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Guidelines on training in the port sector

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Foreword

Education and training are essential to the ILO's goal of creating greater opportunities for women and men to obtain decent work, in conditions of freedom, equity, security and human dignity. Education and training is therefore a central pillar of the ILO's Decent Work Agenda.

The ILO's Portworker Development Programme (PDP) has successfully contributed to this goal over many years. As a further step, in 2009 the Sectoral Activities Department of the ILO embarked on work to develop guidelines on training in the port sector with the aim of providing a framework for portworker training to meet the following objectives:

- protecting and promoting health and safety in ports;
- improving the skills of portworkers and enhancing their professional status and welfare;
- securing the greatest possible social and economic advantages from advanced methods of cargo handling and other port operations;
- improving cargo handling efficiency and enhancing the quality of service to port clients; and
- protecting the natural environment in and around the port area, and promoting decent work and sustainable jobs in ports.

An informal Working Group of experts was established to assist the Office in the development of an initial draft of the guidelines. The Group was comprised of (port) employer representatives (the International Association of Ports & Harbors, IAPH),

(dock) worker representatives (the International Transport Workers' Federation, ITF) and government representatives, as well as international shipping lines, national and global port operators, port training institutes, the International Maritime Organization (IMO), World Bank, European Commission (EC), the International Safety Panel (ICHCA International Ltd), and several individual experts.

As part of this work, the ILO also commissioned an international assessment of training in the port sector to provide a background and overview of ILO instruments and different models of training, and to outline a framework for the implementation of training in ports.

The Tripartite Meeting of Experts for the Review and Adoption of the ILO Guidelines on Training in the Port Sector, held in Geneva from 21–25 November 2011, reviewed and adopted the Guidelines as amended. The Meeting was composed of five Government experts (Argentina, Finland, Jordan, Papua New Guinea and Senegal), five Employer experts and five Worker experts nominated by the Employers' group and Workers' group of the Governing Body respectively, as well as observers from five other governments and a number of intergovernmental and non-governmental organizations. The publication of the Guidelines was authorized by the Governing Body at its 313th session.

The ILO Guidelines on training in the port sector present a competency-based framework for portworker training methods and are the first ILO sector specific training guidelines.

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Contents

Appendices

Abbreviations and acronyms

AIDS	Acquired Immune Deficiency Syndrome
CC	cargo coordinator
DAV	driver articulated vehicle
DWCP	Decent Work Country Programme
GTO	global terminal operator
HIV	Human Immunodeficiency Virus
HR	human resources
ICT	information and communication technologies
ILC	International Labour Conference
ILO	International Labour Organization
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Organization for Standardization
IT	information technology
KSA	knowledge, skills and attitudes
OLE	operator of lifting equipment
PDP	Portworker Development Programme
PPE	personal protective equipment
RMG	Rail-mounted gantry crane
RO/RO	roll-on/roll-off
RPL	recognition of prior learning
RTG	Rubber-tyre gantry crane
STS	Ship-to-shore gantry crane
UoC	units of competency
VET	vocational education and training

Explaining the *Guidelines on training in the port sector*

The ILO *Guidelines on training in the port sector* (hereafter "the Guidelines") present a competency-based framework for portworker training methods designed to:

- protect and promote health and safety in ports;
- improve the skills development of portworkers and enhance their professional status and welfare;
- secure the greatest possible social and economic advantages from advanced methods of cargo handling and other port operations;
- improve cargo handling efficiency and enhance the quality of service to port clients; and
- protect the natural environment in and around the port area, promote decent work and sustainable jobs in ports.

These objectives are consistent with international labour standards and other ILO instruments relevant for the port sector (see Appendix I). Compliance with international labour standards goes hand in hand with improvements in productivity, safety and health, and economic performance. Investment in skills development is invariably part of this process, as a better trained workforce will be more productive and safety conscious. Where portworker training leads to efficiency gains and service improvement, and consequently more trade passing through the port, the result is often more as well as better jobs.

The Guidelines have been produced for all organizations and individuals involved in any aspect of portworker training. This includes, but is not restricted to: government ministries of transport and labour/employment and other relevant government

agencies; training schools/institutions, whether broadly based (national) or dedicated (industry, port or company-specific) organizations involved in the provision of portworker training; port and terminal operators as well as specialist port service providers; individual trainers employed by training schools/institutions and port managers, especially those in human resources (HR)/training functions; and trade union officials and other (port-based) worker representatives (e.g. port safety committee members, members of a works council and the like).

The Guidelines apply to all workers involved in cargo handling in ports and on board vessels, regardless of their employment status (e.g. permanent or casual), job category (e.g. general portworkers or specialist equipment operator), experience, years of service or existing levels of skill. The general (competency-based) approach set out in the Guidelines, and in particular specific elements (e.g. safety and health), is applicable to all workers who enter the port (e.g. truck drivers or railway workers) and those employed in cargo activities outside the port. For example, workers responsible for stuffing (packing) freight containers should receive training on ways to secure cargo and on the weight distribution of goods in a freight container as these activities will impact on the safety and efficiency of subsequent port operations.

The Guidelines set out the general approach and key processes for competency-based training in the port sector; they are not designed to provide a detailed syllabus for training or training materials. The latter are available from other sources, such as the ILO's Portworker Development Programme (PDP) or materials provided by well-established training providers in the industry. Further information on access to these and other materials may be obtained by contacting the ILO. A glossary

of terms is provided at the end of the Guidelines to assist all readers but especially those who are unfamiliar with competency-based training systems.

The Guidelines are presented in three main sections as follows.

Section 1. Background

The opening paragraphs of this section set out the objectives of training in general, and portworker training in particular, according to fundamental principles and values accepted by the ILO. The section includes the ILO's preferred approach to competency (see table 2) and introduces a specific model for competency-based training in the port sector (see figure 1). The model is briefly explained as a prelude to a more detailed exposition in the two subsequent sections that focus on the principles and practice of competency-based training for portworkers.

Section 2. Competency-based training in a supportive environment

This section provides an overview of competency-based training and the environment in which portworker training takes place. Its purpose is to introduce the reader to the various elements constituting a competency-based training system for portworkers, which can be set within a national qualifications framework that facilitates extension (breadth of acquired competencies) and progression (to higher level skills and qualifications), as well as labour mobility within and between firms. The national qualifications framework is just one element of the wider environment in which portworker training can be developed within any given country. Another important element, which is integral to the

work of the ILO, is social dialogue. Countries that have a greater number of cooperative or consensual systems of industrial relations tend to have more – and a higher quality of dialogue – on training between the social partners than those who do not. Vocational education and training (VET) requires a cooperative approach among a variety of different stakeholders, including employers, unions, educational authorities, training institutions and the like. Social dialogue provides a solid foundation for such cooperation.

In everyday language, section 2 considers "what to do" when it comes to portworker training, and "what is needed to do it". Competency-based training is evidently not the only approach to portworker training. In fact, there are several examples around the world of extremely successful portworker training programmes based on very different approaches, one of the most notable being one in which new recruits to a port labour pool are trained in a broad range of manual and mechanical skills or the handling of different types of cargo. Increasingly, however, ports and other industrial sectors have found that an "output-based" approach (proven and displayed competencies) is more effective than "input-based" (time served) approaches to education and training. Competency standards identify key roles that the worker is expected to perform, which are then broken down into a number of "units of competence"; these are then further subdivided into "elements of competence". For each element, "performance criteria" are defined which form the basis of assessment, with "range statements" provided for guidance (i.e. the relevant work settings where the defined tasks need to be performed). These are the building blocks of a competency-based training system for portworkers.

Section 3. Portworker training

The model for portworker training, which is detailed in this section, follows a sequential process or cycle that starts with competency profiling; identifies any gaps between the competencies required and the competency profile of the workforce; and develops individual learning plans to close the gap through a systematic process of training, subject to appropriate assessment and accreditation (see figure 3). Details are provided in this section of each step in this process. At the heart of the cycle is the training policy, an explicit statement of intent that may be part of a national (government-inspired) policy on training, either in alignment with cross-sector VET policy in general or ports policy in particular. If no such national policy on training exists, or if it is deemed too general for the port sector, then the industry and/or individual ports/operators are advised to develop their own policy to set out the commitment of different stakeholders to training, with appropriate rules and regulations to facilitate the universal objectives of safe and efficient port operations that provide a timely, cost-effective and high-quality service for all port users.

The emphasis in section 3, in everyday language, is on "how to do it", with each step in the training cycle clearly described. The training model presented in this section is based on recognized "good practice", including the ILO's own PDP. Good practice demands a clear statement of intent. Whereas laws can compel or prohibit certain behaviours, a policy statement merely guides action towards the most desirable outcome – in this instance, towards a safe and healthy work environment; higher level and widely recognized skills; efficient port operations; the effective utilization of new technologies; and the ability to meet the needs of customers, protect the environment and ensure decent work

and sustainable employment. In the past, a major problem in the sector was found to be "the lack of specific training policies set by management to improve port services and encourage a more client-oriented approach in port operations".[1] "What to do" starts with the policy cycle – a tool used to analyse the development of a policy item, in this instance portworker training – but it does not denote what is actually done. As a statement of intent, port training policy merely guides the actions of the relevant parties. These actions are depicted in figure 3 as a "training cycle", which is described in some detail in section 3.

The Guidelines conclude with a very brief summary that calls for ports around the world to invest in (competency-based) training that will raise safety and health standards, improve the efficiency of cargo handling operations, enhance customer service, and create sustainable, high-quality jobs for current and future generations of portworkers.

1. ILO: *Social and labour problems caused by structural adjustments in the port industry*, Sectoral Activities Programme, TMPI/1996 (Geneva, 1996).

Section 1. Background

All workers have a right to basic education and training. In ports and indeed many other sectors of economic activity, especially those industries most exposed to global competition, all parties now recognize the importance of investing in human as well as physical capital. For the ILO, the objectives of skills development should include:

- promoting sustainable enterprises that apply workplace practices based on the full respect of fundamental principles and rights at work and international labour standards (see box 1);
- improving productivity which also includes improving workers' lives, enterprises' sustainability, social cohesion and economic development;

Box 1
Full respect of the fundamental principles and rights at work

By adopting the Declaration on Fundamental Principles and Rights at Work and its Follow up at the 89th Session of the International Labour Conference (1998), the ILO member States recognize that they have an obligation to work towards realizing certain basic values that are inherent in ILO membership, namely: freedom of association and the effective recognition of the right to collective bargaining; the elimination of all forms of forced and compulsory labour; the effective abolition of child labour; and the elimination of discrimination in respect of employment and occupation. This obligation exists even if member States have been unable to ratify the eight fundamental Conventions (Conventions Nos 29, 87, 98, 100, 105, 111, 138 and 182) that embody these principles.

The Declaration on Social Justice for a Fair Globalization was adopted at the 97th Session of the International Labour Conference (2008) to promote the ILO's Decent Work Agenda and forge an effective response to the growing challenges of globalization. The 2008 Declaration states that the violation of fundamental principles and rights at work cannot be invoked or otherwise used as a legitimate comparative advantage and that labour standards should not be used for protectionist trade purposes.

- developing people's competencies and employability, thereby providing the opportunity for better career paths (within the company or in the labour market) and higher income, as well as enabling enterprises to remain competitive and retain their workers; and
- developing an effective response to local, national and international challenges such as technological change, globalization and trade, climate change, protection of the environment, and demographic changes.[2]

In ports around the world there is now a demand for significant change in skills development. Port work has been transformed in recent years by a combination of the growth in world trade; containerization and other mechanized forms of cargo handling, the introduction of new information and communication technologies (ICT) to direct and track the movement of goods throughout the transport chain; the vertical integration of transport companies offering a "door-to-door" service to clients; and the increasing concentration of port activities under the control of just a handful of global terminal operators (GTOs).

Table 1 summarizes the changing world of port work. Taken together, these changes have transformed the skills required of a

2. The important role of skills development for social and economic development and decent work was highlighted in a series of ILO discussions and conclusions, most notably: the Human Resources Development Recommendation, 2004 (No. 195); the Global Employment Agenda, adopted by the Governing Body at its 286th Session in March 2003; the Conclusions on promoting pathways to decent work for youth, adopted by the International Labour Conference (ILC) at its 93rd Session (2005); the Conclusions on the promotion of sustainable enterprises, adopted by the ILC at its 96th Session (2007); and the resolution concerning the recurrent discussion on employment, adopted by the ILC at its 99th Session (2010).

portworker, which in turn demand a new professional training system. These changes also open the industry to new sources of labour supply, most notably the increasing number of women who drive equipment, tally cargo and perform information technology (IT) jobs in the operational control departments of major ports around the world.

Training programmes in many ports have been adapted to this changing pattern of labour supply and the demand for new and/or combined skills. There has been a shift in emphasis from "job analysis" being used to pinpoint the skills needed for a particular job, to an identification of competencies required for a given function. Many of these competencies are common to a significant number of functions in ports – and indeed are necessary throughout the transport and logistics chain. Competencies can therefore be combined to create recognized qualifications for portworkers as part of a national qualifications framework,[3] although it should be noted that a sector-based approach is often more viable than an attempt to create one education and training system for all, applying to all industries.[4]

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3. A national qualifications framework is an instrument for the development, classification and recognition of skills, knowledge and competencies along a continuum of agreed levels (typically between eight and ten levels). By providing clear statements of what the learner must know or be able to do, whether learned in a classroom, on the job or less formally, national qualification frameworks allow qualifications to be related to each other and placed at different levels. See R. Tuck: *An introductory guide to national qualifications frameworks: Conceptual and practical issues for policy makers* (Geneva, ILO, 2007).

4. S. Allais: *The implementation and impact of national qualifications frameworks: Report of a study in 16 countries*, Skills and Employability Department (Geneva, ILO, 2010), p. 4.

Table 1. The changing world of port work

From		Towards
General labourers	→	Multiskilled/specialist workers
Labour-intensive operations	→	Capital-intensive operations
Break-bulk handling	→	Specialized operations
Casual hiring	→	Permanent employment
Informal on-the-job training	→	Formalized training
Male workforce	→	Diversified labour force

For the purposes of the Guidelines, qualifications are defined as "a formal expression of the vocational and/or professional abilities of a worker which is recognized at company, sector, national or international levels". With a competency-based approach to training, modular programmes can be used to deliver training in a flexible and cost-effective way that meets the needs of all parties.

A key advantage of a competency-based approach is that it relates to learning outcomes or outputs, irrespective of the route of acquisition involved, rather than learning inputs (or "time served"). Therefore, a competent person is someone who: (a) possesses certain knowledge, skills and attitudes (KSA) which she or he can use (b) to perform specified tasks to (c) a standard of performance expected in (d) a specified workplace under (e) conditions of uncertainty and change. The purpose of competency-based training, however, is not simply to ensure that workers are equipped to meet their current job demands, but to provide workers with the competencies they need (the necessary attributes) to perform efficiently today and in the foreseeable future. The approach to competency-based training favoured by the ILO is summarized in the right-hand column of table 2.

