An international assessment of training in the port sector

Peter Turnbull

INTERNATIONAL LABOUR OFFICE • GENEVA

First edition 2011

Turnbull, Peter
An international assessment of training in the port sector
International Labour Office, Geneva, 2011

ISBN 978-92-2-125450-8 (print)
ISBN 978-92-2-125451-5 (Web pdf)

vocational training / training needs / occupational safety / safety training / docker / port / role of ILO / developed countries / developing countries
06.01

ILO Cataloguing in Publication Data

Photocomposed in Switzerland SCR
Printed by the International Labour Office, Geneva, Switzerland

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 are therefore central pillars of the ILO's Decent Work Agenda.

The ILO's Portworker Development Programme has successfully contributed to this goal over many years. As a further step, in 2009 the Sectoral Activities Department of the ILO initiated a project to develop guidelines on training in the port sector to provide a framework for portworker training designed to contribute to 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.

These objectives were agreed by an informal Working Group of experts established to oversee 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, 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 project, the ILO commissioned this 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. We welcome the publication of this report, which has paved the way for the *Guidelines on training in the port sector* and, it is hoped, will contribute to further understanding and use of the Guidelines.

Alette van Leur
Director
Department of Sectoral Activities, ILO
November 2011

Contents

Part II Putting competency-based training into practice

Figures

Boxes

Abbreviations and acronyms

ADG	Australian Dangerous Goods
AIDS	Acquired Immune Deficiency Syndrome
AQF	Australian Qualifications Framework
ATO	Approved Training Organisation (Singapore)
CC	cargo coordinator
CCFO	critical cross-field outcomes
CEPA	Centrale des Employeurs au Port d'Anvers (Antwerp, Belgium)
CET	continuing education and training (Singapore)
DAV	driver articulated vehicle
DWCP	Decent Work Country Programme
EDI	electronic data transfer
EQF	European Qualifications Framework
ESPO	European Sea Ports Organisation
ETQA	Education and Training Quality Assurance (South Africa)
EU	European Union
GEA	Global Employment Agenda
GTO	global terminal operator
HE	higher education
HIV	human immunodeficiency virus
HPH	Hutchison Port Holdings
HR	human resources
IAPH	International Association of Ports & Harbors
ICHCA	International Cargo Handling & Co-ordination Association International Ltd
ILC	International Labour Conference
ILO	International Labour Office/Organization
ITC	Inland Transport Committee (ILO)
IMDG	International Maritime Dangerous Goods
ICT	information and communication technologies
IENPAC	Instituto de Educación Naútica y Portuaria (Mexico)
ISC	Industry Skills Council (Australia)
ISO	International Organization for Standardization
ISTC	Industry Skills and Training Council (Singapore)
ITC	Inland Transport Committee (ILO)
ITF	International Transport Workers' Federation

IMO	International Maritime Organization
KPI	key performance indicators
KMS	Kompetenz Management System (Germany)
KSA	knowledge, skills and attitudes
LTIF	lost-time injury frequency
ma-co	maritimes competenzcentrum e.V. (Germany)
MNE	multinational enterprise
MTC	Mærsk Training Centre
MUA	Maritime Union of Australia
NAICS	North American Industrial Classification System
NDLB	National Dock Labour Board (United Kingdom)
NDLS	National Dock Labour Scheme (United Kingdom)
NJC	national joint council
NOS	national occupational standards
NQF	national qualifications framework
NSB	National Standards Body (South Africa)
NVQF	national vocational qualifications frameworks
NSRS	National Skills Recognition System (Singapore)
OCHA	Opleidingscentrum voor Havenarbeiders (Belgium)
OLE	operator of lifting equipment
PDP	Portworker Development Programme (ILO)
PSS	Port Skills and Safety (United Kingdom)
RMG	rail-mounted gantry crane
RTG	rubber-tyre gantry crane
RTO	registered training organization (Australia)
SAQA	South African Qualifications Authority
SGB	Standards Generating Board (South Africa)
SOA	Statement of Attainment (Singapore)
STS	ship-to-shore gantry crane
SWL	safe working load
TEU	twenty-foot equivalent unit
TGWU	Transport & General Workers Union
TLISC	Transport & Logistics Industry Skills Council (Australia)
TPT	Transnet Port Terminals (South Africa)
ULR	union learning representative
UoC	units of competency
VET	vocational education and training
VQ	vocational qualification
WDA	Workforce Development Agency (Singapore)
WQF	Workforce Skills Qualifications (Singapore)
WLL	working load limit

Acknowledgements

This research report was written by Professor Peter Turnbull of the Cardiff Business School, Cardiff University, United Kingdom, based on extensive fieldwork in several countries and information provided by an informal ILO Working Group of experts under the responsibility of Marios Meletiou of the ILO Sectoral Activities Department. Throughout the project, Mr Meletiou provided constant advice, comment, support and encouragement, as well as several technical inputs for different sections of the report.

Many other individuals and institutions have also contributed to the report. In particular, the author wishes to acknowledge Vladimir Gasskov and Dr Brian Thomas, as well as the assistance of Transnet (South Africa), ma-co maritime competenzcentrum e.V. (Germany), Port of Singapore (PSA Institute), Port Skills & Safety (United Kingdom) and the Transport & Logistics Industry Skills Council (Australia). Fer van de Laar (IAPH), Frank Leys (ITF) and Mike Compton (ICHCA International Ltd) also made extremely valuable contributions. The ILO Skills and Employability Department has contributed to the report from its inception, sharing its knowledge and experience on vocational education and training (VET). The ILO's International Labour Standards Department has also been an invaluable source of information and support.

Preface

This international assessment of training in the port sector, commissioned by the International Labour Office as part of the project to develop the Guidelines on training the port sector, aims to:

- identify ILO instruments pertinent to the development of the guidelines on training in the port sector;
- review different models of competency-based training and their suitability for portworker training;
- provide an overview of past, present and future training practice in the port sector; and
- outline a framework for the implementation of competency-based training in ports.

The decision to focus on competency-based approaches to training in the port sector reflects the recent shift in training provision from "job analysis", used to pinpoint the skills needed for a particular job, to an identification of the competencies required for a given function. The term "competencies" covers the "knowledge, skills and know-how applied and mastered in a specific context". 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 (defined as "a formal expression of the vocational and/or professional abilities of a worker which is recognized at 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. This approach has been used successfully by major ports around the world and indeed by the ILO through its Portworker Development Programme (PDP).

The focus of this report is on the "port sector" as opposed to simply "ports", as the port is no longer a "terminus" but a critical point of exchange between different transport modes (sea, road, rail and inland waterways) that is increasingly integrated via multi- and inter-modal transport systems. Therefore, the port sector includes work undertaken in the physical or geographical area of the port (as nationally defined) as well as port-related activities outside the port that have an important and direct impact on cargo-handling activities inside the port estate (e.g. stuffing containers in a container freight station, where the distribution of weight inside the container or the stowage and securing of different types of containers have an impact on safe and efficient cargo handling inside the port). It was therefore determined to review the following activities:

- skills development for portworkers and their supervisors involved in cargo-handling-related activities inside the port area, including both ship- and shore-based operations;

- training in health and safety in ports, as well as instruction in the efficient operation of cargo-handling activities for all workers who enter the port estate, such as truck drivers or railway workers who are required to interface with such activities (e.g. security and customs clearance, document processing for cargo, the loading and unloading of containers from trucks to the container stack, and vice versa);

- instruction in health and safety in the port sector, including awareness training in HIV and AIDS for all personnel employed in the port area, even those who are not directly involved in cargo handling (e.g. maintenance, security, cleaning, management); and

- appropriate training for any worker outside the port area who is involved in the handling of cargo that has a direct subsequent impact on the safe and efficient handling of cargo inside the port and on the vessel.

In order to ensure that training meets both economic and social objectives, dialogue and cooperation between the social partners is essential.[1] The ILO already offers practical guidance on social dialogue in ports (ILO, 2006a).[2] Case studies for this international assessment of training in the port sector were selected not only on the basis of the quality of training they provided but also the role of social dialogue in creating an environment conducive to a safe and healthy working environment, high levels of productivity and first-class customer service.

