time
- availability of facilities
- cost
- hazards.

The purpose of assessment within a programme of learning is to collect sufficient evidence to demonstrate that participants have learned at least the required minimum percentage of the syllabus. If the programme of learning is also linked to an awards system, a further purpose may be the achievement of formal recognition that the required level of knowledge, understanding and/or skill has been met. This usually takes the form of a certificate or diploma.

In a competence-based assessment system, the purpose of assessment is to collect sufficient evidence that individuals can perform or behave to the specified standards in a specific role. If this assessment is also linked to an award system, a further purpose is formal recognition of successful performance.

These facts were recognised when the STCW Convention was revised. The Convention aims to ensure that seafarers are fully competent for the jobs they undertake on board ships. It is therefore necessary to ensure that formal assessments are properly organised, carried out and recorded. It is also necessary to ensure that the evidence gathered is acceptable to national authorities responsible for issuing certificates of competency.

It should also be remembered that there are specified requirements for continued professional competence and revalidation of certificates, as well as for refresher and updating training.

The assessment process

A process is a "series of actions or events", or a "sequence of operations". We could say that all forms of assessment involve the following sequence of operations:

- defining requirements or objectives of assessment;
- collecting evidence;
- matching evidence to requirements or objectives;
- making judgements based on this matching activity

In order to operate a competence-based approach assessors are needed. These are people who are competent within the area being assessed and who have received training in how to support and assess others. Assessors need to use the standards to check for competency. While the assessment methods could differ, the check for competency will always have to be done against the specified competence standards.

A "competence standard" contains details of what needs to be demonstrated (performance criteria), under what circumstances or conditions they must be completed, to what accuracy levels (range statements) and what knowledge is required to be able to achieve these performance criteria effectively (underpinning knowledge, skills and attitudes).

Performance criteria are the key to the competence-based approach as they contain the details of what must actually be done to complete the task.

Range statements are also important as they give the variables, circumstances or conditions under which competence must be demonstrated.

Range statements have to be written to be as comprehensively as possible. In some cases, this can cause problems for participants. For example, the range statement for

- respond to malfunction of vessel's systems affecting navigation
may say:

Provide a navigational response to emergencies to the vessel for:

- the vessel dragging anchor during your watch;
- failure of navigational equipment, such as gyro compass, GPS and echo sounder;
- loss of power to electronic navigational equipment; and
- sudden failure of steering gear.

In a well-run and well maintained vessel many months may pass without a need to respond to a failure or malfunction of the engines or navigational equipment. Nevertheless, it is important to know what to do; what procedures and what actions to take when things do go wrong or should an emergency arise.

In this case it is entirely possible that some candidates will not have experienced failure of the steering gear. What does the assessor do?

What is needed is that individuals should produce real evidence of those areas where they do have experience. The assessor will then need to be satisfied, by questioning and discussion, that the candidate indeed has the skills for those parts of the range for which direct evidence cannot be produced. Evidence of this may include participation in drills or, if not, familiarity with the procedures on board for such events.

The underpinning knowledge, skills and attitude requirement is important because it ensures a full understanding of the task.

Competence-based assessment

Some key characteristics of the competence-based assessment approach are:

- focus on "outcomes" (criterion-referenced);
- individualized assessment;
- no percentage rating;
- no comparison with other individuals' results (not norm-referenced);
- all standards (requirements) must be met;
- on-going process (leads to further development and assessment);
- only "competent" or "not yet competent" judgement made.

As has already been noted, the purpose of competence-based assessment is:

To collect sufficient evidence to demonstrate that individuals can perform or behave to the specified standards in a specified role.

An addition to this definition can be made by clarifying that in competence-based assessment reference is being made to work roles and therefore to standards of competence that reflect performance at work. An appropriate definition of the purpose of competence-based assessment will therefore be:

To collect sufficient evidence of workplace performance to demonstrate that individuals can perform or behave to the specified standards required within a specified occupational role.

This differs drastically from traditional forms of occupational assessment in which evidence collected relates to what has been learned. In competence-based assessment, the key concern is actual performance. The focus is therefore, on what participants can do as well as what they know.

This outlines the key purpose of competence-based assessment. The issue of "perform" vs "behave" in the definition above will depend on whether we have set vocational outcomes or behavioural outcomes as the basis of our competence system.

Practical implications of competence-based assessment

The introduction of competence-based assessment at national, organizational or departmental level has wide implications for managers, for trainers and for those being assessed.

Unlike traditional forms of occupation-related assessment, competence-based assessment can be, and should be, undertaken in the workplace, and should be individualized, in the sense that the assessment measures the performance of each individual with reference to the specified standards.

Who Assesses?

The first question then is if assessment is to be undertaken in the workplace, who should be the assessors?

The most obvious choice are individuals who have the following:

- necessary knowledge and competence in the particular task to be assessed;
- time to undertake formal assessment;
- motivation for assessment; and
- diagnostic and assessment skills

The Assessor's Role

It is the assessor's role to facilitate a process that allows the candidate to show competence in the area being assessed. The important thing about assessment is that it is designed to test, not only the candidate's knowledge, but more importantly their ability to complete a task competently. But what is competence? Competence is the blend of skills, knowledge, values and attitudes required to consistently perform a task to an agreed standard.

The assessor must give the candidate the opportunity to demonstrate their ability to perform a specific task to the required standard. This demonstration comprises a variety of methods ranging from observation of the candidate performing a task to the candidate producing written records to support his/ her competency.