Table 2. Dimensions of competence

Functional/behavioural approach	Multidimensional approach
Passive employees (orientated towards the demonstration of prescribed competencies)	Active employees (involved in constructing knowledge)
Particular skills necessary to perform specific tasks as specified by employers	The ability to deal with complex work situations, drawing on multiple resources that the employee brings to the workplace
Emphasis on context-bound, practical (tacit) knowledge	Combines practical (tacit) knowledge and context-free, theoretical (explicit) knowledge
Prescribed outcomes – "competence" is the person's ability to demonstrate performance to the standards required	"Competence" is a holistic notion, relating to the whole person and including different dimensions such as occupational, personal and interpersonal ("shared understanding")
"One best way"	Potentially different ways to perform any given work task
Binary assessment (competent or not yet competent)	Graded assessment (e.g. exceptional, highly competent, effective, less than effective)
Individual competence – "possessed" by the individual	Organizational competence – the interaction of individual, group, managerial and technological systems
Limited transferability (across workplaces in the same industry)	More extensive transferability (across workplaces in the same and cognate industries)
Employer-led	Consultation, negotiation and agreement of competencies by the social partners
Workplace/enterprise orientation	Occupational/industry orientation

Source: Based on J. Winterton, F. Delamare-Le Deist and E. Stringfellow: *Typology of knowledge, skills and competencies: Clarification of the concept and prototype*, CEDEFOP Project No. RP/B/BS/Credit Transfer/005/004 (Thessaloniki, CEDEFOP, 2005).

This "multidimensional" approach is more consistent with the broader objective of decent work for all women and men in the twenty-first century and it echoes the long-standing principle that "labour is not a commodity". Jobs should not be defined in

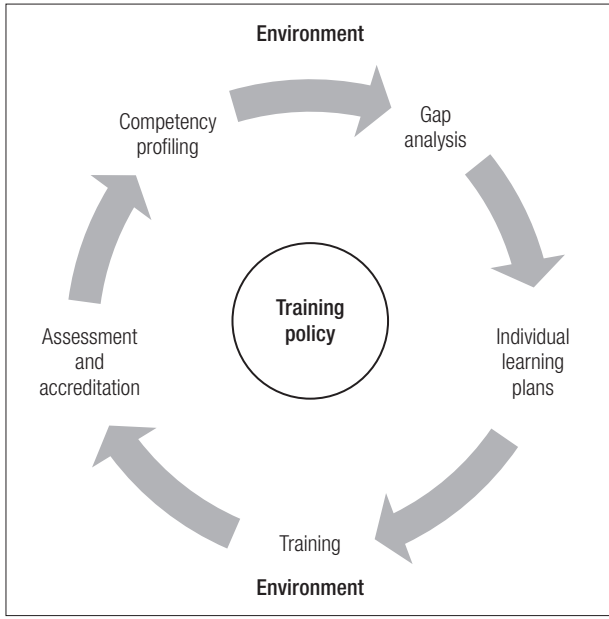
purely technical terms or simply in terms of a person's "value" to their employer.

Following a multidimensional approach, the Guidelines provide a framework for competency-based training in the port sector that will contribute to health and safety, skills development, the efficiency of cargo handling and the quality of port services. In order to ensure that training meets both economic and social objectives, dialogue and cooperation between the social partners is essential. Workers' and employers' representatives can offer invaluable support in areas such as occupational safety and health, job training and skills development. Dialogue creates incentives for employers' associations, trade unions and training providers to use their influence in joint regulatory bodies to expand training opportunities beyond those provided by individual employers. It also increases the level of commitment, particularly that of employers, to training goals which might otherwise be evaded if a purely administrative approach is taken.

A generic model for competency-based training in the port sector is depicted in figure 1. At the heart of this model is "training policy". Every organization employing portworkers should have a training policy. In brief, a policy can be considered as a "statement of intent" or "commitment" to which the organization may be held accountable. As a high-level plan embracing the goals of the organization, the port training policy provides a guide as to the "what" and the "why" questions that might arise in portworker training in a given context (the external environment in figure 1).

The term "policy" is not normally used to denote what is actually done. The method of action selected for the ILO Guidelines on training in the port sector is a competency-based training cycle that offers a guide to the "how", "where" and "when" type

Figure 1. Framework for competency-based training in the port sector



questions of portworker training. The cycle begins with "competency profiling" – defining the competencies required to perform a particular task and combining or packaging these competencies to create recognized qualifications that meet the needs and aspirations of the workforce, the requirements of the employer and the demands of the customer.

Once a competency profile has been established for all the different jobs in the port, a "gap analysis" can be undertaken to identify any training deficiencies. It is not uncommon for a gap

analysis to identify shortcomings with respect to training policy and provision on the part of both employers and training providers, as well as to the skills of the workforce. For example, operating companies may discover that important competencies are in short supply or are simply not catered for, which can undermine the integrity of standard operating procedures, the efficiency of operations and the quality of service. More importantly, competency gaps might endanger workers' health and pose a safety risk. Training organizations might well discover that their training materials are out of date or, worse still, non-existent. Workers may need additional competencies as a result of technological change or refresher training to upgrade existing knowledge and skills.

By mapping the worker's individual competency profile (his or her knowledge, skills and other attributes) onto a competency profile or matrix, which lists all the jobs in the port and identifies the job the worker currently occupies, it is possible to rectify any outstanding gaps by means of an "individual learning plan". Social dialogue and one-to-one communication is particularly important, and at times essential, at this stage to reassure workers who may be unsettled by the identification of "gaps" in their competency profile. If any gaps exist, workers should be classified as "not yet fully competent" in a particular job or skill.

Ports need appropriate physical and human resources to deliver effective training. For example, well-qualified and highly motivated trainers can make a significant difference to the quality of portworker training, as can modern training facilities such as crane simulators. High-quality training materials, such as the ILO's PDP, also constitute a key ingredient of effective training.

The model of competency-based training presented in figure 1 is based on "active learning", which combines theoretical

instruction and practical exposure with continuous assessment to monitor the progress of trainees. There is an old adage that: "What we have to learn to do we learn by doing." Active learning methods recognize that workers' experience and ideas are the organization's most valuable resource. Consequently, active learning is "learner-centred", as it is best viewed as a process of interaction between "reflective practitioners" (participants/trainees) and "facilitators" (teachers/trainers). Three basic principles guide this approach: (i) reflection enables us to take the meaning out of our experiences; (ii) empirical data help us to contextualize and compare our experiences; and (iii) theory enables us to understand and explain our experiences.

The multidimensional definition of competence (table 2) combines knowledge (cognitive competence), skills (functional competence) and attitudes/behaviours (social competence) with "facilitating learning" (meta-competence). Meta-competence is concerned with an individual's knowledge of his or her own intellectual strengths and weaknesses, the manner in which to apply skills and knowledge in various task situations, and the ways to acquire missing competencies. Thus, meta-competencies typically include "learning how to learn" and "coping with uncertainty" (i.e. being able to adapt, anticipate and create).

Continuous assessment and the process of accreditation facilitates the systematic and reliable accreditation of portworkers' skills and provides the necessary confidence and trust in the award of qualifications. Recognized qualifications are the "currency" of the labour market; however, like banknotes, their value is contingent upon the recognition and status accorded to them within the socio-economic and wider political system. This is just one element of the environment depicted in figure 1 and further developed in the following section.

Section 2. Competency-based training in a supportive environment

Introduction

Training policies and programmes cannot simply be selected "off the shelf"; they must always be developed in the context of a specific time and place. For example, the extent to which a country's system of VET relies on markets and/or institutions, involves employers' organizations, trade unions and employee representatives in their development, and is underwritten by the active support of the State, financially or otherwise, will all have an important bearing on training policy and practice. Other important factors include the general business setting (e.g. prevailing technologies) and structure of employment (e.g. the participation of different groups in the labour market), as well as predominant modes of engaging labour. In ports where portworkers may be hired on a casual basis, for instance, the mode of engaging labour "continues to have a harmful effect on the safety, health and occupational training of dockworkers".[5] A crucial element in the development of an effective port training policy is therefore a consideration of, and adaptation to, the external environment depicted in figure 1.

One of the great attractions of a "functional/behavioural" definition of competence, as summarized in table 2, is that it seeks to "isolate" or "neutralize" the impact of contextual or environmental factors, as far as possible, by focusing on practical

5. ILO: *Dock work: Social repercussions of new methods of cargo handling* (Geneva, ILO, 2002), para. 136. Casual employment is also incompatible with the use of modern equipment, which "requires the employment of a skilled, trained and responsible workforce. The systematic use of casual labour cannot offer the same guarantees" (para. 137; see also paras 75, 77, 88 and 113).

skills in the workplace. Thus, from a practical (operational) perspective, this approach can be very appealing as it enables employers and training providers to concentrate their efforts almost exclusively on the competencies needed for a given function. While much of section 2 is presented in terminology that is consistent with a functional/behavioural definition of competence, it must always be remembered that if workers' competencies are narrowly prescribed (or "context-bound" as defined in table 2), they tend not to develop the knowledge, skills or indeed the motivation to perform tasks or deal with situations beyond the prescribed outcomes. For precisely this reason, "competence" should not be interpreted as "compliance" (i.e. workers who simply follow rules and procedures without question). The functional/behavioural approach can prove to be contrary to the needs of customers, the contingencies inherent in the work of a modern-day port, and the legitimate aspirations of portworkers for interesting, challenging and responsible jobs.

The starting point for section 2 is therefore to define "competence" and a "competent person". Competence is expressed in terms of knowledge, skills and attitudes (KSAs), and their application according to workplace and/or industry standards. As mentioned above, a competent person: (a) possesses certain knowledge, skills and attitudes, which she or he can use (b) to perform specified tasks to (c) a standard of performance expected in (d) a specified workplace under (e) conditions of uncertainty and change.

As competency-based approaches focus on what is expected of the worker in the job, rather than on the time spent in education and training, it is important to specify the "performance criteria" for each task, job and occupation. In performing any specified task, certain critical elements of performance are expected

(e.g. precision, speed, quality) along with compliance with industry codes, regulations and procedures.[6] ILO Conventions, Recommendations and other relevant instruments for the port sector are summarized in Appendix I.

Performance criteria are usually allied to a "range statement" that specifies, among other factors, the type of workplace(s), equipment, materials or processes to be used or controlled (e.g. the type of equipment used to lash or unlash containers, the temperature range for perishable goods, the different vessels to be worked). The range statement might also include the type of clientele who will receive services (e.g. different port users such as shipping lines, road haulage companies, forwarding agents) as well as process uncertainties and irregularities (e.g. the impact of inclement weather and the early/late arrival of ships), breakdowns and any associated risks to be handled – often referred to as "contingency management" skills. The level of responsibility and autonomy in the implementation of these tasks will also be specified, as will the need for working and communicating with others and in teams.[7] These and other dimensions of competency are depicted in figure 2.

The competencies required for the implementation of a single task/outcome are commonly presented as a "competency element". A competency element is described through its title, scope of application, the task/outcome to be implemented,

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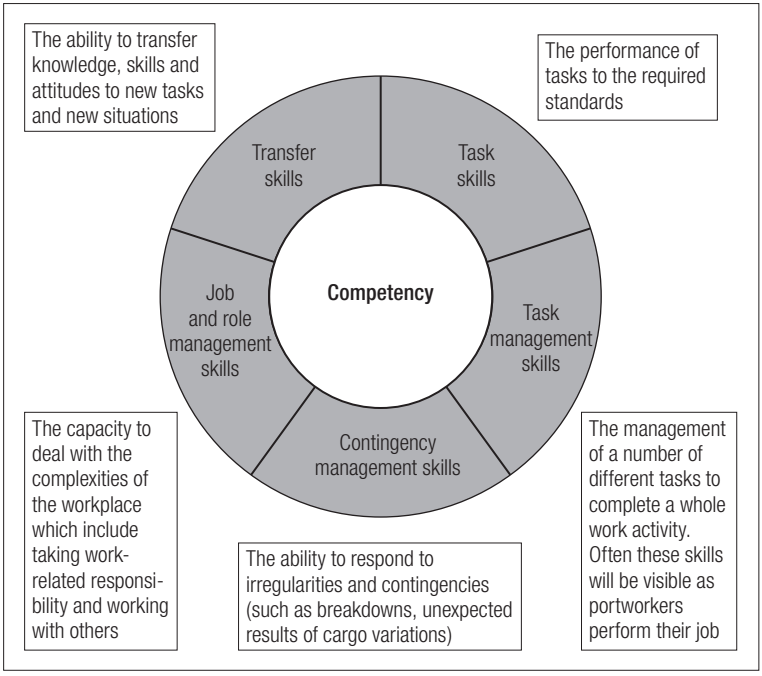
6. Codes of practice on security in ports and safety and health in ports were adopted by a Tripartite Meeting of Experts on Security, Safety and Health in Ports (Geneva, 8–17 December 2003) and approved by the ILO Governing Body at its 289th Session in March 2004.

7. ILO: *Guidelines for development of regional model competency standards (RMCS)*, Regional Skills and Employability Programme in Asia and the Pacific (SKILLS-AP), (ILO, Geneva, 2006).

Figure 2. Dimensions of competency



Source: Adapted from: Singapore Workforce Development Agency (WDA): *Singapore workforce skills qualification system: An introduction* (Singapore, 2007), at: http://app2.wda.gov.sg/data/ImgCont/487/SupplementaryGuideforACTACU2007v1.pdf.

the critical elements of performance and the KSA required. Competency elements are commonly grouped into "units of competency" (UoC). A single competency unit or a package of competency units will determine the performance requirements for carrying out a certain job or occupation. In order to demonstrate how competency standards can be expressed in a

way that can be clearly understood by all parties, the "generic structure" for a unit of competency is subsequently described in this section of the Guidelines, with more detailed (port-specific) examples provided in the appendices.

Units of competency are combined or "packaged" in different ways to create recognized qualifications, which may or may not be part of a national qualifications system. Preferred methods of packaging are also described in this section, although it must always be borne in mind that industry-based qualifications, national qualifications system or other rules and regulations of the national VET system may prescribe or preclude certain combinations of competency units. The external environment will impinge on "what is to be done" in other important ways, including those authorized to provide recognized training, the standards of training provision and accreditation they must satisfy, and the different stakeholders who are involved in the process. This section first examines a supportive environment for competency-based training, before looking in more detail at the main elements of a competency-based training framework.

A supportive environment for competency-based training

At the micro level (i.e. enterprise or port level), competency-based training might be viewed as a purely "job-specific" system of training and development, whereby the employer undertakes a detailed job analysis and identifies the necessary (technical) competencies to perform the tasks in hand. However, an effective system of competency-based training involves much more than this. For example, in addition to the technical or "hard skills" required to perform a job in a competent manner – as defined in terms of various performance outcomes, including safety and

health – the worker is usually expected to exercise initiative and judgement during any unusual or unexpected operating conditions (e.g. adverse weather, damage to cargo or equipment, early/late arrival of vessels or trucking delays).