Part I of this report draws on both historical and contemporary data from ports around the world to provide the necessary context for an appreciation of how competency-based training can increase efficiency, enhance customer service, protect health and safety and promote career opportunities and personal growth for port workers. Part II focuses on the "nuts and bolts" of competency-based training and how this approach can be implemented and integrated into port operations and the working lives of port employees. This second part formed the basis for the subsequent *Guidelines on training in the port sector*.

[1] Social dialogue is defined by the ILO as including all types of negotiation, consultation or simply exchange of information between, or among, representatives of governments, employers and workers, on issues of common interest relating to economic and social policy. The main goal of social dialogue is to promote consensus building and democratic involvement among the stakeholders in the world of work.

[2] This guidance manual has also been published in Bulgarian, Croatian, French, Romanian and Spanish, and has now been translated into Arabic.

PART I

TRAINING IN THE PORT SECTOR

1. Introduction

1.1. Skills development in the port sector

It has long been recognized that "people's endowment of skills and capabilities, and investment in education and training, constitute *the key* to economic and social development. Skills and training increase productivity and incomes, and facilitate everybody's participation in economic and social life" (ILO, 2002a, p. 3; see also Bartel, 1994). In a world where work is being transformed by new technology and the forces of globalization, the acquisition, development and utilization of skills has assumed even greater importance for employers, employees and the State.

This is especially true for the port sector, which in recent years has been transformed by, inter alia, the growth of world trade, containerization and other mechanized forms of cargo handling, the introduction of new information and communication technologies (ICT) to control 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). Training is the key to higher productivity, better service quality, and the safety and health of port workers. Ports are hazardous places to work, but risks can be significantly reduced and the health of the workforce substantially improved through ongoing investments in training and development. At the ILO Tripartite Meeting on Social and Labour Problems Caused by Structural Adjustments in the Port Industry in May 1996, all parties agreed on the essential nature of training for dockworkers (ILO, 1996). The first argument in favour of training "is undoubtedly the reduction of accidents to which training in safe cargo-handling methods can contribute" (ILO, 2002b, para. 148). All parties benefit if ports are safer and healthier places to work. As the Report of the Committee of Experts on the Social Repercussions of New Methods of Cargo Handling concluded, "dockworkers must have appropriate training and experience to be able to operate ever more costly equipment safely and efficiently" (ibid. para. 14).

In many ports around the world there is now a need for nothing short of a revolution in skills development. As a recent report commissioned by the European Sea Ports Organisation (ESPO) has pointed out, containerization and other technological developments have increased the pressure on the training of port workers (Notteboom, 2010, p. 38). However, it cannot be assumed than any "skills revolution" will translate seamlessly into productivity transformations (Keep, Mayhew and Payne, 2006) or indeed other beneficial outcomes such as decent work for port employees. As the Conclusions on skills for improved productivity, employment growth and development adopted by the International Labour Conference (ILC) at its 97th Session in June 2008 acknowledged, "skills development will not automatically lead to improved productivity or more and better jobs *unless there is a conducive economic and social environment to translate productivity improvement into employment growth and development*" (ILO, 2008, para. 8, emphasis added).

Skills development in the port sector must therefore be approached in the broader socio-economic context of the specific country in question. This requires at least some consideration of both product and labour markets, the system of industrial relations, social welfare provision, income distribution

and the like (Bosch and Charest, 2008). Training provision in the port sector (Chapter 4) is therefore considered in its broader historical and contemporary context, drawing on a range of examples from portworker training programmes in Asia, Europe and Latin America, as well as the ILO's Portworker Development Programme (PDP). International experience shows that countries that have succeeded in linking skills to productivity, employment, development and decent work have targeted skills development towards three main objectives (ILO, 2008):

1). matching supply to current demand for skills;

2). helping workers and enterprises adjust to change; and

3). building and sustaining competencies for future labour market needs.

The assessment of training in the port sector offered here highlights the importance of human resource planning at both enterprise and sectoral levels, as well as of developing training programmes that respond flexibly to new cargo handling methods and ICT. A competency-based approach to training (Chapter 3) has proven to be a popular and successful way to achieve these objectives. For example, the move towards outcome or competency-based approaches in vocational education and training (VET) can be observed in most European countries, reflecting the need to adopt a more "demand-driven" model that better responds to the needs of the labour market (Mansfield, 2004).

There are, however, different models of competence that inform current practice. These are summarized in table 1.1. The multidimensional model is favoured by the ILO, as it is clearly more consistent with the broader objective of decent work for all women and men in the twenty-first century.

Table 1.1. 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 inter-personal ("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 Winterton, Delamare-Le Deist and Stringfellow, 2005.

Few, if any, people would want to define jobs in very narrow technical terms or simply in terms of a person's "value" to their employer. Labour is not a commodity. Occupational identity is important to most employees, including portworkers, for it denotes the mastering of particular skills and the ability to apply them (Standing, 1999, pp. 1–7). Workers today not only want interesting work that presents a challenge, but work that, with the passing of time, leads to a deepening of competence as well as the opportunity and the ability to undertake increasingly more challenging tasks.

The ILO is committed to education, training and lifelong learning policies that promote people's employability throughout their lives.[1] When supported by a transparent and fair mechanism for skills assessment, certification and recognition, education and training policies will ensure that skills developed are portable across enterprises, industries and educational institutions. ILO policy instruments that support training and development in general, and portworker training in particular, are considered in Chapter 2.

1.2. The role of social dialogue in skills development

All these policies are best developed through a process of social dialogue (i.e. all types of negotiation, consultation or simply exchange of information between, or among, representatives of governments, employers and workers, on issues of common interest relating to economic and social policy). The ILO Human Resources Recommendation, 2004 (No. 195) calls on member States to "strengthen social dialogue and collective bargaining on training at international, national, regional, local, and sectoral and enterprise levels as a basic principle for systems development, programme relevance, quality and cost-effectiveness", and to "provide support to the social partners to enable them to participate in social dialogue on training" (II, 5(f) and (i)).

Systems of industrial relations can either foster or discourage social dialogue in relation to VET. In brief, 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 which do not (Lansbury and Pickersgill, 2002). The absence of meaningful social dialogue certainly hinders the development of effective and equitable policies for achieving broad-based social progress (ILO, 2000a), including progress in relation to VET (ILO, 1998). It is a matter of concern that social dialogue has been eroded in many countries where trade union membership has recently declined, where collective bargaining has been decentralized, and where industrial relations have become less collectivist and the employment relationship more individualized.

Compared to general education, vocational training systems are far more sensitive to changes in product and labour markets and to the strength and relations of unions and employers' organizations (Bosch and Charest, p. 430). The social partners provide the intermediate structures and institutional mechanisms required to link vocational training with the labour market. Such linkages make vocational training attractive to employers and potential trainees, as well as to training institutions. The State also has an important role to play, as a long-term focus on VET appears necessary for effective social

[1] The term "lifelong learning" encompasses all learning activities undertaken throughout life for the development of competencies and qualifications. "Employability" encompasses the skills, knowledge and competencies that enhance a worker's ability to secure and retain a job, progress at work and cope with change, secure another job if she/he so wishes or has been laid off, and enter more easily into the labour market at different periods of the life cycle. Individuals are most employable when they have broad-based education and training, basic and portable high-level skills, including teamwork, problem-solving, ICT, communication and language skills, learning to learn skills and competencies to protect themselves and their colleagues against occupational hazards and diseases, including HIV/AIDS.

dialogue (Winterton, 2006). The ILO's *World Employment Report* (1998) underlined three advantages arising from tripartite approaches:

1). The social partners have incentives to use their influence in joint regulatory bodies to broaden the scope of training. This can help to correct market failures in employer-initiated training, particularly under-investment in occupational skills which are likely to be more general and portable.

2). There is likely to be greater commitment to training goals which employers might seek to evade under a purely administrative approach to training.

3). Employer bodies and trade unions are likely to provide valuable training-related services to their members which support and add value to the training programmes undertaken by the worforce (see also Lansbury and Pickersgill, 2002, p. 287; ILO, 2008).