In many instances, broader employability skills are necessary, such as communications, team working, problem solving, self-management, capacity to learn and the increasing use of (digital) technology. These are skills that can be transferred across jobs, and indeed across industries, especially when they are based on prior learning. As a result, these skills are often provided by the State (via general education) or collectively by employers in a specific sector (e.g. via jointly funded training institutions or the sponsorship of appropriate educational programmes in the general education system). Yet increasingly, these skills also feature in company-specific training programmes, as employers recognize their value in a changing world of work and employees appreciate their contribution to lifelong learning. Tallying cargo, for example, now demands IT skills in many ports. Communication between portworkers is no longer a conversation between gang members in a ship's hold, or a loud shout to warn of impending danger, but interaction via radio and information displayed on a computer screen.

The full commitment of management and the trainee is an essential condition for the success of skills development programmes. In such programmes, three distinct but interrelated levels can be considered, namely the macro (economy), meso (industry) and micro (company) levels. Competency-based training will be more effective where it is supported at these different levels, as summarized in table 3.

Examining the provision of current training facilities gives an idea of the extent to which the environment for training in the

Table 3. Levels of support for competency-based training

Macro (economy) level	Meso (industry) level	Micro (company) level
• tripartite social dialogue • government commitment to training and development • a well-established national VET system • a national qualifications system/framework • nationally recognized and funded training organizations • a recognized system of certification and assessment • a quality assurance system	• tripartite and/or bipartite social dialogue and engagement with other stakeholders (e.g. port users) • specialist training schools/organizations jointly funded by employers and/or the State and managed with the participation of the social partners • trainers with industry experience and appropriate pedagogic skills • opportunities for work-based and work-like training • recognized occupational job categories and associated training requirements • adequate training resources (e.g. training facilities, professionally qualified trainers, detailed training materials, time off for workers to undertake training) • a recognized system of certification and assessment for the port sector and associated (maritime and logistics) industries	• bipartite social dialogue • a human resource management system in which training plays a specific and clearly defined role • human resource planning and development to identify future training requirements for the organization as a whole and individual workers • detailed job analysis • training records that systematically document the employees' current knowledge, skills and attitudes • opportunities for on-the-job training • paid leave for appropriate training • well-developed, high-quality training materials, which might be company-based, provided by national/industry training organizations, or international bodies (e.g. the ILO's PDP) • access to both workplace facilities for practical training and classrooms for theoretical training • access to advanced training aids (e.g. IT facilities and crane simulators) • mentoring and appraisal to support past, current and future training needs

port sector has changed in recent years. Around the world, institutional and administrative reforms introduced since the mid-1990s, particularly the reduction in government funding for the port sector and the increased role of private companies in the provision of port facilities and services, have led to the closure of many national and port-based training centres. These have often been replaced by corporate training units at the individual terminal level, in some cases funded and supported by the major global terminal operators (GTOs). Given the increasingly specialized nature of portworker training, GTOs and other major port operators often prefer to provide all forms of training in-house, whenever this is feasible. However, it is important to adapt training materials and methods to the local culture, institutions, traditions of learning and the needs of the workforce. Irrespective of whether training is provided by an accredited training centre/college or a dedicated in-house facility, the training unit must be designed and resourced to accommodate modern training strategies and methods. The facilities recommended for training are summarized in Appendix VII.

It is essential that all ports employ competent trainers. As the bedrock of any portworker training system, trainers must themselves possess the skills they are required to teach to others – most ports in fact insist on a very high level of technical proficiency in the tasks that trainers teach to others. All trainers would need to undergo training to understand the concepts of outcome-based training. They also need to know how to assess and evaluate the participants' competency during the training session. They should also possess generic IT skills and display excellent communication and interpersonal skills. Above all, they must have the desire and aptitude to teach. The "generic characteristics" of trainers are listed in Appendix VIII.

With a supportive environment and the physical (training facilities) and human resources (trainers) in place, the port will have solid foundations on which to build a competency-based training system for all the various jobs performed not only by portworkers, but by all those who enter the port area to deliver/collect cargo or provide other services at the terminal.

Competency-based training

The ability to operationalize knowledge and develop skills is a prerequisite for developing competence, along with other social and attitudinal factors. These elements constitute the widely used KSA framework of the training profession derived from Benjamin Bloom's "taxonomy of learning".[8] In this taxonomy, there are three domains of learning:

(1) The cognitive domain (mental skills) refers to knowledge structures that can be viewed as a sequence of the progressive contextualization of material (knowledge → comprehension → application → analysis → synthesis → evaluation).

(2) The psychomotor domain (manual or physical skills) relates to physical movement, coordination and the use of the motor skills area, with progression demanding practice and patience (imitation → manipulation → precision → articulation → naturalization).

(3) The affective domain (growth in feelings or emotional areas) includes the manner in which we deal emotionally with situations and people, ranging from mere awareness to the internalization of values (receiving → responding → valuing → organizing → internalizing).

8. B. Bloom: *Taxonomy of education objectives* (Boston, MA, Pearson, 1956).

Knowledge therefore includes underlying theory and concepts in addition to practical knowledge acquired through work experience. Operationalizing knowledge is part of developing skills, a term which is usually used to denote a level of performance in terms of accuracy, speed, quality, etc. "Skilled performance" involves a combination of underlying perceptual, cognitive and motor skills, which develop over time with practice and experience and result in the "economy of effort". Competency-based training is a systematic way to reach the goal of skilled performance with an economy of effort.

The building blocks of a competency-based training system are the competency elements identified for each different task. A competency element is described through its title, scope of application, the task/outcome to be implemented, the critical elements of performance, and the KSA required. Competency elements are commonly grouped into UoC. A single competency unit or a package of competency units will determine the performance requirements for carrying out a certain job or occupation. Box 2 summarizes the main (generic) elements of a UoC, which is described in more detail below. Port-specific examples of different UoC are provided in figure 7 and Appendices IV and V.

The development of competency units involves the following stages:

- scoping the industry;
- functional analysis of the identified jobs and occupations (involving process flow analysis, job boundary analysis, job and task analysis, and output analysis); and
- compilation of the competency details in the form of competency units to produce a competency matrix.

Scoping should identify the anticipated coverage of the competency standard in terms of industry subsectors and jobs. It is critical at this stage to secure agreement and support from industry stakeholders in general, and the social partners in particular. If standards are developed nationally (e.g. through a national qualifications framework), scoping commonly takes account of the industries where similar jobs exist and standards tend to be occupationally based and more generic. For example, generic standards can be developed for "moving loads using forklift trucks", which can be adopted and suitably adapted by port operators with specific standards for operating a forklift in a port environment. Thus, a set of "national occupational standards for port operations" might share some "core competencies" with other industries, such as "moving loads using lift trucks" (see Appendix II). Where standards are developed by the industry to meet its particular needs, then scoping should gather information on the following:

- size, diversity and scope of the sector;
- geographical area of port activities;
- occupational range;
- mode of work in different jobs/occupations (e.g. full-time, part-time, permanent, casual, contract);
- type of work (e.g. skill-intensive or knowledge-intensive, the need for multiskilling, etc.);
- the need for whole and partial qualifications;
- applicability of available standards from other industries;
- need for industry-specific competencies across all workplaces;
- demographic composition (e.g. gender, age, language and education levels);
- under-represented groups in specific jobs/occupations (e.g. people with a disability);

Box 2
Generic structure of a unit of competency (UoC)

Unit title and descriptor

The *unit title* is a brief statement of the outcome of the specific UoC, for instance, "Organize despatch operations" or "Assess and monitor the environmental impact of port operations and activities". The *unit descriptor* helps to clarify the unit title and links with other UoC.

Scope of the unit

The *scope* should describe the industry competency field/area to which the unit belongs. For instance, competency area: "Handling cargo". Competency sub-field: "Despatch operations including planning and organizing the storage and despatch of cargo, completing all required documentation and records". The scope may also denote the industry sector (e.g. ports), specialization (e.g. tallying), or function (e.g. record weight) associated with the unit.

Industry-specific competencies and performance criteria

These are the competencies required to accomplish generic (industry-specific) tasks by demonstrating critical elements of performance. *Industry-specific knowledge* areas may exist at different levels of generality.

Job-specific competencies and the critical elements of performance

These are competencies required to accomplish a standard set of tasks related to a *specific job* and demonstrate critical elements of performance. A standard set of tasks may involve task skills, task management skills, transfer skills, and contingency management skills in a specific workplace (see figure 2). For instance, in the port sector, such competencies may involve: "Locking out and preparing the overhead crane, conducting routine inspections on the overhead crane, maintaining and repairing the crane controls, etc."

Employability skills

These relate to a range of *employability skills* enabling people to work more effectively. Such skills may involve communication, team working, problem solving, planning and organizing, learning and computer literacy. Further literacy and numeracy skills may be added if they are critical prerequisites for undertaking the work.

Box 2 (cont.)

Range statement of the workplace

The *range statement* describes:

- essential operating conditions that may be present where a worker should perform the tasks;
- the range of contexts and conditions to which the performance criteria apply;
- different work environments and situations that may affect performance; and
- the meaning of key terms used in the performance criteria.

The range of workplace situations may be centred on: types of equipment, tools, materials, other inputs and processes to be dealt with at the workplace; types of clientele; levels of process uncertainty and associated risks; levels of required responsibility/accountability and autonomy, etc.

Evidence guide/assessment guidelines

This provides information to the training providers and assessors about ways in which the described competency may be demonstrated. It must be read in conjunction with the performance criteria and the range statement of the UoC and the relevant assessment guidelines. The *evidence guide* may describe:

- the range of evidence;
- conditions under which competency must be assessed, including variables such as the assessment environment or necessary equipment;
- the underpinning of knowledge and skills that must be demonstrated to prove capabilities;
- methods of assessment (gathering of evidence through direct observation of working processes and results, supervisor's reports, samples or work accomplished, and/or questioning on knowledge and regulations; assessment on the job, and/or off the job, using workplace simulation, etc.);
- ways of linking assessment to the performance criteria (used as critical elements of assessment);
- relationships with the assessment of any other UoC; and
- assessment of consistency of performance (competency may need to be demonstrated in different contexts), etc.

- key stakeholders, such as employer associations, industry advisory bodies, trade unions and professional groups; and
- future directions including technology and skill requirements.

The purpose of functional analysis is to produce a listing of job-related functions/roles and the competencies required to carry out a particular task or job. Functional analysis is usually undertaken by the relevant stakeholders with the assistance of a facilitator or external expert. This analysis involves:

- job boundary analysis based on the initial scoping and organizational charts;
- job process flow analysis to clarify interlinkages between different jobs/occupations and to identify similarities between jobs to enable use of the same elements of competency (supporting competencies) in the competency standards for such jobs;
- job/task analysis to identify the type of tasks performed in each job (e.g. job-related tasks, job management tasks, contingency management tasks, requirements for working with others, the frequency of performance of each task and the type of outputs produced) and to identify the responsible person(s) for each job/task; and
- output analysis to identify measurable outputs for the task/job, which is then used to develop measurable performance.

On the basis of results from the functional analysis, elements/units of competency are compiled as follows:

- standard tasks to be implemented in a job;
- inputs required to perform each task/job in terms of knowledge, skills and attitudes (e.g. task skills, task management skills, contingency management skills, skills for working with others);

- contexts for implementing each task such as equipment, materials, common contingencies, autonomy/responsibility required, etc., resulting in appropriate range statements;
- measurable performance criteria for individual competency elements; and
- the need for generic/employability skills required in the job/industry.

Examples of competency units are provided in Appendix III (Load and unload cargo transport units) and Appendix IV (Securing cargo). Descriptions of competency units typically include the following information:

- competency category – this provides information on the broad area or function in which these competencies are mainly found (e.g. customer service, safety and health, security). This information is used to provide additional contextual information on the background of the competency standard;
- competency unit code – this serves as shorthand and a quick way to identify the various characteristics of the competencies inherent in the standard;
- competency unit title – this describes a particular work role, duty or function, forming the smallest group of skills, knowledge and abilities/attitudes set, which may be recognized separately for certification. It refers to a grouping of tasks which make up the job functions;
- competency descriptor – this provides an overview of what the competency standard covers, indicating the KSA that would be useful and the competencies normally required;
- competency level – this reflects the complexity and depth of learning required by the competencies in the standard;

- credit value – the number of points assigned to each unit/module (a specified number of credit points must be achieved for each level in the qualifications framework);
- performance criteria – these state the performance criteria in behavioural terms, specifying the expected performance outcome, the evaluative criteria and any conditions where applicable;
- range and context – this specifies the range and context under which competent performance must be demonstrated (e.g. types of workplace, equipment, products and services, customers);
- underpinning knowledge – this is a statement of what the learner is required to acquire and may influence how the task is performed; and
- evidence sources – these provide information on the type and quality of evidence required to demonstrate competence, including product or service evidence, process evidence and knowledge evidence.

On the basis of the available competency elements/units, companies and training providers can compile a competency matrix, which allows the job profile to be expressed through the required competencies (i.e. a list of all job categories and the corresponding units of competency for each job). In Appendix V, the "Stevedoring pathway", which is part of the "General port operations pathway", is clearly specified in terms of mandatory and elective units of competency. If a competency profile is attributed to each job, this profile can then be compared against the competency profile of potential candidates or incumbent job holders. Any "mismatch" or "skills gap" can then be addressed through training in the relevant UoC.

Qualifications are created by combining units of competency into groups which meet job roles and are meaningful in the workplace, a process known as "packaging". While there are different ways to package units of competency, the two preferred models are:

(1) Core and electives model – in which the core (compulsory units) defines the competencies critical for all workplaces and the electives (chosen units) provide the breadth of skills necessary to meet the needs of diverse enterprises with varying skill combinations and different approaches to work organization. To ensure maximum flexibility, the core should not be too large and there should be meaningful choice between the electives (Appendix V is based on this model).

(2) Core and specialization model – in which there is a core of essential units but a choice is made from defined groups of units or "specializations", rather than a choice between individual units. This is a useful model where particular specializations are widely recognized (e.g. lashing, forklifts, bulk handling, inspection).

Whichever packaging model is adopted, there are common rules that should be applied, including:

- each qualification resulting from packaging UoC must have a distinct vocational outcome;
- qualification levels should be determined on the assumption that as the qualification outcome increases, so too does the complexity of skill and knowledge to be acquired in its achievement (through the increased breadth of functions and specializations), as well as autonomy and responsibility for work outcomes of self and others;
- each qualification should involve task-related and other specific competencies, as well as generic/employability skills;

- packaging of units should allow for the flexible application of qualifications in different enterprises and industries, enabling them to adjust their specific operational requirements;
- individual UoC can be included in more than one qualification;
- units sourced from other qualifications should be used in new qualifications at the same level; and
- the packaged UoC should refer to the titles of national qualifications whenever possible.

Each UoC will carry a specific number of credit points. Each level of the qualifications framework will require a specified number of credits. For example, for a Level 1 Certificate in Port Operations (basic entry-level proficiency) a worker might need 300 points, comprised of ten core modules each worth 20 credit points and five elective modules – also worth 20 credits each. Entry-level units typically specify "prerequisite learning" before the worker embarks on the training. The example provided in Appendix V (Level 2 Stevedoring pathway) requires nine further units. Most national qualification frameworks are based on eight to ten levels, with supervisory jobs typically designated as Level 4.

Ideally, all training should be provided by accredited training providers. These providers usually have the power to award qualifications, subject to periodic assessment of their training provision and accreditation standards by the government (e.g. ministry of education or employment or a designated body created specifically for this purpose by the State).

With a competency-based training framework and facilities in place, the employer, training institutes and other stakeholders now know "what to do" and "what is needed to do it". The next question to address is how to implement a system of competency-based training in the port sector.

Section 3. Portworker training

Introduction

This section focuses on the policy and process of portworker training. Both policy and process can be considered as a cycle. The policy cycle starts with agenda setting; formulating a training policy through consultation with all the relevant stakeholders; developing appropriate policy instruments and formally adopting the policy; coordinating its implementation; and, finally, undertaking a periodic evaluation of the policy to ensure continuous improvement. The cyclical process of portworker training, as depicted in figure 1 (section 1), starts with competency profiling. It then proceeds to gap analysis, individual learning plans, training and, finally, assessment and accreditation, where the latter feeds into the functional analysis that informs competency profiling (as briefly discussed in section 2). Policy and process are considered in turn in section 3.

It is important to ensure that the training cycle is just that – a cycle. Most ports embarking on a competency-based training programme will not initially possess a complete set of competency units for every job in the port; neither will they necessarily have all the training facilities recommended for portworker training (Appendix VII). Even where training packages are bought "off the shelf", they must be adapted to the port's standard operating procedures and any port-specific operating conditions, procedures or equipment. Nonetheless, ports should embark on the training cycle as soon as possible, as the cycle itself will enable ports to learn, adapt and improve their training processes.

Training should be an ongoing investment to which all parties contribute. Appropriate education and training is a right for all

Box 3
Safety and health in ports

An important and essential element of any portworker training programme is safety and health. This training should reflect the company's policy, industry standards and any national or other requirements, as well as relevant provisions of the ILO's Occupational Safety and Health (Dock Work) Convention, 1979 (No. 152), and its accompanying Recommendation (No.160), and the associated code of practice and industry guidelines (see Appendix I). Training should include the necessary safety and health elements of the job itself and the relevant safe system of work and use of personal protective equipment (PPE), together with awareness of the hazards associated with the terminal/ship and access to/from the place of work. The aim should be to achieve a safety-conscious management and workforce.

Other sources may contain valuable information on safety and health. Further information is provided on the ILO website.

people. This is especially important in a demanding and often dangerous working environment such as a busy port, as clearly stated in box 3. It is only through the formulation of clear and agreed training policies, the enforcement of appropriate standards and the delivery of effective training that ports can become safe and productive places to work.

Port training policy

As a statement of intent by the organization, training policies are typically set out in an official document signed by senior managers with executive powers, not only to legitimize the policy but also to signify its central importance to the organization's success. People are, after all, the organization's most valuable asset. In general, policy statements tend to follow a standard format as detailed below, often prefaced by the "background" or "motivating factors":

- purpose – why the organization is issuing the policy, as well as the policy's desired effect or outcomes;
- applicability and scope – who the policy affects and which actions are impacted by it (e.g. workers who are expressly included/excluded or actions/activities outside the policy);
- effective dates – when the policy comes into force and is due to be renewed; and
- responsibilities, regulations and requirements – which parties and organizations are responsible for carrying out individual policy statements (e.g. identification of any relevant oversight and/or governance structures).

A typical (port) training policy will therefore start by recognizing the contribution of employees to the organization's success, as well as the need for highly skilled (port) workers. Box 4 gives an example of how this might be worded.

Box 4
Generic port training policy

"[Port/company name] recognizes the contribution employees make to its ongoing success and is committed to making the most effective use of the talents, skills and abilities of its workforce. The port/company is committed to delivering high-quality and cost-effective services through its people, who will receive appropriate training in order to undertake their duties safely, efficiently, and without risk to themselves or others. The purpose of training is to equip all staff with the necessary skills, knowledge and attitudes to meet the objectives of the organization, the needs of the customer, and the employees' own personal development goals."

The applicability and scope of the training policy will usually express a commitment to equal opportunities and may therefore include a statement along the following lines:

"[Port/company name] will provide opportunities for training based on operational requirements and employees' development needs, irrespective of the employee's gender, age, marital status, disability, race, religion, colour, ethnic or national origin or sexual orientation."

HIV/AIDS is a particular health and safety concern in the transport sector, which must be taken into account in relevant training policies; it should be recognized as a workplace issue. In the spirit of decent work and respect for the human rights and dignity of persons infected or affected by HIV and AIDS, there should be no discrimination against or stigmatization of workers on the basis of real or perceived HIV. More information on HIV and AIDS can be found in Appendix IX.

Port training policies often state that certain aspects of training, such as security, safety and health, will apply to all workers who enter the port estate and not simply portworkers. In other words, the "application" of the port's training policy is extended to other workers such as truck drivers or railway workers who enter the port, although the "scope" of the port's training policy in this instance is limited to security and safety. The port/operator may not provide this training itself; rather it will specify recognized standards/qualifications that ancillary companies are expected to meet if their employees are to enter the port estate. Given the importance of safety and health and the dangers inherent in port work, it is not uncommon for ports/operators to issue a specific health and safety policy. A typical health and safety policy statement might read as specified in box 5.

Training is a cyclical process, as depicted in figure 1 (section 1), and as (training) policy itself is developed through a cyclical process with periodic evaluation, it makes sense to reissue – and more importantly to reaffirm – the organization's commitment to training. This will also allow any important changes to be incorporated into the training policy (e.g. commitments to comply with all relevant legislation in areas such as health and safety and mechanical handling, which may well change from time to

Box 5
Generic port safety and health policy

"[Port/company name] will:

- provide adequate control of the health and safety risks arising from our work activities;
- consult with our employees on matters affecting their health and safety;
- provide and maintain safe plant and equipment;
- ensure safe handling and use of substances;
- provide information, instruction and supervision for employees;
- ensure all employees are competent to do their tasks, and give them adequate training;
- prevent accidents and cases of work-related ill health;
- maintain safe and healthy working conditions; and
- review and revise this policy as necessary at regular intervals."

time). The effective dates of a training policy usually span several years, although annual reviews are not uncommon.

The responsibilities set out in a (port) training policy typically focus on the commitments of the organization and the obligations of both the organization and all staff. It might also include references to any relevant national and/or industry qualifications, health and safety regulations and the like. Box 6 gives an example of how a typical policy might read.

In many countries, there is a legal requirement for portworkers to attend and successfully complete approved training in key areas such as security and safety and health. Where this is the case, the obligation on staff to attend such training is often backed up by disciplinary sanctions.

Training policies often identify the means through which training needs are identified (e.g. individual appraisal), as well as the way in which these needs, and the policy in general, are

Box 6
Training responsibilities

"[Port/company name] will, on the basis of operating requirements and the company's general training policy:

- identify training and development needs for individuals and for groups of staff via gap analysis and individual appraisal;
- within available resources, provide staff with opportunities to participate in training and development activities; and
- fully evaluate the benefits and effectiveness of investments in training and development activities for both individuals and the organization;

and will expect staff to:

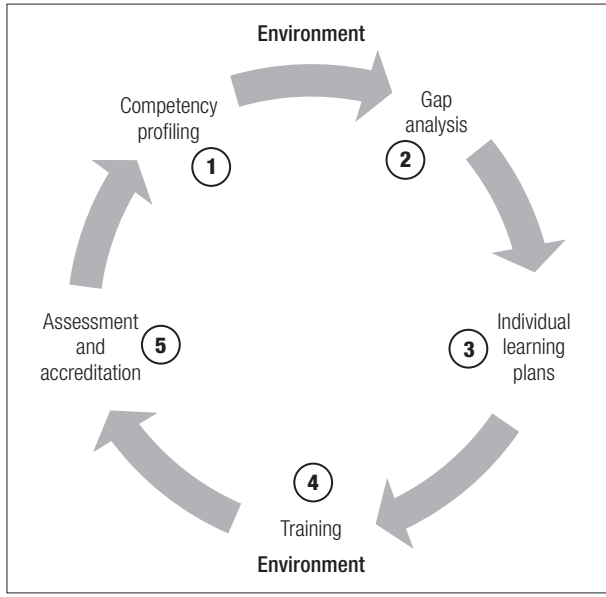
- cooperate and participate, where appropriate, in activities and processes that are designed to identify training needs;
- attend and fully participate in any activity that is relevant to their individual development; and
- actively practise the new skills and knowledge gained through training and development activity and participate in any related evaluative measures."

communicated to staff. The policy might also state the role and responsibilities of the social partners. Most importantly, the policy must contain a clear statement of how it is to be delivered. For the purpose of these Guidelines, the chosen "method of action" is a training cycle that "surrounds" training policy in figure 1.

The portworker training cycle

The training cycle initially presented in the general framework for competency-based training in the port sector (figure 1) is reproduced in figure 3. Each stage in the cycle is clearly numbered and will be considered in turn.

Figure 3. The training cycle



1. Competency profiling

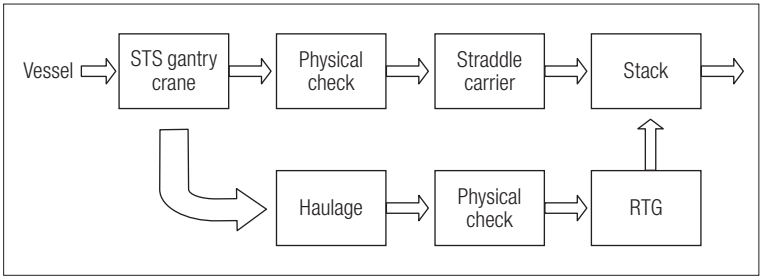
The first stage of the training cycle is competency profiling. The purpose of this initial stage is to compile a competency matrix that links competencies (skills and knowledge) to the company's different job profiles. The competency profiling process involves several sequential stages, namely: process flow analysis → job boundary analysis → systems analysis → task analysis → output analysis.

Process flow analysis is undertaken on the basis of consultation with all relevant parties (e.g. subject matter experts, labour

representatives, finance, quality control) with the aim of (visually) mapping the process from start to finish and recording both the "ideal" and the "actual" process. For example, a quality check may be necessary (ideal) but is not currently performed (actual) because staff do not have the competencies to undertake this check. As the actual (current) process may differ from the required (future) process, it is imperative for process flow analysis to be based on the latter rather than the former. This is the only way to ensure that port operations are safe, efficient and meet the expectations of port users. For a container terminal, the process flow analysis is as simple as "following the freight container" from the stowage cells on the vessel to the stacking space in the yard, as depicted in figure 4.

Once the basic flow has been determined, process boundaries can be established, defined as a process or part of a process where value is added to the product (e.g. vessel discharge, physical check of the container, tallying cargo as containers are offloaded). The equipment used in each process boundary must be clearly specified, as must the inputs to and outputs of the process. This allows a list of training requirements (competencies) to be

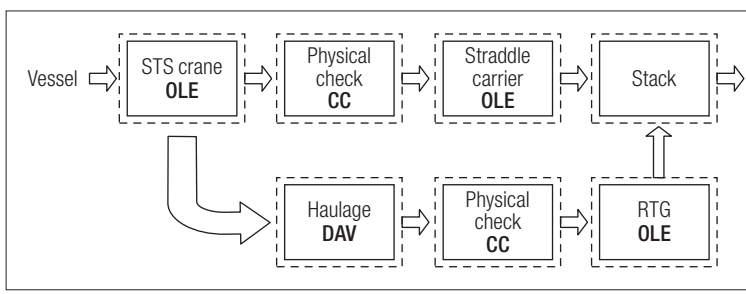
Figure 4. Process flow analysis – Container terminal



developed for each process boundary. As a rule, competencies are listed as "continuous present tense", starting with a verb (doing) such as "operating a ship-to-shore crane", "coordinating the loading of cargo", or "conducting a physical check".

Job boundary analysis links the competencies to the relevant job profiles (always remember that workers think in terms of "jobs" rather than in terms of the competencies required to perform the job). Job boundaries are (physically) drawn onto the process flow document, as illustrated in figure 5, where each process must be linked to a job or more than one job. Each job will involve many different competencies. Job boundary analysis is designed to identify clusters of competencies that may be grouped together as they are performed (or could be performed) by the same person. For example, a "cargo coordinator" (CC in figure 5) might tally cargo, undertake physical checks (e.g. inspection) of freight containers, and monitor activities in the yard. An operator of lifting equipment (OLE) might drive a straddle carrier or a ship-to-shore (STS) gantry crane. Once complete, it is important that all relevant stakeholders should agree the job boundary analysis,

Figure 5. Job boundary analysis – Container terminal



Note: OLE – operator of lifting equipment. CC – cargo coordinator. DAV – driver articulated vehicle

especially worker representatives, as this process determines job content and could have a significant impact on remuneration, future skills development and career opportunities.

Systems analysis is designed to identify any additional systems that are essential to make the process work, such as communications or computer systems. These systems will give rise to additional competencies for the job (e.g. IT skills and interpersonal communication skills). Once again, these systems can be drawn on top of the process flow document, with each system linked to one job in the process. Workers who undertake physical checks of the cargo, for example, might use a hand-held terminal and require general IT training.

Task analysis is then used to finalize the list of competencies and to identify the skill elements that make up the various competencies. This stage is more time consuming as it involves detailed analysis of every competence. In addition to observation and one-to-one discussion with different jobholders, existing documentation is also useful for the task analysis (e.g. job descriptions, work instructions, safety manuals, standard operating procedures, maintenance manuals and collective agreements). While it is useful to capture the task with a brief description, it is also important to list the knowledge elements that can support the task. This enables the separation of competencies on the basis of complexity and role.

Output analysis completes the picture by identifying the output criteria for the specific competencies. Outputs are based on operational requirements and must be measurable (e.g. tonnes per hour, crane moves per hour, the dwell-time of containers on the terminal). Outputs are measured at the formative stage (during training), upon completion of training, and then again after a period of time working on the job. For an STS gantry

crane driver, for example, formative assessment might be based on 20 moves per hour and 24 upon completion of training; the "standard" level of performance of 26 moves per hour is expected after a specified time on the job.

The resulting competency matrix links different competencies to the various job profiles, as illustrated in figure 6, which depicts a matrix for container operations (it is not uncommon for a complete competency matrix to include several hundred competency units). Four broad categories of competencies are listed – "generic", "vehicles", "operating lifting equipment" and "systems" – along with competency numbers and titles (the competency number and title for figure 7, for example, is numbered COO-01 "Conducting general duties in the container area"). Job titles are listed in the left-hand column in figure 6 under "job profiles", with a "✓" used to signify whether the competency is relevant to the job. Process workers, for example, only need to be competent in "general duties in the container area" (COO-01) and demonstrate an "understanding of container operations" (COO-04) (bottom row of figure 6), whereas an operations coordinator (top row of figure 6) requires the full complement of competency units.