In countries where training is coordinated by tripartite arrangements, or where bipartite arrangements are supported by legal rights to participate in training decisions, VET is more robust and responsive to the changing needs of different stakeholders. In particular, cooperation and strong institutional arrangements at the national level appear to be a decisive factor in determining the social partners' involvement, because it is only at national level that new occupational profiles can be developed and standards can be set. Cooperation and social dialogue at the sector and enterprise levels are still vitally important for the implementation of these standards, but are not a substitute for a robust national system of VET in open labour markets (ibid.).

Where the social partners are weak, the State can step into the breach, as it has done in the Republic of Korea, but again this is no substitute for the involvement of the social partners (Bosch and Charest, 2008, pp. 440–3; see also Keep, 2007). In Europe, while governments generally define the framework for VET and lifelong learning, they invariably expect the social partners to be involved in "fleshing out" the framework provided (Winterton, 2006; Heidemann, 2002). In the United States, in contrast, the industrial relations system is decentralized to the level of the firm, social partnership is not very well developed, and general education is increasingly "crowding out" vocational training (Bosch and Charest, 2008, p. 445) Interestingly, however, this conclusion does not hold in the port sector, especially on the West Coast of the United States.

In general, where training provision is fundamentally market-driven and largely focused on the enterprise, and where managerial prerogative prevails, the emphasis tends to be on the acquisition of firm-specific skills. Under these circumstances, training is often characterized by a low theoretical content and a rather narrow skills base. Lifelong learning is then restricted to the accumulation of skills in relation to a particular job or task, rather than the more holistic model of career development envisaged in other VET systems that include personal as well as professional growth. This approach is usually designated as the "functional/behavioural" model summarized in table 1.1.

After years of state intervention in VET, it is clear that governments can fail just as badly as markets in providing decent work and skills (Buchanan, 2006). Consequently, future training policy, in ports and indeed other sectors of economic activity, cannot be simply about how to make markets function better or how to design more effective, transparent and accountable government interventions. Rather, the challenge is to identify the appropriate spheres of coordination (e.g. the company, the port or the port sector) and, crucially, who should be involved in defining and governing them, and how (e.g. the role of the social partners and social dialogue). There is no escaping the fact that these are issues that require a cooperative approach amongst a variety of different stakeholders, including employers, unions, educational authorities, training institutions and the like. Social dialogue provides a solid foundation for such cooperation. The success of social dialogue and partnership depends on:

- the existence of mutual purpose and goals
- strong and well-defined leadership
- trust in the system (from design to monitoring and funding)
- the capacity for partnership work
- inclusive government practices

1.3. The environment for skills development in the port sector

The extent to which systems of VET rely on markets and/or institutions, involve employers' organizations, trade unions or employee representatives in their development, and rely on the active contribution of the State are just some of the variables that help to define the broader environment for skills development.[2] The principal dimensions of this environment, in addition to the institutional and policy framework, are:

- business setting
- structure of jobs
- level and type of skills
- labour supply
- predominant modes of engaging labour

In the port sector, the business setting will be influenced by the product market (e.g. the mix of general cargo, containers, short-sea shipping), the competitive strategies of firms (e.g. the vertical integration of shipping lines into other transport modes to offer a "door-to-door" service) and the type of business organizations and networks that prevail (e.g. global terminal operators such as DP World, Hutchison Port Holdings, APM Terminals, PSA International and Eurogate as opposed to local or nationally-based stevedoring companies).

Most of the examples of competency-based training reported in this assessment focus on container handling, although other port operations are not overlooked. An important feature of containerization is the flexibility it offers for inter-modal transport and the consequent scope for "door-to-door" services. The vertical integration of shipping lines and other transport and logistics providers raises the question of whether there should be coordination of training across different transport modes, or at least a common qualifications framework and portability of those qualifications.

These concerns are reflected here by focusing on the port sector, which includes work undertaken in the physical or geographical area of the port *as well as* port-related activities outside the port that have an important and direct impact on cargo handling activities inside the port estate (e.g. the stuffing and stripping of container boxes in container freight stations). Skills development along global value chains certainly provides opportunities for new knowledge and technology transfers as lead firms – such as international shipping lines – provide skills to other transport companies further down the logistics chain – such as road haulage companies (ILO, 2008, para. 20).

[2] The environment is often referred to as the "skills ecosystem". See, for example, Finegold, 1999.

As the business setting is now dominated by a handful of global terminal operators (GTOs)[3] it is clear that GTOs will play an increasingly important role in the future training and development of port workers. The global reach of these companies creates new opportunities for cross-cultural learning and the transfer of "best practice" with respect to training, social dialogue and other business activities. As a recent study of dock labour and port-related employment in European ports highlighted, "The port business is an international one, so multi-cultural and international thinking should also be part of training and education programs in port management, maritime transport or logistics. Tomorrow's port workers have an international perspective" (Notteboom, 2010, p. 18).

The ILO Tripartite Declaration of Principles Concerning Multinational Enterprises and Social Policy (MNE Declaration) calls on multinational enterprises such as GTOs to "ensure that relevant training is provided for all levels of their employees in the host country as appropriate, to meet the needs of the enterprise as well as the development policies of the country" (para. 30,; see also ILO, 2008, para. 20). The data collected for this report draw extensively on the experience and input of GTOs as well as other stakeholders involved in the design and delivery of portworker training.

The structure of jobs in the port industry, the level and type of skills formation, as well as the supply of labour, have been transformed in recent years as a result of organizational and technological change (see table 1.2). As a result, the competencies required to perform the job of a portworker have changed significantly; work on the waterfront has been redesigned, which in turn demands a new (professional) qualifications system. This also opens the industry to new sources of labour supply, most notably the increasing number of women who drive equipment, tally cargo and perform IT jobs in the operational control departments of major container terminals. In the port of Valencia, for example, more than 10 per cent of dockworkers are now women (see Turnbull et al., 2009). Training programmes in many ports have been adapted to this changing pattern of labour supply.

One of the most important elements of the general environment for skills development in all ports around the world has always been the mode of engaging labour, which has shifted from casual hiring systems to permanent employment (Turnbull, 2011). Under casual forms of employment, training was often provided by a state agency, which would finance training via a levy on the cargo or the operating companies. Alternatively, operating companies might collectively provide (general) training, usually coordinated through an employers' association, given that they "share" the available labour supply and that they all have an interest in hiring qualified workers. Under the permanent

Table 1.2. The changing world of port work

From	To
General labourers	Multi-skilled/professional workers
Labour-intensive operations	Capital-intensive operations
Break-bulk handling	Specialized operations
Casual hiring	Permanent employment
Semi-autonomous gang working	Management-directed teams
Informal on-the-job training	Certified training
Male workforce	Diversified labour force

[3] In Europe, for example, the six leading port operators handled nearly 70 per cent of total European container throughput in 2002 compared to 53 per cent in 1998.

employment systems that characterize container terminals and other modern-day facilities, employers are more likely to invest directly in portworker training programmes tailored to their own specific requirements (Notteboom, 2010, p. 33). Various arrangements for portworker training under these different environmental conditions are considered in Chapter 4.

1.4. The importance of training in the port sector

The benefits of portworker training extend well beyond the immediate port sector, especially in developing countries where an improvement in port efficiency can significantly boost trade performance and transform the competitiveness of major export industries. Maritime nations have a particularly strong interest in the efficiency of port operations – and by implication the quality and skills of port labour – as ports are often centres of maritime, industrial and distribution activities. Ports invariably have a "Midas-touch" on the regional if not the national economy, attracting a wide range of jobs and creating a wealth of business opportunities (see, inter alia, Accario, 2008; Martin Associates, 2007; Musso, Benacchio and Ferrari, 2000; and Oxford Economics, 2009).