Each competency unit must then be described in detail, typically in terms of process output, skill and knowledge elements. These are listed in figure 7 for the unit of competency entitled: "Conducting general duties in the container environment" (COO-01 in figure 6). A similar example for a car terminal is presented in Appendix VI. The "process outcomes" are defined as those that must be produced, provided or delivered. They constitute the outcomes that will occur if the employee applies the relevant knowledge and demonstrates the required skills. "Skill elements" are defined as those that can be demonstrated

Figure 6. Competency matrix for container operations

	Workplace competency units							
	Generic			Vehicles				
	General duties in container area	Coordinating container cargo	Understanding container operations	Operating reach stacker	Operating articulated vehicles	Operating sweepers	Operating fuel bowser	Operating empty container handler
Job profiles	**COO-01**	**COO-02**	**COO-04**	**VLE-04**	**VLE-05**	**VLE-07**	**VLE-12**	**VLE-14**
Operations coordinator	✓	✓	✓	✓	✓	✓	✓	✓
Operations supervisor	✓	✓	✓	✓	✓	✓	✓	✓
Operator lifting equipment	✓		✓	✓	✓	✓	✓	✓
Cargo coordinator	✓	✓	✓					
Driver articulated vehicle	✓		✓	✓	✓	✓	✓	✓
Planning supervisor			✓					
Planners			✓					
Process worker	✓		✓					

Note: Supervisory competencies would compete this particular matrix but are not listed. They might include, for example, "Coordinating work teams"; "Controlling the loading/offloading of containers"; "Controlling container fleet operations (road vehicles)"; and "Controlling rail container operations".

Workplace competency units											
Operating lifting equipment (OLE)							Systems				
Operating straddle	Operation RMG	Operating Liebherr STS gantry crane	Operating ZPMC STS gantry crane	Operating Noel STS gantry crane	Operating RTG		Computer literacy	Using SAP	Using a hand-held terminal	Using the COSMOS system	Using the NAVIS system
OLE-07	OLE-08	OLE-09	OLE-10	OLE-11	OLE-12		SYT-01	SYT-02	SYT-04	SYT-05	SYT-06
✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓		✓				
									✓		
							✓	✓	✓	✓	✓
							✓	✓		✓	✓

Figure 7. Workplace training unit

C00-01	**Conducting general duties in the container environment**

	Outputs *that must be produced, provided or delivered*
O-01	Completed duties

	Skills *that can be demonstrated and observed*
S-01	Identifying and readying equipment for specific tasks
S-02	Assisting with basic operational activities
S-03	Conducting routine inspections on containerized goods
S-04	Conducting housekeeping in the works area
S-05	Reporting daily operational occurrences
S-06	Adhering to safety standards

	Knowledge *that must be understood and explained*
K-01	What are the standard tools and equipment used during normal operations?
K-02	What precautions must be taken when using these tools/equipment?
K-03	What will the implications be if the tools and equipment are not correctly cleaned, maintained and stored?
K-04	What should be checked when conducting routine inspections on containerized goods?
K-05	What precautions must be taken when working on or around containers?
K-06	What is a safety hazard and why should any safety hazards immediately be reported to the supervisor?
K-07	What general safety precautions should be taken when assisting with general operational activities in a container terminal?
K-08	Why is it important to ensure that the works area is clean and tidy at all times?
K-09	What personal protective equipment should be worn during any normal operations?

Note: C00-01 is the identification number for this unit of competency. O, S and K (left-hand column) are the competency numbers.

and observed. It is these that must be put into effect in order to deliver the required output. "Knowledge elements" are defined as those that must be understood and explained. They refer to the essential embedded knowledge that will allow the employee to perform the relevant skills and thereby produce the relevant outputs.

In addition to "functional training" – the direct trainable skills and knowledge used to define the different competencies (as listed in figure 7) – there are "desired workplace attitudes" to be considered. These may or may not be specified for each UoC. In general, the typical affective skills sought by port employers are listed in box 7.

Box 7
Examples of employee attitudes desired by employers

- Always be careful and meticulous.
- Be self-disciplined.
- Have pride in your work.
- Do not compromise safety and health.
- Do not compromise quality.
- Be well prepared for work.
- Keep your workplace clean, tidy and free of hazards before ending your work shift.
- Operate equipment with due regard for the safety of yourself and other workers.
- Respect the rights of your co-workers.
- Respect public property.
- Respect the property of your employer.
- Respect property of cargo owners.
- Show empathy.
- Respect the environment.
- Promptly report anything that might be harmful to your employer or other persons.
- Have patience.
- Try your best.
- Be punctual.
- Appreciate the contribution of fellow workers at the workplace.
- Respect the opinions and views of other persons.
- Adopt a team spirit.
- Be supportive to new colleagues.
- Share useful work-related information that might make the work of others easier, more productive and safer.

Once a competency matrix is in place, and every UoC has been clearly specified, it should then be possible to compare the profile of the organization and the workforce against this matrix and to identify any "gaps" between what the organization needs to ensure that operations are safe, efficient and consistent with customer expectations, and the skills and other resources actually available to the organization.

2. Gap analysis

While gap analysis is intended to reveal any training shortcomings for operating companies, training organizations and individual portworkers alike, the primary focus will be on the workforce. In some situations, gap analysis can be quite unsettling for the workforce, especially for those who have been employed for many years in their current job and/or in countries where there is no established culture of lifelong learning. For an established worker to be told that he or she does not have the necessary competencies to perform the job safely, efficiently or to the required standard of quality, can be disconcerting to say the least.

Identifying and communicating gaps in the worker's competency profile must therefore be handled sensitively in an open and transparent way, ideally with the full cooperation of employee representatives. Workers must not be told that they are "incompetent"; they should rather be informed that they are "not yet fully competent", on account – more often than not – of new operating procedures, the introduction of new technology, recent health and safety regulations, more exacting service standards demanded by customers, etc.

It is not uncommon, for example, for statutory regulations to require "recertification" every few years for workers who operate

particular types of lifting equipment. As the size of vessels increases, higher crane rates might be written into a new service contract between the shipping line and the port operator. This may result in "refresher" training for existing drivers to ensure that they can consistently hit the (new) agreed target. As new health and safety hazards are identified and understood (e.g. HIV/AIDS), these hazards must be incorporated into existing training programmes – or new modules might be added to the existing matrix. In ports where there is a strong training culture, all parties expect that skills will be constantly updated. In this situation, further training will be seen as a source of greater security, job satisfaction and career progression, not a cause for concern.

By mapping workers' competency profiles onto the competency matrix, as illustrated in figure 8, gaps can be clearly identified (the shaded cells in figure 8). These are the gaps in the worker's competency profile that must be filled with additional or refresher training. Thus, the next stage in the training cycle is to use this information to develop an individual learning plan.

3. Individual learning plans

Stage 3 in the training cycle uses the data from figure 8 to develop an individual learning plan for each worker. Some gaps are job-specific and clearly need to be filled if the worker is to be designated "competent" to perform his or her current role. In many cases, however, the worker is already performing the job to the required standard but has not followed an approved training course or specific unit standard.

It should be recalled that competency-based training is focused on learning outcomes or outputs, irrespective of the route of acquisition involved. Qualification frameworks are often

Figure 8. Gap analysis – Operators of lifting equipment (OLE)

	Workplace competency units – Operator of lifting equipment (OLE)							
	Generic			Vehicles				
	General duties in container area	Coordinating container cargo	Understanding container operations	Operating reach stacker	Operating articulated vehicles	Operating sweepers	Operating fuel bowser	Operating empty container handler
	COO-01	COO-02	COO-04	VLE-04	VLE-05	VLE-07	VLE-12	VLE-14
Required competencies	✓	○	✓	✓	✓	✓	✓	✓
Compton, M.	✓	○	✓	✓	✓	✓	✓	✓
du Randt, P.	✓	○	✓	✓	✓	✓	✓	✓
Eichenlaub, D.	✓	○	✓	✓	✓	✓	✓	✓
Gasskov, V.	✓	○	✓	✓	✓	✓	✓	✓
Leys, F.	✓	○	✓	✓	✓	✓	✓	✓
Meletiou, M.	✓	○	✓	✓	✓	–	–	✓
Ntshangase, W.	✓	○	✓	✓	✓	✓	✓	✓
Soh Hoon, T.	✓	○	✓	✓	✓	✓	✓	✓
Thomas, B.	✓	○	✓	✓	✓	✓	✓	✓
Turnbull, P.	✓	○	✓	✓	✓	✓	✓	✓
van de Laar, F.	✓	○	✓	✓	✓	✓	–	✓

✓ = acquired competency. ○ = competency not required. – = competency not yet acquired

Workplace competency units – Operator of lifting equipment (OLE)										
Operating lifting equipment (OLE)						Systems				
Operating straddle	Operation RMG	Operating Liebherr STS gantry crane	Operating ZPMC STS gantry crane	Operating Noel STS gantry crane	Operating RTG	Computer literacy	Using SAP	Using a hand-held terminal	Using the COSMOS system	Using the NAVIS system
OLE-07	OLE-08	OLE-09	OLE-10	OLE-11	OLE-12	SYT-01	SYT-02	SYT-04	SYT-05	SYT-06
✓	✓	✓	✓	✓	✓	✓	○	○	○	○
✓	✓	✓	✓	✓	✓	✓	○	○	○	○
✓	–	✓	–	✓	–	✓	○	○	○	○
✓	✓	✓	–	✓	✓	✓	○	○	○	○
✓	✓	–	–	✓	–	✓	○	○	○	○
✓	✓	–	✓	✓	✓	✓	○	○	○	○
✓	–	–	–	✓	–	✓	○	○	○	○
✓	✓	✓	✓	–	–	✓	○	○	○	○
✓	✓	✓	✓	✓	✓	✓	○	○	○	○
✓	✓	✓	✓	–	–	✓	○	○	○	○
✓	✓	✓	✓	✓	–	✓	○	○	○	○
✓	–	–	✓	✓	–	✓	○	○	○	○

Figure 9. Example of an individual learning plan

Operating division:				
Employee's surname and initials:				
Position title:				
Employee's manager:				
Individual learning plan				
Skills/performance gap	**Skills/performance outcome expected**	**Suggested development activities (e.g. self-study, on-the-job, formal, coaching)**	**Support required (e.g. mentoring)**	
Employee's signature		Manager's signature		

	Employee number:				
	Port/department:		Training school:		
	Date:		From:		
			To:		
	Individual learning plan				
	Suggested time frame	**Opportunity for application of learning/ skills (e.g. paid training leave, shift rotation)**	**Feedback on outcomes achieved**	**End of period sign off (review and assessment)**	**Future development activities**
	Date:	To personal file ☐		To HR ☐	To mentor ☐

sufficiently flexible to allow individuals to obtain qualifications based on knowledge and skills they already have, which means that some workers may not be required to undertake all elements of the unit standard. In other cases, the worker's performance may fall short of expected standards – in which case it is imperative that he or she follow the full training for any missing competencies. One area where there should be no compromises or short cuts is safety and health. Even if an employee has an exemplary work record with no accidents or near misses, full participation in all relevant health and safety training modules should be compulsory.

For some workers, additional training is desirable but not essential. For example, some workers may be fully employed on a specific type of crane and there is no pressing need for them to drive other (similar) types of equipment. However, if portworkers hold qualifications to operate different types of equipment, (re)deployment is more flexible for the employer and work is more varied – and presumably more interesting for the employee. In addition to greater job satisfaction, workers can also expect new possibilities for career progression if they command a wider range of skills. Given the operational demands and customer expectations in a modern-day port, holding multiple qualifications is increasingly necessary rather than simply desirable.

An example of an individual learning plan document is reproduced in figure 9. These plans are typically completed by the employee's line manager and/or the recognized assessor in the training school. Keeping a record of the required and completed training, signed off by all parties, is an effective way to ensure transparency and the commitment of all parties. Quite simply, it is good HR practice.

4. Training

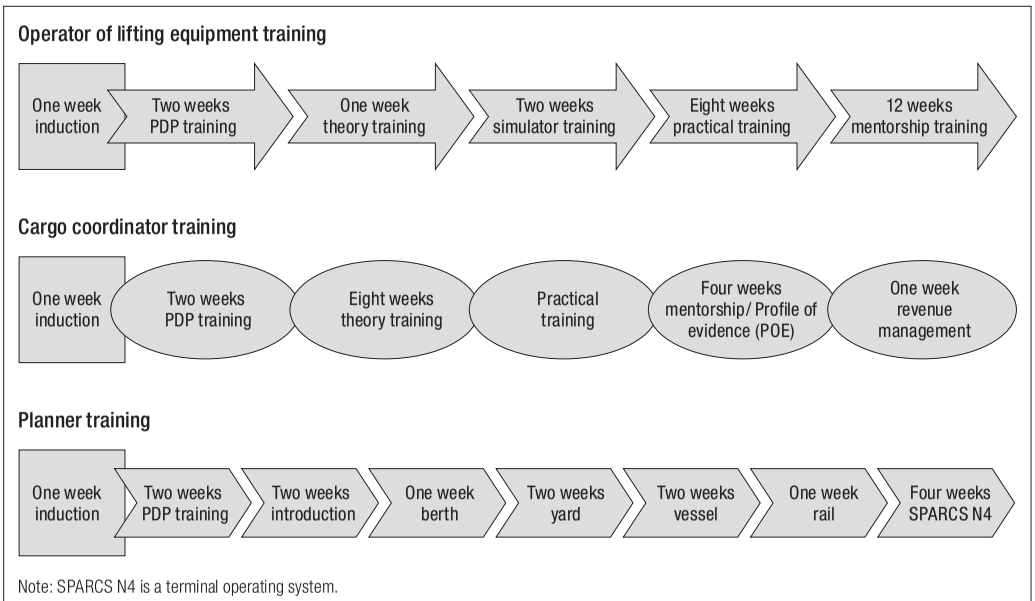
The physical and human resources recommended for training in the port sector have been considered in section 2 (e.g. Appendix VII). Not all ports will have access to their own training facilities, although they may be able to utilize other facilities in their home country or perhaps call on the services of international training organizations. The absence of facilities recommended in section 2 should not be an excuse for inactivity, especially in relation to key areas of portworker training such as safety and health.

Modern-day training centres have developed comprehensive and integrated training programmes that are specifically designed to ensure optimum performance in the working environment. For example, a process of task-oriented learning (as opposed to the traditional concept of subject-oriented learning) involves the integration of theoretical instruction and practical exercises. It is important that trainees' newly acquired knowledge and the experience they bring with them to the training sessions should help them solve the problems they are set, in accordance with the principles of "active learning". In general, trainees are more likely to remember the subject matter and understand the objectives and application of training when this "parallel" or "dual" approach (i.e. theory and practical application) is deployed. To reiterate a well-known Chinese proverb: "Tell me and I'll forget. Show me and I'll remember. Involve me and I'll understand." An example of effective instruction is provided in Appendix X.

The training phase of the cycle should be based on the following principles:

- clear outcomes are defined for each training event;
- active learning as theory and practical exposure is integrated;

Figure 10. Functional training – Container terminals



Note: SPARCS N4 is a terminal operating system.

- strict alignment with port/terminal standard procedures is respected;
- continuous assessment is undertaken to monitor progress; and
- an integrated summative assessment is undertaken where performance criteria are used.

For a workplace training unit such as "Conducting general duties in the container environment" (figure 7), knowledge (what the trainee should know) is developed initially through theoretical (classroom) training; skills (what must be done) are developed through practical training (e.g. simulator and standard operating procedures); and process outputs (what must be delivered) are monitored and developed through mentoring. Figure 10 depicts an example of training for operators of lifting equipment, cargo coordinators and planners, using the ILO's PDP training materials.

It should be evident from figure 10 that portworker training represents a considerable investment of time and money. In this example, training for operators of lifting equipment lasts 26 weeks (which is not uncommon); cargo coordinator training lasts 16 weeks; and planners are trained over a 15-week period. To compete in a global economy, modern-day ports spend millions of dollars on equipment and facilities. To achieve the most profitable return on their investment in physical resources, they also invest considerable time and money in their human resources.

5. Assessment and accreditation

Continuous assessment is good training practice, providing feedback to both trainers and trainees. By means of this process, trainers can adjust the content and delivery of training material

to suit the trainees' learning needs and ability (e.g. changing the pace of delivery or the composition of learning groups, adding more detail or background on procedures and regulations with which trainees are less familiar than initially assumed). Trainers should be formally qualified for the job and subject to periodic assessment by management and/or senior staff to ensure that standards are maintained.

Whenever possible, training programmes should incorporate both formative (ongoing) and summative (final) assessment, with additional feedback and evaluations during the (often extended) period of mentoring. Good practice indicates that all assessment should be:

- relevant;
- fair;
- manageable;
- reliable;
- authentic;
- systematic;
- consistent;
- appropriate;
- integrated;
- valid;
- open/transparent; and
- sufficient.

It is also important to ascertain whether existing assessment criteria are fair and appropriate to the job and must not be used to exclude any groups. With changes to the composition of the workforce, the fairness and propriety of assessment criteria are likely to come under increasing scrutiny.

Another significant matter to take into account is whether to undertake any pre-training assessment. For example, computer programmes are now available to identify suitable candidates for crane driving jobs, providing an initial assessment of care, precision, speed, etc. Given the costs of training for sophisticated cargo handling equipment, the ability to identify the most suitable candidates prior to any major investment in actual training is an important consideration.

Classroom assessment instruments used to test the trainees' knowledge can be either oral or written. The former includes questioning, interviews, presentations, panel discussions and role-play exercises. Written assessment can involve multiple-choice questions (including true/false statements and matching items); "completion statements" requiring the trainee to complete a statement or supply missing words; essays/short answers; report writing; keeping a journal or learning log; and reviewing case studies.

Assessing the trainees' practical skills should be based predominantly, if not exclusively, on observation, with a qualified assessor using checklists, a rating scale, or examination of work produced – such as the records generated by a cargo checker. For example, using an assessment mark sheet, the assessor assigns points for each occurrence of non-compliance or error against a list of performance criteria, which are then totalled by the assessor to determine the level of competence. Limits are set for both the total number of penalty points and the proportion of penalty points deducted against certain criteria (e.g. driving time).

Only qualified assessors should be allowed to perform practical assessments. All training providers – both institutions and individuals – should be accredited by the relevant organization or

education and training quality assurance body. For qualifications to achieve widespread recognition in the labour market, assessment – and especially accreditation – will normally be performed in accordance with national guidelines.

On completion of the training cycle, portworkers should be issued with a recognized qualification (e.g. certificate of competence), and their personnel files updated accordingly. Appendix XI provides a list of information typically recorded as part of this process.

Implementation strategy

Given the varied national and industry contexts in which any particular port finds itself, it is important for the social partners to develop an appropriate implementation strategy. Some ports may need to do little more than realign their existing portworker training programmes to a national qualifications framework that has already been developed using a competency-based approach. Other ports will need to start from scratch, beginning with an awareness-training programme that explains competency-based approaches to portworker training. The primary purpose of these Guidelines is to assist such ports in this endeavour.

It is recommended to implement competency-based training progressively, as opposed to a "big bang" approach, commencing with key generic areas such as health and safety, general duties,[9] and securing cargo.[10] By starting in this way, all parties will benefit from experiential learning as training is rolled out across the workforce and the many different jobs in the port. Using the

9. See figure 7.

10. See Appendix IV.

training cycle[11] will allow ports to start with specific handling processes (e.g. forklifts, heavy lifting equipment, roll-on-roll-off) and cargo categories (e.g. containers, bulk, hazardous goods). In this way, competency profiles can be developed gradually; competency units can be shared, where appropriate, across processes/cargo categories; and ports can progressively realize their goal of providing safe and efficient operations to meet the expectations of customers and the desire of employees for high-quality jobs that offer opportunities for personal development and career progression. It goes without saying that competency units should be regularly reviewed and updated in the light of technological change and process innovations. Continuous monitoring and evaluation by the social partners and other stakeholders (e.g. training institutes) is inherent to the training cycle recommended in these Guidelines.

Summary

If port training policy is clearly stated and widely communicated – taking into account the external environment – and put into practice through a systematic training programme, then ports will become safe and rewarding places to work, port operations will be efficient and profitable, and customers will be well served. There are many examples of excellent portworker training programmes around the world, but equally there are all too many ports where training falls short of international standards. The ILO *Guidelines on training in the port sector* are designed to raise standards and promote good practice, founded on a (multidimensional) approach to competency-based training that will serve the interests of all parties.

11. See figure 3.

Glossary of terms used in the Guidelines

Accreditation The official recognition and approval of training courses, programmes and institutions.

Assessment All methods used to appraise competence by gathering evidence to determine whether learners, trainers, training methodologies, programmes and institutions have achieved the required standards.

Benchmark Identify the best practices and compare and adapt the current system to at least match it. Used as a point of reference to measure comparability.

Certification The formal assurance that an individual has successfully achieved a defined set of learning outcomes.

Competency matrix A matrix that captures the type of competencies needed in an industry. It provides a quick reference of the competency categories, the title of competency standards and the qualification design. A competency matrix can be used to illustrate career.

Competence Knowledge, skills and attitudes that a person needs and uses in an occupation/job that is both observable and measurable.

Competent person Someone who: (a) possesses certain knowledge, skills and attitudes (KSA), which she or he can use (b) to perform specified tasks to (c) a standard of performance expected in (d) a specified workplace under (e) conditions of uncertainty and change.

Credit A unit of measure assigned to courses or course-equivalent learning.

Employability Portable competencies and qualifications that enhance an individual's capacity to make use of the education and training opportunities available in order to secure and retain decent work, to progress within the enterprise and between jobs, and to cope with changing technology and labour market conditions.

Evaluation (in training) The process of determining the adequacy, value, outcomes and impact of training and learning.

Evidence Information gathered which, when matched against the performance criteria, provides proof of competency.

Evidence guide Part of a unit of competency that aims to guide assessment of the unit of competency in the workplace and/or training environment.

Learning outcome The set of knowledge, skills and/or competencies an individual has acquired and/or is able to demonstrate after completion of a learning process, either formal, non-formal or informal.

Lifelong learning All learning activities undertaken throughout life for the development of competencies and qualifications.

Pathway A sequence of learning or experience to be followed for attaining competence.

Performance criteria Specifies the activities, skills, knowledge and understanding that provide evidence of competent performance for each element of competency.

Performance standards Explicit definitions of what learners must do to demonstrate proficiency at a specific level on the competency standards.

Qualification Certification awarded to an individual in recognition of having achieved particular knowledge, skills or competencies. It is also the formal expression of the vocational or professional abilities of a worker which is recognized at international, national or sectoral levels.

Qualifications framework A system for placing qualifications that meet certain standards of quality on one of a series of hierarchical levels.

Quality assurance A planned and systematic process of ensuring that the requirements of the assessment, competency standards and any other criteria are applied in a consistent manner.

Range statement Part of a dimension of a competency standard. It identifies the type of contexts to which the performance criteria apply, covers items that are achievable or to be used/serviced by workers, such as types of equipment, products, types of customers.

Recognition of prior learning Acknowledgement of the knowledge and skills that an individual has acquired in previous training and work or through experience.

Stakeholders Individuals and organizations with a legitimate interest in the issue(s) under discussion.

Trainer A person with pedagogical and professional skills, as well as experience, who imparts practical and theoretical training in an education and training institution or enterprise.

Training A planned process or procedure for increasing knowledge and/or increasing skills through specific learning experiences. Training may also lead to changed attitudes towards work, fellow workers, the enterprise or the industry.

Training resources Resources available to trainers in the form of teaching materials, equipment, facilities, etc.

Vocational education and training Education and training beyond compulsory education, but excluding degree-level programmes, which provides individuals with occupational or work-related knowledge and skills.

Appendix I

ILO instruments for the port sector

1. Sector-specific Conventions and Recommendations are:

- the Dock Work Convention, 1973 (No. 137);
- the Dock Work Recommendation, 1973 (No. 145);
- the Occupational Safety and Health (Dock Work) Convention, 1979 (No. 152); and
- the Occupational Safety and Health (Dock Work) Recommendation, 1979 (No. 160).

2. Convention No. 137 deals with new methods of work in docks and their impact on employment and the organization of the profession. It has two main objectives: first, to afford protection to dockworkers in their professional life through measures relating to the conditions of their access to and performance of work; and second, to foresee and manage in the best possible manner, through appropriate measures, fluctuations in the work and the workforce required.

3. Article 6 of Convention 137 requires member States to "ensure that appropriate safety, health, welfare and vocational training provisions apply to dockworkers", while the accompanying Recommendation No. 145 calls for comprehensive vocational training schemes to enable dockworkers to carry out several related tasks, to ensure workplace safety, and to help dockworkers to find employment elsewhere through the provision of retraining facilities and the assistance of the public employment services.

4. As might be expected, training features prominently in Convention No. 152 and its accompanying Recommendation No. 160 to ensure the protection of dockworkers against the risk

of accident or injury to health arising out of or in the course of their employment. Article 38 of Convention No. 152 states that "No worker shall be employed in dock work unless he has been given adequate instruction or training as to the potential risks attaching to his work and the main precautions to be taken." In case of an accident, Article 35 states that "adequate facilities, including trained personnel, shall be readily available for the rescue of any person in danger, for the provision of first aid and for the removal of injured persons in so far as is reasonably practicable without further endangering them".

5. Other ILO instruments for the port sector include:

- code of practice on security in ports (ILO–IMO, 2004);
- code of practice on safety and health in ports (2005);
- port safety and health audit manual (2005); and
- social dialogue in the process of structural adjustment and private sector participation in ports: A practical guidance manual (2006).

6. These instruments are supported and supplemented by research studies and extensive training materials, including:

- General Survey of the reports concerning the Dock Work Convention (No. 137), and Recommendation (No. 145), 1973, International Labour Conference, 90th Session, Geneva, 2002;
- Portworker Development Programme (PDP);
- training materials on the implementation of the ILO–IMO code of practice on security in ports;
- training materials on the ILO code of practice on safety and health in ports (including the audit manual); and
- training materials for the implementation of the guidance manual on social dialogue in ports.

7. The ILO code of practice on safety and health in ports (2005) highlights the need for all portworkers to be trained to develop the knowledge, psychomotor and attitude skills which they need to enable them to do their work safely and efficiently, as well as to develop general safety awareness (section 2.6.2.1). In addition, general induction training should be given to all persons who are to work in ports. This training should cover the general hazards associated with ports, which are often quite different from those encountered in other industries (section 2.6.3.1).

8. All this information is available at: www.ilo.org.

Appendix II

Example of national occupational standards for port operations

List of units

1. Handle cargo/loads

1.1 Undertake manual handling operations
- 1.1.1 Check and mark cargo
- 1.1.2 Secure cargo
- 1.1.3 Transfer loads through slinging and signalling
- 1.1.4 Load and unload cargo transport units
- 1.1.5 Receive, store and dispatch cargo
- 1.1.6 Handle loads manually
- 1.1.7 Support cargo handling operations associated with RO/RO vessels

1.2 Handle loads using lifting equipment
- 1.2.1 Move loads using lift trucks
- 1.2.2 Move containers using shore-based lifting equipment
- 1.2.3 Lift and position loads by crane
- 1.2.4 Plan and implement a lifting plan
- 1.2.5 Transfer loads using ships' gear
- 1.2.6 Handle dry bulk cargo using automated equipment

1.3 Drive shore-based vehicles
- 1.3.1 Drive shore-based tractor units
- 1.3.2 Drive tractor vehicles within RO/RO vessels
- 1.3.3 Drive light vehicles on and off RO/RO vessels
- 1.3.4 Drive heavy vehicles on and off RO/RO vessels
- 1.3.5 Trim and clean out dry bulk cargo

- 1.4 Transfer bulk liquid cargo
  - 1.4.1 Operate equipment for moving bulk liquids

2. Support port operations

- 2.1 Operate port vessels
  - 2.1.1 Handle port craft
  - 2.1.2 Navigate port craft
  - 2.1.3 Handle unpowered craft
- 2.2 Support vessel operations
  - 2.2.1 Berth vessels
  - 2.2.2 Position access equipment on vessels
  - 2.2.3 Fuel vessels
- 2.3 Support safe navigation within port areas
  - 2.3.1 Position moorings and lay buoys
  - 2.3.2 Maintain clear channels and water areas
  - 2.3.3 Establish water depths
- 2.4 Operate locks and bridges
  - 2.4.1 Operate lock systems
  - 2.4.2 Operate bridges

3. Support the movement of passengers

- 3.1 Provide support and information to passengers
  - 3.1.1 Give customers a positive impression of yourself and your organization
  - 3.1.2 Control vehicle movements
  - 3.1.3 Resolve customer service problems
  - 3.1.4 Transfer passengers to/from small vessels
- 3.2 Process documents
  - 3.2.1 Process travel documents

- 3.3 Process baggage
  - 3.3.1 Process baggage

4. Maintain health and safety

- 4.1 Work safely
  - 4.1.1 Take action to reduce risks to health and safety within a port environment
  - 4.1.2 Work safely with dangerous cargo
  - 4.1.3 Work safely near water
  - 4.1.4 Survive in the water
  - 4.1.5 Work safely when alone
  - 4.1.6 Work safely at heights
  - 4.1.7 Work safely in confined spaces
  - 4.1.8 Undertake safety inspections
- 4.2 Deal with incidents
  - 4.2.1 Respond to shore based emergency situations
  - 4.2.2 Respond to a pollution incident
  - 4.2.3 Administer first aid
  - 4.2.4 Respond to emergency situations aboard vessels

5. Support the maintenance of security

- 5.1 Maintain security
  - 5.1.1 Maintain security in ports

6. Service, maintain and repair plant and equipment

- 6.1 Provide maintenance and repairs
  - 6.1.1 Plan and coordinate the routine maintenance of port plant and equipment
  - 6.1.2 Undertake basic maintenance and serving of vehicles
  - 6.1.3 Maintain marine equipment

6.1.4 Clean and maintain port craft
6.1.5 Undertake minor repairs to port infrastructure

7. Work with others

7.1 Lead teams of operatives
7.1.1 Provide leadership for your team
7.1.2 Allocate and check work in your team

7.2 Build effective working relations with colleagues
7.2.1 Develop productive working relationships with colleagues
7.2.2 Liaise and develop professional working relationships with third parties

8. Support effective working

8.1 Manage self
8.1.1 Manage your own resources

8.2 Operate communications equipment
8.2.1 Operate radio equipment
8.2.2 Operate marine radar equipment

8.3 Maintain records
8.3.1 Maintain records regarding the movement of cargo
8.3.2 Maintain records of vessel movements

8.4 Use IT systems
8.4.1 Use IT systems

8.5 Maintain the environment
8.5.1 Maintain environmental good practice within ports

Source: Port Skills and Safety (PSS): *Port operations. National occupational standards for port operations* (London, 2005).