Notwithstanding these wider benefits, the principal beneficiaries of training in the port sector are those individuals and organizations most immediately and intimately involved in cargo handling, namely workers and port operators. Ports are dangerous and often unhealthy places to work, but proper training programmes can significantly reduce accidents and health hazards. This is especially important for new recruits and portworkers who are learning new skills. In Antwerp, for example, 50 per cent of all accidents involve dockworkers with less than one year's experience and it has been reported that new recruits in many other ports are often "unaware" of important health and safety risks (Turnbull, 2009). Data collected by the Mærsk Training Centre (MTC) in Denmark reveal that trainee crane drivers who face simulated accidents during their training, based on the "accidents" that trainees have experienced during previous simulator training exercises as well as on "known hazards" for the port in question, go on to be safer drivers.[4]

Promoting the safety and health of the workforce is a primary objective of modern-day port training programmes, alongside the enhancement of portworkers' professional status and general welfare. In the past, port work was typically regarded as "unskilled" or "general" labour (see, for example, Oram, 1970). In fact, break-bulk cargo handling often required considerable skill and dexterity to ensure a tight stow, but these skills were typically acquired "on the job" and were usually not formally recognized. Today, port work is more often regarded as skilled or even professional work, especially by trade unions but also by GTOs and local (nationally-based) stevedoring companies (Turnbull, 2009).

Private port operators and public port authorities are also direct beneficiaries of improved training in the port sector. Safe and efficient operations reduce costs and make the port more attractive to current and potential customers. Training can have measurable effects on labour productivity, equipment downtime, service quality and other indicators of performance. To express this point another way, once it is recognized that the efficient operation of a modern port depends on the presence of a skilled workforce, it has to be concluded that this workforce must be provided appropriate training. As early as 1951, the Inland Transport Committee (ITC) of the ILO emphasized this point, indicating that "in modern ports the handling of cargo, especially mixed cargo, calls for a certain amount of experience

[4] MTC maintains a logbook of all the "accidents" that trainees on the simulators have ever had. These data are used to simulate similar hazards for future trainees. In addition, local and freak weather conditions and tidal patterns are programmed into the simulator. This is one reason why simulator-trained drivers go on to be safer operators, especially when they actually encounter the unpredictable, such as high winds.

and knowledge on the part of the dockworkers". The ITC therefore invited the Governing Body of the ILO "to draw attention of governments and of the employers' and workers' organizations concerned to the importance of an adequate training of dockworkers for the handling of mixed cargo in modern ports" (ILO, 1951).

1.5. Overview

It is important that all those involved in portworker training appreciate the broader environment in which skills are developed in different ports around the world, as this is vital to any understanding of how and why portworker training is organized, funded, certified and managed in different ways in different contexts. To this end, Part I of this report provides the necessary context for practitioners to understand these issues and influences.

While there are universally acknowledged standards for many aspects of port work, for example in relation to safety and health, and widely recognized "good practices" that ensure such standards, there are many aspects of VET that are specific to a particular time and place. However, increasing standardization across ports of training provision and practice will have beneficial effects for all stakeholders in terms of the efficiency of cargo handling, the quality of port services, the protection and promotion of health and safety standards, the portability of qualifications, and opportunities for career development and lifelong learning. Part I therefore also presents an overview of good practice in terms of both ILO policy instruments for training and development and generic approaches to competency-based training.

A key advantage of focusing on 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" (Winterton, Delamare-Le Deist and Stringfellow, 2005). The purpose of this approach, 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. This requires VET and portworker training policies that support the interests of the social partners and other stakeholders such as port users. A framework for implementing competency-based training in ports is presented in Part II of this report, which has served as the basis for the material presented in the ILO *Guidelines on training in the port sector* (forthcoming).

Many of the examples presented in Part II focus on specific aspects of port work, most notably container-handling activities. This is not to deny the importance of other methods of cargo handling in ports; rather, it is a reflection of the fact that competency-based approaches and training materials are more advanced and readily available for container work. Nor is the focus on the technical dimensions of container work a denial of the importance of workers' key competencies that are context-independent, applicable and effective across different institutional settings, occupations and tasks (e.g. basal competencies such as literacy, numeracy, IT skills, communication skills).

In addition to technical and (generic) employability skills, workers should possess knowledge of their own intellectual strengths and weaknesses, how to apply their skills and knowledge in various task situations and how to acquire missing competencies (i.e. "how to cope with uncertainty" and "learning to learn"). The multidimensional model of competence presented in table 1.1 enables workers to follow different pathways to autonomous, self-directed learning and occupational progression, as well as providing the basis for all women and men to participate in society's debates, controversies and conversations (Buchanan et al., 2009). Simply put, the multidimensional model promotes active citizenship as well as employability and (job-specific) technical skills. The approach developed in Part II is consistent with this multidimensional model.

2. ILO policy instruments for training and development

2.1. Introduction

The purpose of this chapter is, first, to review the general principles and instruments that inform ILO policy and practice in relation to education, training and development, with particular emphasis on the roles of government and the social partners. The chapter also considers the policy environment for skills development at the sector level, alongside any sector-specific training provisions contained in ILO Conventions and Recommendations for the port industry.

The role of social dialogue is highlighted throughout. Although the scope and effectiveness of social dialogue and partnerships in training might be limited by the weak organization of workers and/or employers, or by a lack of resources of their respective representative organizations, there are several notable examples in the port sector where social dialogue and collective bargaining have created a broad commitment to education and training and a learning culture in the workplace and beyond. This has strengthened support for the ongoing reform of training systems, and has provided channels for the continuous communication of information between employers, workers and governments.

The experience of many ports around the world demonstrates that in addition to promoting skills development and the efficiency of cargo-handling operations, social dialogue and collective bargaining can be instrumental in the equitable and efficient distribution of the benefits of improved productivity. As the conclusions on skills for improved productivity, employment growth and development (ILO, 2008, para. 7) pointed out, "Productivity gains arising from skills development should be shared between enterprises and workers – including through collective bargaining – and with society in order to sustain the virtuous circle of improved productivity, employment growth and development, and decent work."

2.2. General principles and instruments

The ILO has for many years advised member States on skills development policies, principally through its Skills and Employability Department which undertakes research and offers policy guidance and technical assistance to constituents to:

- Integrate *skills development* into national and sector development strategies in order to better meet current labour market needs and to prepare for the jobs of the future;
- expand access to employment-related training so that *youth*, *persons with disabilities* and other vulnerable groups are better able to acquire skills and secure productive employment while at the same time contributing to *poverty reduction*; and
- improve the ability of *public employment services* to provide career guidance, labour exchange services, delivery of active labour market programmes, and rapid response services in the aftermath of crises.

Skills development policies constitute a core element of the ILO's Global Employment Agenda (GEA), the ILO's policy framework for the employment promotion objective of the Decent Work Agenda. Human resources development, education and training contribute significantly to promoting the interests of individuals as well as economic development and social inclusion. According to the resolution concerning human resources training and development, adopted by the International Labour Conference (ILC) at its 88th Session (ILO, 2000b): "Human resources development and training also underpin the fundamental values of society – equity, justice, gender equality, non-discrimination, social responsibility, and participation."

At its 295th Session in March 2006, the ILO Governing Body placed the topic of skills for improved productivity, employment growth and development on the agenda of the 97th Session (2008) of the Conference, which adopted, by tripartite agreement between workers, employers and governments, conclusions that provide a forward-looking framework for strengthening linkages between skills, productivity, employment, development and decent work. These conclusions underscore the principle that effective skills development policies need to be integral components of national development strategies in order to prepare the workforce and enterprises for new opportunities and adopt a forward-looking approach to dealing with change. Effective skills development systems – which connect education to technical training, technical training to labour market entry and labour market entry to workplace and lifelong learning – can help countries sustain productivity growth and translate that growth into more and better jobs.[5]

Many countries are constrained by a "vicious spiral" of inadequate education, poor training, low productivity and poor-quality jobs with low wages that traps the working poor and excludes workers without relevant skills from participating in economic growth and social development in the context of globalization. In contrast, the ILO seeks to promote a "virtuous circle" in which skills development fuels innovation, productivity increase and enterprise development, technological change, investment, diversification of the economy, and competitiveness that are needed to sustain and accelerate the creation of more and better jobs in the context of the Decent Work Agenda.

In recent years, the ILO has determined to focus its efforts on promoting decent work at the level of economic sectors (ILO, 2007, 2009, and Sector Workplan 2010–11, Outcomes 2 and 3). A sectoral approach is not simply warranted by the economic significance or dependency of most countries on just a few key sectors, rather by the fact that this is where the social partners and governments are typically best placed to shape the changes occurring in the world of work.[6] There are three basic reasons for this (ILO, 2007):

1). Globalization, economic and industrial restructuring and increased private-sector participation have extremely important sectoral dimensions. To remain relevant to the ever-evolving state of the world of work, the ILO must not only address global trends, but also the way in which they affect specific sectors.

---

[5] 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 conclusions concerning human resources development (ILO, 2000b), the Human Resources Development Recommendation, 2004 (No. 195), the Global Employment Agenda adopted by the Governing Body in March 2003, the conclusions on promoting pathways to decent work for youth (2005) and the conclusions on the promotion of sustainable enterprises (2007). In addition, the Paid Educational Leave Convention, 1974 (No. 140) and the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy (1977, as amended in 2000 and 2006) (MNE Declaration) are also relevant with respect to opportunities for training.

[6] Sectoral activities address issues in a different manner from many other ILO programmes as they deal with specific issues in specific sectors at a specific point in time. As such, they make the ILO's mandate more meaningful to employers' and workers' organizations and governments which are engaged in the task of improving working conditions and developing economic opportunities on a sectoral basis (see ILO, 2007).

2). Social dialogue and the efforts of the ILO's constituents to achieve decent work take place primarily within a sectoral framework and at the enterprise level. The sectoral approach offers an opportunity for governments and the social partners to foster the Decent Work Agenda, in particular within the framework of Decent Work Country Programmes (DWCPs) in line with national priorities.

3). There are important sectoral variations in social dialogue and the principal aspects of decent work. Therefore, "one-size-fits-all" policies and programmes are unlikely to be successful. Programmes and activities need to address sector-specific needs in order to promote the Decent Work Agenda through existing structures, institutions and social dialogue mechanisms.

The sectoral characteristics of work, social dialogue and public policies are reflected in the sectoral nature of many employers' and workers' organizations, in their interest in sectoral issues, and in the fact that governments, employers and workers are often engaged in social dialogue, collective bargaining and other industrial relations practices along sectoral lines. As a result, social dialogue, collective bargaining and other industrial relations practices such as training and health and safety are most developed at the enterprise or sectoral level.

In the port sector, trade unions are often well established at all levels – port, sector and nationally – with high levels of membership giving them a clear mandate to negotiate with individual employers and/or employers' associations. Training has long been a focal point for discussion and negotiation in the industry and it is not uncommon for port unions to share joint responsibility for the operation and management of portworker training centres, especially in Europe.[7] In Sweden, for example, the Port & Stevedoring School (Hamn & Stuveri Skolan) has a management board with three representatives from the employers and an equivalent number from the trade union side.

Social dialogue is central to the ILO Human Resources Development Recommendation, 2004 (No. 195), which recommends that member States should:

- based on social dialogue, formulate, apply and review national human resources development, education, training and lifelong learning policies which are consistent with economic, fiscal and social policies (para. 1);
- recognize that education and training are a right for all and, in cooperation with the social partners, work towards ensuring access for all to lifelong learning (para. 4a);
- define, with the involvement of the social partners, a national strategy for education and training, as well as establish a guiding framework for training policies at national, regional, local, and sectoral and enterprise levels (para. 5a);
- strengthen social dialogue and collective bargaining on training at international, national, regional, local, and sectoral and enterprise levels as a basic principle for systems development, programme relevance, quality and cost-effectiveness (para. 5f);
- provide support to the social partners to enable them to participate in social dialogue on training (para. 5i);
- promote, with the involvement of the social partners, the ongoing identification of trends in the competencies needed by individuals, enterprises, the economy and society as a whole (para. 9a);

[7] A recent survey of 18 unions from 14 EU Member States found that the majority were jointly involved in the running of portworker training centres, while a further 28 per cent were "consulted" or "informed" on issues pertinent to the operation/management of training centres. The majority of unions also reported sharing joint responsibility for the review of training provision, while 44 per cent held joint responsibility for the design of future training programmes (see Turnbull, 2009).

- support initiatives by the social partners in the field of training in bipartite dialogue, including collective bargaining (para. 9c);
- adopt measures, in consultation with the social partners and using a national qualifications framework, to promote the development, implementation and financing of a transparent mechanism for the assessment, certification and recognition of skills, including prior learning and previous experience, irrespective of the countries where they were acquired and whether acquired formally or informally (para. 11.1);
- identify, in consultation with the social partners, roles and responsibilities of employment services, training providers and other relevant service providers with respect to vocational and career information and guidance (para. 15c); and
- promote national capacity building to reform and develop training policies and programmes, including developing the capacity for social dialogue and partnership building in training (para. 21c).

Investing in education and skills for women and men to help economies achieve dynamic growth with quality jobs is a pressing priority throughout the globe. Such investment helps to "pivot" an economy towards higher-value-added activities and dynamic growth sectors, while also ensuring that essential services such as transport meet the changing needs of the economy in the twenty-first century. For the ILO, the objectives of skills development include:

- *promotion of sustainable enterprises* that apply workplace practices based on full respect for fundamental principles and rights at work and international labour standards;[8]
- *productivity improvement*, which is not an end in itself but a means to improving workers' lives, enterprises' sustainability, social cohesion and economic development;
- *developing competence and employability of people*, which gives 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;
- *developing an effective response to local, national and international challenges* such as technological change, globalization and trade, climate change and demographic changes; and
- *promoting decent work*, which encompasses continuous and seamless pathways of learning,[9] the development of both core skills[10] and higher-level skills,[11] the portability of those skills,[12] and employability for wage work or self-employment.[13]

---

[8] Sustainable enterprises foster good labour–management relations as a means of raising productivity and creating decent work.

[9] Such pathways start with pre-school and primary education that adequately prepares young people for secondary and higher education and vocational training; they continue with the provision of career guidance, labour market information and counselling as young women and men move into the labour market; and they offer workers and entrepreneurs opportunities for continuous learning to upgrade their competencies and learn new skills throughout their lives.

[10] C*ore skills* include literacy, numeracy, communication skills, teamwork, problem-solving and other relevant skills (e.g. learning ability) as well as awareness of workers' rights and an understanding of entrepreneurship as the building blocks for lifelong learning and capability to adapt to change.

[11] H*igher-level skills include* professional, technical and human resource skills to capitalize on or create opportunities for high-quality or high-wage jobs.

[12] P*ortability* is based firstly on core skills to enable workers to apply knowledge and experience to new occupations or industries and secondly on systems that codify, standardize, assess and certify skills so that levels of competence can be easily recognized by social partners in different labour sectors across national, regional or international labour markets.

[13] Employability results from all these factors – a foundation of core skills, access to education, availability of training opportunities, motivation, ability and support to take advantage of opportunities for continuous learning, and recognition of acquired skills – and is critical for enabling workers to attain decent work and manage change, and for enabling enterprises to adopt new technologies and enter new markets.

ILO Conventions, Recommendations and other important instruments in the area of skills development are listed below. Together, they aim to assist governments, enterprises, employers and workers put into effect education, training and lifelong learning policies and programmes. They call on governments, enterprises and the social partners to develop and implement education, training and lifelong learning policies that promote people's employability throughout their lives.

- Employment Policy Convention and Recommendation, 1964 (No. 122)
- Employment Policy (Supplementary Provisions) Recommendation, 1984 (No. 169)
- Paid Educational Leave Convention and Recommendation, 1974 (No. 140)
- Human Resources Development Convention, 1975 (No. 142)
- Human Resources Development Recommendation, 2004 (No.195)
- Declaration on Fundamental Principles and Rights at Work, 1998
- Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy (MNE Declaration as amended in 2006)
- Resolution and conclusions concerning human resources training and development, International Labour Conference, 88th Session, 2000
- Resolution and conclusions concerning skills for improved productivity, employment growth and development, International Labour Conference, 97th Session, 2008

The ILO Constitution recognizes that workers should be employed in the occupation in which they can have the satisfaction of giving the fullest measure of their skills and attainments and make their greatest contribution to the common well-being. Numerous ILO Conventions and Recommendations are therefore designed to promote decent work in specific sectors. The ILO has regularly directed its attention to the special situation of dockworkers. In fact, the ILC examined matters relating to dockworkers for the first time in 1929 and then again in 1932, when instruments on the prevention of accidents to workers engaged in loading and unloading ships were adopted.[14] Subsequently, the ILO's Inland Transport Committee (ITC)[15] examined the difficulties associated with the regularization of employment (1949), welfare (1954) and the organization of dock work (1957). In the latest survey of dock work in member States undertaken by the ILO, the Dock Work Committee of the Conference (90th Session, 2002) concluded that the occupation of dock working "continues to require specific protection measures" (ILO, 2002b, para. 235). The survey was based on reports from 92 member States concerning the Dock Work Convention, 1973 (No.137) and Recommendation (No. 145). Port-specific Conventions and Recommendations that supplement and reinforce cross-sector Conventions and Recommendations are listed in box 2.1, along with other ILO instruments that promote the safety and health and training of dockworkers.