Appendix III

Example of a competency unit – Load and unload cargo transport units

What this unit is about

1. This unit is about removing cargo from a transport unit, and also about packing, or repacking cargo. It is recognized that containers and other storage units are often handled without unloading their contents. However, removing and packing can occur, for example when:

- meeting the needs of inspections by Customs and Excise, or other authorities;
- offering a part-load service, by accepting break-bulk cargo and making up container loads.

2. As the movement of cargo from and/or into a storage unit may often involve manual handling, it is recommended that this unit be progressed in conjunction with unit 1.1.6 "Handle cargo manually".

Who this unit is for

3. This unit applies to anyone whose responsibilities include removing, packing and/or repacking cargo.

Health and safety

4. Maintaining health and safety is of paramount importance at all times when working within a port environment. Unit 4.1.1 "Take action to reduce risks to health and safety within a port environment" is recommended to everyone working within a

port environment, and supports this unit. In addition, further units address best practice in ensuring health and safety when dealing with dangerous cargo (unit 4.1.2), working near water (4.1.3), surviving in water (4.1.4), working alone (4.1.5), working at heights (4.1.6), and in confined spaces (4.1.7).

Evidence towards key and core skills

5. While key and core skills are not part of the standards required for achieving this unit, in demonstrating competence in loading and unloading cargo transport units, individuals are likely to also have evidence towards achieving the following key and core skills:

Key skills	Levels	Core skills	Intermediate, higher
Communication	1	Communication	1
Application of number	1	Problem solving	1
Problem solving	1		

6. This information is intended to assist those employers and/or individuals seeking to progress key and/or core skills. However, as above, the skills are not part of the standards, and this reference to them is not intended to imply that they are a requirement in achieving this unit.

Outcomes of effective performance – What you must do

1. You respond promptly, and in line with your organization's requirements, to requests for the removal or inspection of cargo.

2. You identify correctly the cargo units to be unloaded, confirming that door locks and seals are intact, and ensure that the units are positioned correctly in areas designated for de-vanning.

3. Where the cargo unit is refrigerated, you ensure that power supplies are disconnected prior to the unit being moved.

4. You open cargo units carefully to prevent loose cargo falling out, and inspect the position of the cargo, recording any damage correctly.

5. You assess correctly whether the cargo unit contains fumigants and where these are present, you deal with these correctly before entering the unit.

6. Cargo is unloaded according to agreed procedures, in line with your organization's requirements, with full cooperation given to the authority requesting the work.

7. You identify correctly where ancillary lighting is required to ensure safe working, and obtain this promptly.

8. Where it is requested that removed cargo be segregated, you check with the relevant authority whether emergency equipment/services are required, obtaining this where necessary before transferring the required cargo correctly to an appropriate inspection site.

9. You reload cargo securely and correctly, taking into account the cargo type and the limitations of the cargo unit, and ensure an appropriate weight distribution.

10. You use loading and access equipment which is compatible with the cargo.

11. You seal loaded cargo units correctly in accordance with legislative requirements.

12. You report correctly and promptly any difficulties, and faults in the equipment and materials.

Knowledge and understanding – What you must know

General knowledge and understanding

1. You know and understand the hazards associated with fumigants and other noxious gases, and the importance of taking the relevant precautions to ensure adequate ventilation before entering storage areas.

Industry-specific knowledge and understanding

2. You know and understand the principal characteristics of the main types of cargo, and whether they are hazardous or non-hazardous.

3. You know and understand the capabilities, including capacity and strength of the principal types of lashing materials, and the implications of using defective or faulty materials.

4. You know and understand the principal methods and systems used to lash different types of cargo, and the correct use of lashing points.

5. You know and understand how to handle power supplies safely.

Organizational-specific knowledge and understanding

6. You know and understand your organization's policies and procedures relating to loading and unloading cargo transport units relevant to your area of operations, including those relating to checking and ventilating fumigants before entering storage units.

7. You know and understand your organization's procedures relating to meeting legislative requirements regarding loading and

unloading cargo relevant to your operations, and are aware of the relevant sections of this legislation.

8. You know and understand the limits of your responsibility and to whom to refer if these are exceeded.

Source: Port Skills and Safety (PSS): *Port operations: National occupational standards for port operations* (London, 2005).

Appendix IV

Example of a competency unit – "Securing cargo"

1. This unit involves the skills and knowledge required to secure cargo including preparing to secure cargo/containers, un/lashing cargo, protecting cargo from weather, and un/packing cargo. Work is performed under some supervision generally within a team environment. It involves the application of workplace procedures and regulatory requirements to the securing of cargo as part of work activities in the stevedoring, transport, distribution and allied industries. The performance criteria for this unit are as follows:

Element	Performance criteria
1. Prepare to secure cargo/ containers	1.1 Work area is prepared and maintained in accordance with the national standards, safety codes and site operating procedures. 1.2 Unsafe work practices and/or equipment are reported to appropriate personnel. 1.3 Appropriate protective clothing, equipment and fittings are selected. 1.4 Formwork is erected where no lashing points exist. 1.5 Lashing plan is read and interpreted.
2. Lash and unlash cargo	2.1 Work is conducted in accordance with industry standards, statutory requirements, safety codes, site operating requirements and any special requirements of the cargo. 2.2 Lashing points are identified and appropriate fittings and lashing equipment are used for each lashing point. 2.3 Cargo is lashed and secured to lashing points ensuring the correct spread of lashings and that lashings are secured, attached and tensioned. 2.4 Tensioners are securely fastened. 2.5 When unlashing, fittings are released, disconnected and removed from the cargo. 2.6 Lashing equipment is placed in designated storage areas or cleared from work area.

Element	Performance criteria
2. Lash and unlash cargo (cont.)	2.7 Lashing/unlashing operations ensure no injury to personnel or damage to machinery or cargo. 2.8 Lashing is completed in accordance with lashing plan.
3. Protect cargo from weather	3.1 Cargo is covered/uncovered safely ensuring appropriate covering and lashing, no injury to personnel or damage to cargo or equipment. 3.2 Work is conducted in accordance with the requirements of national standards, safety codes and site operating procedures.
4. Pack and unpack cargo	4.1 Damaged cargo is identified and reported following enterprise procedures. 4.2 Cargo is sorted and stacked prior to packing or after unpacking, ensuring the stack is in the correct location, in accordance with national standards, safety codes, and site operating procedures. 4.3 Cargo is identified through the interpretation of marks or numbers. 4.4 Tight stow of cargo is maintained. 4.5 Cargo is handled ensuring no injury to personnel or damage to cargo or equipment.

2. The required skills and knowledge for this unit include:

Skills

- Communicate effectively with others when securing cargo or freight.
- Read and interpret instructions, procedures, information and labels relevant to securing cargo or freight.
- Identify cargo, container and goods, coding, IMDG markings and where applicable emergency information panels.
- Interpret and follow operational instructions and prioritize work.
- Receive, acknowledge and send messages with available communications equipment.

- Complete documentation related to the securing of cargo or freight.
- Work collaboratively with others when securing cargo or freight.
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others.
- Promptly report and/or rectify any identified problems, faults or malfunctions in accordance with regulatory requirements and workplace procedures.
- Implement contingency plans for unplanned events.
- Apply precautions and required action to minimize, control or eliminate hazards that may exist during work activities.
- Monitor work activities in terms of planned schedule.
- Modify activities depending on differing operational contingencies, risk situations and environments.
- Apply fatigue management knowledge and techniques.
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment.
- Identify, select and use relevant equipment, processes and procedures when securing cargo or freight.
- Operate and adapt to differences in cargo handling equipment in accordance with standard operating procedures.
- Use the lashing and protection equipment.
- Select and use required personal protective equipment conforming to industry and occupational health and safety standards.

Knowledge

- Procedures for managing and controlling hazardous situations when carrying out work activities.
- The marking and numbering systems for cargo.
- Problems that may occur when securing cargo or freight and appropriate action that can be taken to resolve the problems.
- Focus of operation of work systems, equipment, management and site operating systems for the securing of cargo or freight.
- Workplace procedures and policies for the securing of cargo or freight.
- National and international standards, codes and regulations relevant to the securing of cargo or freight including IMDG Code.
- Relevant bond, quarantine or other legislative requirements.
- Relevant handling and safety codes.
- Relevant occupational health and safety standards and environmental procedures and regulations.

3. If the work context is considered, then the relevant "range statement" embraces the following:

Work may be conducted:	• in a range of work environments; • by day or night.
Customers may be:	• internal or external
Workplaces may comprise:	• large, medium or small worksites
Work may be conducted in:	• limited or restricted spaces; • exposed conditions; • controlled or open environments; • at height; • in a workbox or work-cage.

Cargo may include:	• goods with specialist requirements, including temperature controlled goods and dangerous goods
Lashing equipment for containers may include:	• twist-locks; • pelican hooks; • lashing rods (bars); • turn handles (keys); • bottle screws; • bridging clamps; • cones.
Securing equipment may include:	• chocks; • racks; • lashings; • ropes; • chains.
Covers may include:	• rain and dust covers
Hazards in the work area may include exposure to:	• chemicals; • dangerous or hazardous substances; • movements of equipment, goods and • materials.
Personnel in work area may include:	• workplace personnel; • site visitors; • contractors; • official representatives.
Personal protective equipment may include:	• gloves; • safety headwear and footwear; • safety glasses; • two-way radios; • protective clothing; • high-visibility clothing; • full arrest safety harness.
Communication in the work area may include:	• phone; • radio; • oral, aural or signed communications.

Depending on the type of organization concerned and the local terminology used, workplace procedures may include:	• company procedures; • enterprise procedures; • organizational procedures; • established procedures.
Information/documents may include:	• goods identification numbers and codes; • manifests, bar codes, and container identification/serial number; • national and international codes of practice and regulations relevant to the securing of cargo; • national and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances; • operations manuals, job specifications and induction documentation; • manufacturers' specifications for equipment; • workplace procedures and policies; • supplier and/or client instructions; • dangerous goods declarations and material safety data sheets (where applicable); • award, enterprise bargaining agreement, other industrial arrangements; • relevant national/industry standards and certification requirements; • quality assurance procedures; • emergency procedures.
Applicable regulations and legislation may include:	• relevant codes and regulations for the securing of cargo; • national and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances; • licence, patent or copyright arrangements; • water and road use and licence arrangements; • export/import/quarantine/bond requirements; • marine orders; • relevant national standards and certification requirements; • relevant state/territory occupational health and safety standards and environmental protection legislation; • workplace relations regulations; • workers compensation regulations.

4. The following "evidence guide" is used to evaluate the trainee:

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying: – the underpinning knowledge and skills; – relevant legislation and workplace procedures; – other relevant aspects of the range statement.
Context of, and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts. • Resources for assessment include: – a range of relevant exercises, case studies and other simulated practical and knowledge assessment; and/or – access to an appropriate range of relevant operational situations in the workplace. • In both real and simulated environments, access is required to: – relevant and appropriate materials and/or equipment; and/or – applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.
Method of assessment	• Assessment of this unit must be undertaken by a registered training organization. • As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests. • Practical assessment must occur: – through appropriately simulated activities at the registered training organization; and/or – in an appropriate range of situations in the workplace.

Source: Transport and Logistics Skills Council, Melbourne, Australia, at www.tlisc.com.au.

Appendix V

Example of a "Stevedoring pathway"

(general port operations, level 2)

Must complete nine units for the qualification:

Mandatory units

4.1.1 Take action to reduce risks to health and safety within a port environment

5.1.1 Maintain security in ports

Group A – At least two units, no more than three units

4.1.2 Work safely with dangerous cargo

4.1.3 Work safely near water

4.1.4 Survive in the water

4.1.5 Work safely when alone

4.1.6 Work safely at heights

4.1.7 Work safely in confined spaces

4.1.8 Undertake safety inspections

4.2.1 Respond to shore-based emergency situations

4.2.2 Respond to a pollution incident

4.2.3 Administer first aid

4.2.4 Respond to emergency situations aboard vessels

8.5.1 Maintain environmental good practice within ports

Group B – At least one unit, no more than two units

3.1.1 Give customers a positive impression of yourself and your organization

7.2.1 Develop productive working relationships with colleagues

7.2.2 Liaise and develop professional working relationships with third parties

8.1.1 Manage your own resources

Group C – At least two units, no more than four units

1.1.1 Check and mark cargo

1.1.2 Secure cargo

1.1.3 Transfer loads through slinging and signalling

1.1.4 Load and unload cargo transport units

1.1.5 Receive, store and dispatch cargo

1.1.6 Handle loads manually

1.1.7 Support cargo handling operations associated with Ro/Ro vessels

1.2.1 Move loads using lift trucks

1.2.2 Move containers using shore-based lifting equipment

1.2.3 Lift and position loads by crane

1.2.4 Plan and implement a lifting plan

1.2.5 Transfer loads using ship's gear

1.2.6 Handle dry bulk cargo using automated equipment

1.3.1 Drive shore-based tractor units

1.3.2 Drive tractor units within Ro/Ro vessels

1.3.3 Drive light vehicles on and off Ro/Ro vessels

1.3.4 Drive heavy vehicles on and off Ro/Ro vessels

1.3.5 Trim and clean out moving dry bulk cargo

1.4.1 Operate equipment for dry bulk liquids
2.1.1 Handle port craft
2.1.2 Navigate port craft
2.1.3 Handle unpowered craft
2.2.1 Berth vessels
2.2.2 Position access equipment on vessels
2.2.3 Fuel vessels
2.3.1 Position moorings and lay buoys
2.3.2 Maintain clear channels and water areas
2.3.3 Establish water depths
2.4.1 Operate lock systems
2.4.2 Operate bridges
3.1.2 Control vehicle movements
3.1.3 Resolve customer service problems
3.1.4 Transfer passengers to/from small vessels
3.2.1 Process travel documents
3.3.1 Process baggage
6.1.1 Plan and coordinate the routine maintenance of port plant and equipment
6.1.2 Undertake basic maintenance and servicing of vehicles
6.1.3 Maintain marine equipment
6.1.4 Clean and maintain port craft
6.1.5 Undertake minor repairs to port infrastructure
8.2.1 Operate radio equipment
8.2.2 Operate marine radar equipment

8.3.1 Maintain records regarding the movement of cargo

8.3.2 Maintain records of vessel movements

8.4.1 Use IT systems

Source: Port Skills and Safety (PSS): *Port operations: National occupational standards for port operations* (London, 2005), at: http://www.portskillsandsafety.co.uk/skills/standards_and_qualifications/national_and_scottish_vocational_qualifications/level_2_general_.