[14] The Protection Against Accidents (Dockers) Convention 1929 (No. 28) and the Protection Against Accidents (Dockers) Convention (Revised) 1932 (No. 32).

[15] The ITC was one of seven tripartite industrial committees set up by the ILO Governing Body at its 94th Session (January 1945); the other committees covered coalmining, iron and steel, metal trades, textiles, petroleum, building, civil engineering and public works. The ITC dealt with interregional problems relating to inland transport and was a forum for the exchange of views on the situation of the transport industries, particularly in countries devastated by the war.

Box 2.1. ILO Conventions, Recommendations and other relevant instruments for the port sector

Sector-specific Conventions and Recommendations are:

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

Article 6 of Convention No. 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.

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."

In addition to Conventions and Recommendations, other ILO instruments for the ports 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)
- *Social dialogue in the process of structural adjustment and private sector participation in ports* (2006)

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

- Portworker Development Programme (PDP)
- General Survey of the reports concerning the Dock Work Convention (No. 137) and Recommendation (No. 145), 1973, International Labour Conference, 90th Session, Geneva, 2002
- 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)
- training materials for the implementation of the manual on social dialogue in ports

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. 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.

Trade unions have expressed concerns about the commitment of private stevedores and international shipping lines in particular to safety and health in ports, with the approach of most organizations characterized as exercising "minimum compliance" with relevant statutory provisions as opposed to actively seeking to improve upon their legal obligations (Turnbull, 2009). GTOs and public port authorities have also been criticized for their "minimalist" approach. Major GTOs have set clear targets for the improvement of safety and health in their network of ports. DP World, for

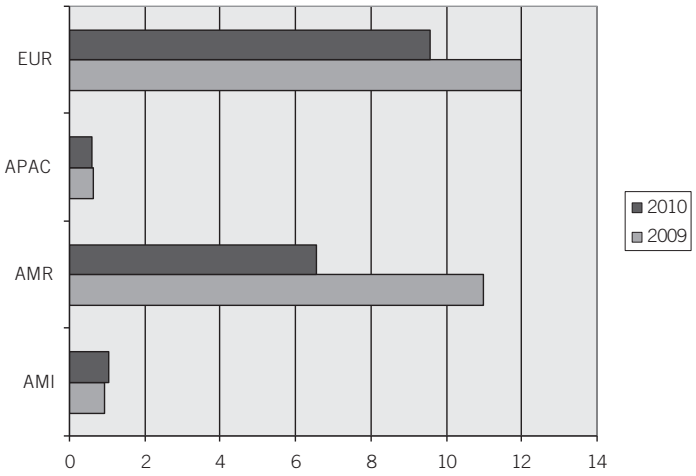
example, recently set itself a target of reducing lost time due to accidents by 20 per cent with "zero fatalities". While the company has achieved the working time target, there are still around 15 deaths per annum across DP World's global network. The elimination of accidents and fatalities was designated as a specific company goal by APM Terminals (of the AP Moller-Maersk Group) in 2007. Details of the company's performance are provided in box 2.2.

Box 2.2. APM Terminals Global Safety Programme

The APM Terminals Global Safety Programme was initiated in 2005, and in 2006 a new company-wide "Safety-for-Life" programme was introduced.* A new "Safety Culture" was formally initiated in 2008. Described as a "new mindset" for all staff, the safety culture is based on the principle of collective and individual responsibility for risk avoidance and safety performance. As part of the programme, over 16,500 personnel of APM Terminals Global Port and Terminal Network prepared and signed Personal Safety Plans in 2008. In 2009 Safety Culture workshops were conducted in each of the port and terminal facilities operated by APM Terminals, involving over 17,000 employees and provided in 12 languages. Global Safety Day is observed every year to renew company and employee commitment to the continuous safety improvement process, and to introduce new safety-related concepts and initiatives.

Safety performance is measured in Lost-Time Injury Frequency (LTIF) which is calculated and expressed in terms of such injuries occurring per million man-hours of work performed. From a starting point of over 30 in 2005, the LTIF rate for APM Terminals dropped to 4.1 in 2009. For the first half of 2010 the LTIF rate dropped by another 32 per cent, with the number of actual reported injuries declining by 35 per cent as compared with the first six months of 2009. The results are illustrated below for four regions: Europe (EUR), Asia Pacific (APAC), Americas (AMR), and Africa and the Middle East (AMI).

APM Terminals LTIF Performance



Another measure of safety performance utilized by the company is Near-Miss reporting, which requires personnel to complete reports describing situations or circumstances in which accident or injury was avoided, but risk existed. The purpose of these incident reports is to enable the company to take proactive steps to eliminate the procedures or conditions which cause the danger to personnel. The incident reports are also a useful means of gauging employee participation in the safety improvement process. Near-Miss reporting rose to 10,151 submissions in 2009, up from 1,800 in 2006 and 2,600 in 2008. The number of reports increased by 29 per cent during the first half of 2010.

Note: * In 2007 company safety results were made one of the criteria for evaluating the CEO's performance. Safety was officially made a responsibility of the company's corporate social responsibility function, and APM Terminals subsequently became a member of the Safety Panel of the International Cargo Handling & Co-ordination Association International (ICHCA).

Source: http://www.apmterminals.com.

A particular health and safety concern in the transport sector is HIV/AIDS.[16] Transport workers are especially vulnerable 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 port workers are non-mobile transport workers there is evidence that port communities are highly vulnerable to HIV infection, as they constitute the geographical intersection of several transport modes – shipping, railways and road transport – where the prevalence of HIV/AIDS is especially high. Awareness, education and training are vital to prevent the spread of HIV, which is now recognized as a workplace issue that should be treated like any other serious illness or condition.

The most recent ILO Recommendation on education, training and lifelong learning (the Human Resources Development Recommendation, 2004 (No.195)) recognizes that:

- people are at the centre of economic and social development;
- the lack of skilled workers is a critical limiting factor on the ability of countries to grow, enterprises to respond to opportunities and challenges and workers to move to better jobs and higher wages;
- education and training are a right for all people, and governments, in cooperation with the social partners, should work towards ensuring access for all to lifelong learning;
- governments and the social partners are major stakeholders in both national and industry (sector-based) skills development policies, which are best developed through a process of social dialogue;
- governments should make a commitment to skills development and lifelong learning by investing and creating the conditions to enhance education and training at all levels;
- enterprises should make a commitment to skills development and lifelong learning by training their employees;
- individuals should make use of education, training and lifelong learning opportunities for developing their employability;
- governments, social partners and society in general should create a culture of learning and development enabling workers to meet the challenges of change;
- enterprises play an increasingly central role in enhancing investment in training and in providing workplace-based learning and training programmes;
- the social partners have roles to play and commitments to fulfil in support of skills development and lifelong learning;
- equal education and training opportunities should be promoted for women and men, for people with different education and skill levels, and for people with special needs, as a powerful tool to liberate them economically and socially; and
- the outcomes of various forms of learning, including formal and non-formal learning, and work experience should be recognized.

There is tripartite and international consensus about guaranteeing universal access of all to, and increasing and optimizing overall investment in, basic education, initial training and continuous training. As the ILO resolution and conclusions concerning human resources training and development

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

(2000) pointed out, discrimination which limits access to training should be combated both by anti-discrimination regulations and by common action on the part of the social partners.

Unfortunately, in many countries structural adjustment programmes, restrictive fiscal policies, low wages, debt repayment obligations, the decline of development assistance flows, competitive price pressures on enterprises and the lack of resources of large sections of the population have led governments, enterprises and individuals to under-invest in education and training. Furthermore, market uncertainties, the poaching of skilled labour by other enterprises and the growth of insecure forms of work and consequential high turnover of staff may reduce enterprises' incentives to invest in training. This is especially true for the least developed countries, most of which are in Africa, given their socio-economic situation. It is also true in specific sectors such as ports where the labour market has been deregulated and/or casual forms of employment prevail (see for example Saundry and Turnbull, 1999). This places the onus on governments to develop and foster institutional arrangements through which ministries, employers, workers and training institutions can respond effectively to changing skill and training needs and play a strategic and forward-looking role in facilitating and sustaining technological, economic and social advancement.

2.3. Roles and responsibilities of government

Governments have overall responsibility for creating, in consultation with the social partners, the enabling framework and broader environment to meet current and future skills needs. The mindset that underpins this enabling framework should be informed by the principle that training is an investment rather than a cost. While this investment will invariably be shared between the public and private sectors, government must always assume the primary responsibility for investing in basic education and initial training, and it should also invest in other forms of training, as stated in the 2000 ILO resolution concerning human resources training and development. Government must also share the greatest responsibility for investments directed at groups where combating social exclusion or discrimination is an important objective.

With respect to the responsibility of individuals, governments must also share responsibility in order that access is not denied on financial grounds and to the detriment of the broader interest of society. Government, as an employer, must also assume responsibility to invest in training. With respect to the private sector, the responsibilities of both enterprises and individuals should be recognized and, where appropriate, encouraged. These responsibilities are especially appropriate with respect to investment in workplace-based and continuous education, which can raise workers' employability and the competitiveness of enterprises. The organization and implementation of private-sector responsibilities in this area can best be accomplished through partnerships between the government and enterprises, between government and the social partners or between the social partners.

In general, governments can contribute to the development of skills for productive and sustainable enterprise and employment growth by:

- ensuring quality basic education and provision of core skills, including literacy and numeracy for all;
- establishing national and industry-based qualifications frameworks in consultation with the social partners;
- building a common understanding with the industry sectors and social partners on the means to boost investment in employable skills that smooth transitions of youth from school to work, and between occupations and sectors;

- identifying and utilizing opportunities for public–private partnerships where these add value to meeting skills development needs of enterprises and workers, and as agreed to by the social partners;
- engaging in consultation with social partners for assuring that groups with special needs (such as, for instance, persons with disabilities) have adequate access to appropriate skills development and employment;
- implementing the primary responsibility for education and pre-employment training of youth and for training the unemployed;
- setting up and providing support to national, regional and sectoral tripartite skills committees responsible for leading and monitoring skills development;
- investing in sound and dynamic education, research and skills training systems that provide basic education, core skills and facilitate lifelong learning for all;
- providing positive measures to stimulate public and private investment and participation in training;
- setting up national skills recognition systems enabling the training and educational institutions to recognize prior learning and workplace experience to assist entry into vocational and higher education and employment;
- ensuring that skills recognition systems enable workers to shift more easily to new jobs, both inside the enterprise and to other occupations and industries;
- ensuring the availability of retraining and skills upgrading facilities by governments or employers and encouraging commitment by workers to lifelong learning by using these opportunities;
- investing in worker retraining and upgrading programmes to ensure that workers are able to upgrade existing competencies and acquire new ones;
- ensuring the provision of vocational, labour market and career information, guidance and employment counselling, supplemented by information on the rights and obligations of all concerned under labour-related laws and other forms of labour regulation;
- implementing social protection measures, in combination with active labour market policies, to provide temporary support to workers affected by dislocation and restructuring;
- stimulating cooperation and networking between educational institutions and companies; and
- providing employment services, including access to timely labour market information, career guidance and job placement services.

In line with the resolution concerning human resources training and development, government should establish a framework for effective social dialogue and partnerships in training and employment. This should result in a coordinated education and training policy at national level, and long-term strategies which are formulated in consultation with the social partners and are integrated with economic and employment policies. It should also include tripartite, national and sector training arrangements, and provide for a transparent and comprehensive training and labour market information system. In the port sector, Convention No. 137 and Recommendation No. 145 prescribe that public authorities should play a role in training activities. The survey of Convention No. 137 and Recommendation No. 145 "found that the involvement of employers' and workers' organizations in the design, implementation and evaluation of training programmes is widespread" (ILO, 2002, para. 51).

Many governments opt to intervene in order to maintain a socially desirable level of national investment in skills training. In many cases, however, government expenditure alone is insufficient to maintain the desired level of investment in human capital. In order to generate greater private-sector involvement and investment in training, governments apply both incentives and compulsory measures ranging from fiscal and tax incentives to strict national regulations on minimum levels of enterprise training expenditure. Numerous examples are summarized in box 2.3.

Box 2.3. Measures to promote investment in training and development

Paid training leave
The ILO Paid Educational Leave Convention, 1974 (No. 140) was introduced to encourage paid leave for people in employment to undertake education and training. Paid leave is typically co-financed by employers, the State and employees themselves, whose wages while on training are not fully subsidized. A willingness to finance paid leave commonly assumes a relatively long-term commitment on the part of both employers and employees to training.

National training subsidies for industry
Some governments in industrialized countries offer training subsidies to industry with the aim of encouraging training. The most common schemes finance the training of employees at risk of becoming unemployed. Some governments only finance programmes for workers that lead to the acquisition of transferable skills, which employers may be reluctant to finance. A relatively common priority in many countries has been co-financing of apprenticeships. In addition, unemployment insurance funds that receive contributions from beneficiaries, employers and, sometimes, governments have also provided funding for the retraining of employees. Some governments also pursue the target of more equitable access to training (e.g. additional grants for female apprentices) as well as low-cost training loans for smaller firms.

Tax-related incentives for company training
These schemes include deduction of enterprise education and training expenditures from taxable profits and from some other taxes, as well as exemption of expenditures related to building training facilities from property and land taxes. Other incentives include exemption of enterprise training activities from VAT.

Compulsory requirements for training in companies
Many countries have introduced compulsory arrangements to secure certain levels of enterprise investment in training. These schemes most often rely on company training taxes (levies) such as revenue-generating levies, levy exemptions, levy-grants and training cost reimbursement. Some revenue-generating levy schemes are in the process of partial transformation into mainly levy-exemption mechanisms, which allow companies to retain a proportion of the levy for in-company training. Under many revenue-generating levy schemes, employers have been found to have little influence over the distribution of the tax-based money collected. As a result, funds may be used in ways that do not directly benefit the levy-paying employers. Ideally, employers should manage the levy-financed training institutions or, at least, be represented on their boards. Levy-exemption schemes have strong advantages over other schemes as they leave responsibility for planning and implementation of training with enterprises themselves. In contrast to other levy-based schemes which generate revenues, the government contribution is limited only to the provision of legal and tax arrangements for implementation. Levy-grant schemes use payroll contributions collected from enterprises that are then distributed between them as grants. Administration of levy-grant schemes requires that certain bodies be established (e.g. a national skills development fund that distributes grants). In some low-income developing countries, governments require enterprises to make their compulsory training contributions in kind through, for instance, conducting compulsory training activities, primarily with regard to new workers.

Social partnerships in skills training
Some countries, instead of applying compulsory schemes, succeeded in promoting the concepts of joint governance and social partner responsibility for skills development. Voluntary training funds agreed upon through collective bargaining, without any state intervention, often prove to be successful in attracting government grants and are able to address important human resources issues in the industrial sector in question. Industrial training funds have been used to encourage dialogue between employers and labour unions in the sector and to discourage the poaching of skilled workers. Governments often contribute to these funds.