Appendix VI

Example of a workplace training unit

CON-02	Coordinating car terminal operations

	Outputs *that must be produced, provided or delivered*
O-01	Received cars
O-02	Dispatched cars
O-03	Reported information

	Skills *that can be demonstrated and observed*
S-01	Preparing to receive/dispatch commodities
S-02	Tallying cars as they are received
S-03	Coordinating the receipt of cars into the designated car bays
S-04	Coordinating the dispatch of cars from the designated car bays
S-05	Tallying cars as they are dispatched
S-06	Checking cars received / dispatched for damages
S-07	Manifesting the received cargo
S-08	Shipping cargo
S-09	Handling discrepant cargo
S-10	Conducting housekeeping in the works area
S-11	Reporting daily operational occurrences
S-12	Adhering to safety standards

	Knowledge *that must be understood and explained*
K-01	What is the function of the cargo coordinator in a car terminal?
K-02	What are the main types of cargo vessels and what types of cargo do they carry?
K-03	What are the main types of vehicles handled in the car terminal environment and what precautions must be taken when handling them?

K-04	What preparations need to be made before the cars are received or dispatched from the parking areas?
K-05	What preparations need to be made before the cars are loaded/offloaded?
K-06	What documentation is used to tally the cars when they are received?
K-07	What documentation is used to tally the cars when they are dispatched?
K-08	What precautions must be taken to ensure that the tally is accurate?
K-09	What will the implications be if the tally is not recorded and controlled accurately?
K-10	What precautions must be taken when directing the loading/off loading of cars onto/from rail trucks?
K-11	What precautions must be taken when directing the loading/off loading of cars onto/from road trucks?
K-12	What precautions must be taken when directing the loading/off loading of cars onto/from vessels?
K-13	What types of damage must be identified and reported on vehicles?
K-14	What procedure should be followed when manifesting cargo and why is it important?
K-15	What documentation should be completed and verified when manifesting cargo?
K-16	What procedure should be followed when shipping cargo and why is it important?
K-17	What documentation should be completed and verified when shipping cargo?
K-18	What is discrepant cargo and how should it be handled?
K-19	What procedure should be followed when discrepant cargo is identified?
K-20	What are the main hand signals used when communicating with drivers?
K-21	What general health and safety precautions should be adhered to?
K-22	What type of information needs to be reported and to whom should this information be reported?
K-23	What is the purpose of housekeeping and what will the implications be if it is not conducted on a regular basis?

Note: CON-02 is the identification number for this unit of competency. O, S and K (left-hand column) are the competency numbers.

Appendix VII

Port training facilities

Training facilities need a sufficient number of classrooms and other work areas to meet the predicted demand for training. Ideally, they should be designed to accommodate small groups of 15–20 trainees at a time. A training centre also requires offices for training staff and their administrative and secretarial support. The practical nature of port work creates a demand for a training workshop for "hands on" exercises and an open area for driver training and for technicians (maintenance staff) to work on large-scale cargo-handling equipment. A library and open-learning centre are extremely desirable, as are rooms for computer and audiovisual technicians to prepare materials, edit DVDs/videotapes and maintain teaching equipment.

The training space must not suffer from noise, either from outside the building or from nearby rooms or corridors, or be hot and stuffy; the temperature should be comfortable with high-quality air and good air circulation. Some natural light in the classroom is always preferable to purely artificial light. Blackout is by no means essential for computer or overhead projection, but it should be possible to reduce room brightness to some extent, and certainly to prevent direct sunlight falling on the projection screen.

The various rooms in the training facility need to be appropriately equipped. The classrooms should ideally be fitted with whiteboards and screens, a computer, overhead and slide projectors, DVD and videotape players and monitors. A workshop has to be provided with workbenches, hand and machine tools, demonstration and practice machines, a materials and tools store, and so on. Also needed are wall charts, display exhibits,

materials for making audiovisual aids, photocopiers and office equipment (computers and desktop publishing system).

A requirement that has assumed greater importance in port training centres in recent years is the provision of a multi-media laboratory, where all categories of port staff can become familiar with computer-based training and management tools, and where they can be taught in a flexible and imaginative way. The use of electronic media brings with it the ability for a greater customization of course content, although it must be supported by the provision of computer-based training for trainers and administrators so they can adapt material without compromising the content and presentation quality. A modern training centre should also have an extensive library of packaged electronic training materials developed in-house or acquired from proprietary sources.

Training materials should always be produced to the very highest standards possible. Indeed, they constitute one of the very first signals employees receive about the quality and professional standards of the training they are about to embark upon. Poor quality training materials can de-motivate trainees and undermine the effectiveness of portworker training. Given the availability of high-quality training materials in the port sector, including the ILO's PDP, there is no excuse for using poor quality training materials.

Many ports and operators make excellent use of simulators such as straddle carrier and gantry crane simulators. These need not necessarily be vastly expensive and complex. In some ports, simulators have even been built using in-house skills and materials available within the IT or engineering departments. Another alternative is to hire a mobile simulator from a GTO. There is now general acceptance in the port sector of the great value of

such devices in operator training. Simulators have the following advantages:

- they free up cranes taken off work-duty to be used in training;
- they facilitate training on a world-wide basis (universal benchmark for all ports);
- local and freak weather conditions and tidal patterns can be programmed into them;
- all trainees are assessed on an equal basis;
- accident levels decrease with training (especially via training on recreated real accident situations);
- trainees gain confidence in a stress-free environment;
- time and personnel is more effectively used (they can be used 24/7); and
- they provide basic (induction) training and can also introduce new equipment to established drivers.

An open-learning resource centre, where provided, needs to be equipped with self-access audiovisual and computer-driven training devices, on which training packages can be used by trainees individually (or in small groups) and independently. Self-access training should be encouraged since it is such an effective method and one that contributes greatly to job satisfaction, individual development and career enhancement. Industry magazines are often available online and ports should consider providing access to these resources for all staff via the organization's Intranet.

Appendix VIII

Generic characteristics of trainers

- Relevant experience in the port sector.
- Appropriate qualifications for the job.
- Ability to create an environment of trust and respect.
- Ability to perceive and respond to group dynamics.
- Excellent interpersonal skills.
- Capacity to relate to and engage with a wide range of target groups.
- Experience in working in different learning environments and contexts.
- Ability to value ideas and suggestions.
- Capacity to value collaboration.
- Ability to stand back/reflect and be flexible.
- Willingness to seek assistance and/or feedback from colleagues.
- Ability to recognize trainees' learning difficulties and adopt appropriate training materials and methods, and/or refer to appropriate personnel.
- Ability to ask probing questions and listen actively/effectively.
- Capacities to be creative and resourceful.
- Possession of a good sense of humour!

Appendix IX

Further information on HIV and AIDS

HIV is the human immunodeficiency virus, a virus that damages the human immune system. AIDS is the acquired immune deficiency syndrome that results from advanced stages of HIV infection and is characterized by opportunistic infections or HIV-related cancers, or both.

The ILO HIV and AIDS Recommendation, 2010 (No. 200), under " General principles" states that "HIV and AIDS should be recognized and treated as a workplace issue, which should be included among the essential elements of the national, regional and international response to the pandemic with full participation of organizations of employers and workers."

Transport workers are especially vulnerable to HIV/AIDS because of the nature of the work they perform, in particular the fact that they spend so much time away from home in unpleasant and difficult circumstances. Although most portworkers are non-mobile transport workers, there is evidence that they too may be highly vulnerable to HIV infection as prevalence is high in communities situated on major transport routes. Ports are the geographical intersection of several transport modes – shipping, railways and road transport – where the prevalence of HIV is especially high.

Discrimination and stigmatization of people living with HIV/AIDS inhibits efforts aimed at promoting HIV/AIDS prevention. Recommendation No. 200 states that: "Real or perceived HIV status should not be a ground of discrimination preventing the recruitment or continued employment, or the pursuit of equal opportunities consistent with the provisions of the Discrimination (Employment and Occupation) Convention, 1958."

Appendix X

Example of effective delivery of portworker training

The main features of good instruction can be grouped under the following four main headings.

1. Content and training strategies

Trainers must ensure that the content of training programmes is relevant, applicable to the needs of trainees and presented at the appropriate level. This is best achieved by properly testing and validating the training materials with sample target audiences. Conducting a training needs analysis, as well as designing and developing training materials that meet these needs, are challenging tasks. They are best achieved by following the "training system model", which comprises seven steps:

- Analyse trainee and port/terminal needs.
- Define subject content and training aims.
- Identify training objectives and assessment goals.
- Select training strategies and media selection.
- Implement training.
- Evaluate effectiveness.
- Improve training materials as necessary.

The training materials must employ appropriate training strategies and teaching methods – such as lectures, classroom or practical exercises, simulations, discussions and role plays – and be designed to motivate trainees so that they want to learn and apply their newly acquired knowledge and skills in the workplace. Effective training leads to a change in the trainee's behaviour as a result of the direct learning experience.

2. Organization

Training materials should have a logical and systematic structure; for instance, the context should be made clear and the behavioural objectives well defined. Trainers must show mastery of the topic and an ability to introduce local examples, anecdotes and experiences from their own background. Successful running of a course depends on a trainer's complete understanding of what it contains and how it should be organized. The classroom setting and seating arrangements must be suitable for the training strategies used, particularly in the case of audiovisual aids and small or large group activities or practical work. Particular consideration must be given to the appropriate use and arrangements for the growing importance of individual learning experiences using computers and other interactive media.

3. Presentation skills

The trainer is the central figure when it comes to providing information and instruction either by lecturing, using audiovisual aids, facilitating discussions or class exercise, or giving feedback to trainees. Lectures and practical demonstrations still form a substantial part of traditional portworker training schemes, and it is therefore essential that trainers develop their presentational skills to deliver learning material in a logical, clear and interesting manner. Important elements or features of successful lecturing include:

- Well-structured learning materials.
- A clear "set, dialogue and closure" procedure:
  - Set: The first step is to establish the set of the lesson with the target group. Identify the objectives, establish the context of the class and establish the learning environment.

It is at this stage that the trainer must ensure the training environment is adequate with functional audiovisual (AV) aids, appropriate seating and lighting, ideal location of AV aids. This environmental aspect of the set must be checked before the trainees arrive (the night before if necessary). In establishing the aims and objectives of the session, the trainer must carefully explain the purpose and structure of the lesson and emphasize the major objectives. At this stage learners need to know what to expect, especially if they are to be involved in active responses and exercises.

- Dialogue: This may be trainer-centred dialogue initiated by the trainer in the delivery of content, or trainee-centred dialogue arising as a result of questions asked by the trainer. The balance between trainer-centred and learner-centred dialogue will depend on how the trainer chooses to structure the lesson. It is at this stage that the main knowledge or skills content will be developed.
- Closure: This is the procedure that ends the dialogue and brings about a review of the main points and a summary of what has happened. It is essential at this stage to invite questions and comments from the trainees. If trainers are teaching a complex topic, it may contain within it several clearly defined sessions. If this is the case then it is appropriate to use a series of small set-dialogue-closure routines within the overall presentation.

- Appropriate audiovisual aids.
- The questioning of techniques to stimulate trainee participation.
- Clear and precise speech.
- Good eye contact with trainees.

4. Group management skills

The final set of attributes is concerned with the trainer's ability to manage the group of trainees and, in particular, to handle sceptical and indifferent (sometimes rebellious) attendees, as well as to maintain class discipline. The trainer must establish a relaxed atmosphere in the classroom and ensure that all trainees are engaged in the learning process. As stated previously, good instructional design encourages the learning to be trainee-centred and not dominated by the trainer. This is supported by clearly defining the trainee's role, and by ensuring that all trainees are put at ease during sessions; indeed, they must be encouraged to take an active part and ask questions. Trainers have to be able to use open-ended and probing questions and allow attendees sufficient time to come up with appropriate replies.

Trainers have responsibility for ensuring that everything is ready for the trainees when they arrive for the course and that the room layout is appropriate. This creates the right atmosphere from the start. Each session must start promptly and activities must keep moving to stimulate interest. It is the trainer's job to check that each trainee is concentrating and participating in all classroom activities. When group discussions are under way some trainees can present problems, possibly by dominating or hijacking the group or not taking part in activities. Trainers must be able to identify the most common kinds of "problem trainees" and possess a range of techniques to deal with them. Finally, trainers have a vital role in evaluating group work, their own performance and assessing trainee knowledge – an integral part of the learning process. Testing and evaluation of course delivery has three distinct benefits:

- diagnostic testing allows the trainer to determine whether applicants for courses have the appropriate entry skills and

to identify specific defects either in skills, knowledge or attitudes, with a view to suggesting or providing remedial action;

- assessment of learner achievement in tests or examinations enables trainers to monitor the performance of trainees. Analysis of the results of this type of test enables the trainer to review problem sections and to help the trainees who have experienced difficulties. Trainers need to develop skills in the administration, marking, analysis and interpretation of such results; and
- evaluation of courses and teaching materials allows the trainer to gather information on the effects of the training programme, and to assess the value of the training. This includes the evaluation of the learning materials, strategies and trainer performance, etc.

A good trainer's responsibilities do not end with evaluation of the course and learning materials. Trainers should maintain contact with trainees, making sure that they put into practice the knowledge and ideas they have acquired and supporting their roles back in the workplace.

Source: ILO: *PDP chief instructor's manual* (Geneva, revised version, 2004).

Appendix XI

Example of information recorded for portworker qualification

- name and logo of the accredited provider or authorized body;
- address of accredited provider;
- identification number of provider;
- certificate identification or serial number;
- identification of any relevant acts and regulations;
- surname and initials of operator;
- identification number of operator;
- lifting machine code, code description of equipment, attachments and capacity;
- restrictions of operation;
- registration number of facilitator and assessor;
- UoC number and credit value;
- date of issue and expiry date (if applicable); and
- authorizing signatures.

The ILO Guidelines on training in the port sector present a competency-based framework for portworker training methods designed to:

- protect and promote health and safety in ports
- improve the skills development of portworkers and enhance their professional status and welfare
- secure the greatest possible social and economic advantages from advanced methods of cargo handling and other port operations
- improve cargo handling efficiency and enhance the quality of service to port clients
- protect the natural environment in and around the port area
- promote decent work and sustainable jobs in ports.

They are also the first sector specific training guidelines. The Guidelines have been produced for all organizations and individuals involved in any aspect of portworker training.

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