2.4. Roles and responsibilities of the social partners

The social partners can promote skills development for productive and sustainable enterprise and employment growth in many ways, including, but not limited to:

- engaging in effective social dialogue and collective bargaining on training at the national, sectoral and enterprise levels as a basic principle for the development of skills training, its relevance and quality;
- setting up industry training bodies comprising employers' and workers' representatives and capable of developing and implementing industry skills policies;[17]
- promoting high-performance workplace practices which focus on better skills development and utilization, better organization of work, worker participation and sharing productivity gains as essential elements;
- providing, supporting and promoting workplace learning for employees and recognizing the skills acquired on the job, enabling employees to move freely between jobs and industry sectors;
- providing workplace learning opportunities for young people to facilitate their smooth transition from school to work;
- developing mechanisms to motivate and support workers to invest their time and effort in developing skills, providing a supportive environment and building their confidence;
- fostering a learning culture at the workplace which may include the provision of paid time off for training;
- supporting apprenticeships and upgrading the quality of learning and the recognition of skills acquired by apprentices;
- making workplace training and apprenticeship opportunities equally accessible to all employees;
- sharing information and good practices on corporate social responsibility with respect to skills development;
- developing and participating in the national and/or industry (sector-based) arrangements for skills assessment and certification;[18]
- encouraging public–private partnerships to share investment in training and employability development; and
- ensuring that working conditions satisfy core labour standards and occupational safety and health standards and facilitate productivity and sustainable development.

Trade unions and employer associations may also contribute to training by managing their own training institutions and providing education for their members. In the United Kingdom, for example, state funds are available to support union learning representatives (ULRs) and develop workplace

[17] A key role for industry bodies is to represent the sector's interests before the government and society, deciding on the minimum levels of enterprise investment in skills development, and promoting a training culture.

[18] This should also include recognition of technical and vocational awards issued by other industrial sectors.

partnerships for training and development. In 1998, the Labour Government established a Union Learning Fund to support ULRs, to encourage innovative ways of accessing learning for hard-to-reach groups and to raise interest in training and development among the least skilled workers. By 2008 there were approximately 18,000 ULRs in the United Kingdom, with over £90 million invested in union-led projects between 2000 and 2008 (Hollinrake, Antcliff and Saundry, 2008). Throughout Europe, the social partners are involved in VET policy regardless of whether the prevailing environment for skills development is based on legal regulation (as found in most European countries), voluntary arrangements (as in Ireland and the United Kingdom), or a hybrid of these arrangements (as in the formalized cooperation found in Finland and the Netherlands). The social partners are typically represented and have a formal role in VET policy at the national and sectoral levels, and in many cases also at regional and local (enterprise or establishment) levels (Winterton et al., 2005).

In addition to their role in the formal structures of VET policy-making, the social partners in most European countries are also involved in various activities concerned with the implementation of VET actions, particularly at sector and local levels (e.g. developing curricula and new qualifications, developing on-the-job training and encouraging take-up of learning opportunities) (ibid.). This is a reflection of the preferred "partnership" approach to training and development within the European Union (EU), with the emphasis on joint problem-solving rather than adversarial approaches to industrial relations typically associated with collective bargaining over distributive or "zero-sum" issues such as pay and benefits (Stuart and Wallis, 2007). Nonetheless, collective bargaining can set appropriate conditions for the organization and implementation of training, especially at the sector and enterprise levels. As outlined in the 2002 ILO resolution concerning human resources training and development, such collective bargaining could encompass issues such as:

- skills required by the enterprise and the economy;
- training necessary for workers;
- assessment of basic skills and skills gained either in the workplace or during individual or associative activities;
- development of career paths for workers;
- personal training and development plans for workers;
- paid or unpaid leave for training;
- facilities needed to allow the maximum benefits from training; and
- recognition and reward schemes, including remuneration structuring.

Table 2.1 summarizes the role of trade unions and industrial agreements in shaping VET in Australia and Germany. In general, trade unions help to integrate VET with the labour market because they negotiate pay and career structures based on training and qualifications. In Germany, unions have a much stronger institutionalized role in developing qualifications and overseeing the quality of training, from the national/industry level to the firm. Whereas the German system is based on codetermination rights and a universal system of occupational regulation, in Australia training has been "uncoupled" from the system of industrial awards (collective agreements) following the introduction of enterprise-based agreements in the early 1990s (Brown, 2006). This can lead to training being seen as an industrial issue for union negotiators and a "benefit" for union members, rather than a socio-economic issue for government and the social partners and a "right" for all workers.

Table 2.1. Union involvement in VET, Australia and Germany

Role of trade unions and industrial agreements	Australia	Germany
Content of initial VET (i.e. apprenticeships and traineeships)	Developed by state training boards. Formal input sought from unions	Developed by the Federal Institute for Occupational Training (BiBB). Formal consultation process to include unions. Overseen by board including union representation
Monitoring and implementation of initial VET	Responsibility of state training bodies	Local committees established by chambers of commerce and industry, comprising equal numbers of employer, union and teacher-trainer representatives to conduct examinations and monitor quality
Content of further vocational training	VET qualifications determined and reviewed by Industry Skills Councils (ISC) at federal level. Unions have representation on ISC boards ranging from 1 out of 6 to 3 out of 5	Same process as for initial VET (see above)
Wages and conditions for apprentices and trainees	Contained in relevant award, enterprise agreement, or individual agreement (AWA, etc)	Contained in collective bargaining agreements negotiated at industry level, may be amended by Works Councils
Conditions relating to training for existing workers (e.g. recognition of qualifications, training leave)	As for wages and conditions of apprentices and trainees (see above). No industry with paid training leave but some reimbursement of training costs	As for wages and conditions of apprentices and trainees (see above). Some industries, mainly in manufacturing, have paid training leave as well as employer reimbursement of training costs
Recognition of qualifications in classification structures	Apprenticeships and degree qualifications for professions recognized, but many traineeships and VETqualifications not recognized	Collective agreements generally recognize all apprenticeships and advanced training (Meister)

Source: Oliver, 2010.

Box 2.4 offers an example of training provisions in an enterprise-based agreement. Under the terms of the collective agreement between Patrick Terminals and the Maritime Union of Australia (MUA), management undertakes a formal review of training plans every six months (clause 7.1d) and individual performance appraisal is used as the basis for additional training where areas for improvement are identified (clause 11.2). More detailed provisions are contained in Clause 13 of the Agreement, as shown in box 2.4.

Although some member States have not ratified cross-sector Conventions on human resources development or sector-specific Conventions for ports, they nonetheless meet or exceed the minimum standards expected by the ILO. Belgium, which has not ratified Conventions Nos. 142 or 137, is a case in point. The Port of Antwerp has an extensive training programme for dockworkers, and "state-of-the-art" training facilities under the joint management of the social partners. Under the Belgian port law of 1972, workers must be recognized as "dockers" before they can work in the "port area" (as legally defined), which initially involves an intensive three-week training course at a purpose-built training centre (Opleidingscentrum voor Havenarbeiders, OCHA) which is financed and managed

Box 2.4. Collective Agreement between Patrick Terminals and the Maritime Union of Australia (MUA)

13. Training

13.1. Where the Company requires an employee to obtain a licence, trades certificate or other qualification, the Company shall pay the normal costs of such licence, trades certificate or qualification.

13.2. The Company may appoint either management or external workplace assessors.

13.3. All employees shall be available to undertake and complete any training and subsequent testing as required by the Company and to train other persons when required by the Company. All training will take place in accordance with operational requirements as determined by the Company and the Company shall, for all training, have the right to determine who is trained. Training (either trainee or trainer) performed by Company personnel as part of normal salaried/remuneration arrangements will not attract any additional payment. Training hours shall be treated as worked hours for purposes of rostering.

13.4. Training will be provided as determined by the Company and may include external trainers. Employees may elect to attend additional training courses conducted by an external organisation during "out of hours" periods or through the taking of accrued leave entitlements as approved by the Company.

13.5. The intent of Patrick is to enable each employee to contribute in accordance with operational requirements towards the improved efficiency, safety, reliability and competitiveness of the Company's operations and to realise their career potential, consistent with operational requirements.

13.6. Patrick will provide vocational training for employees that is consistent with the relevant Industry Training Package and will continue to develop and deploy other training in accordance with operational requirements.

13.7. Competency based training and education, including related processes such as the use of standards and assessment may be utilised for a variety of purposes, including selection and recruitment, entry level training, skill enhancement, skill refreshment or re-assessment, promotional opportunities and the formal recognition of skills previously obtained but not recognised for new and existing employees.

13.8. Competency based training involves both structured training and practical work experience to obtain full competency and proficiency and may be delivered in the classroom or on the job, or through a combination of both. The Company may, at its discretion, develop or maintain qualified workplace trainers and assessors.

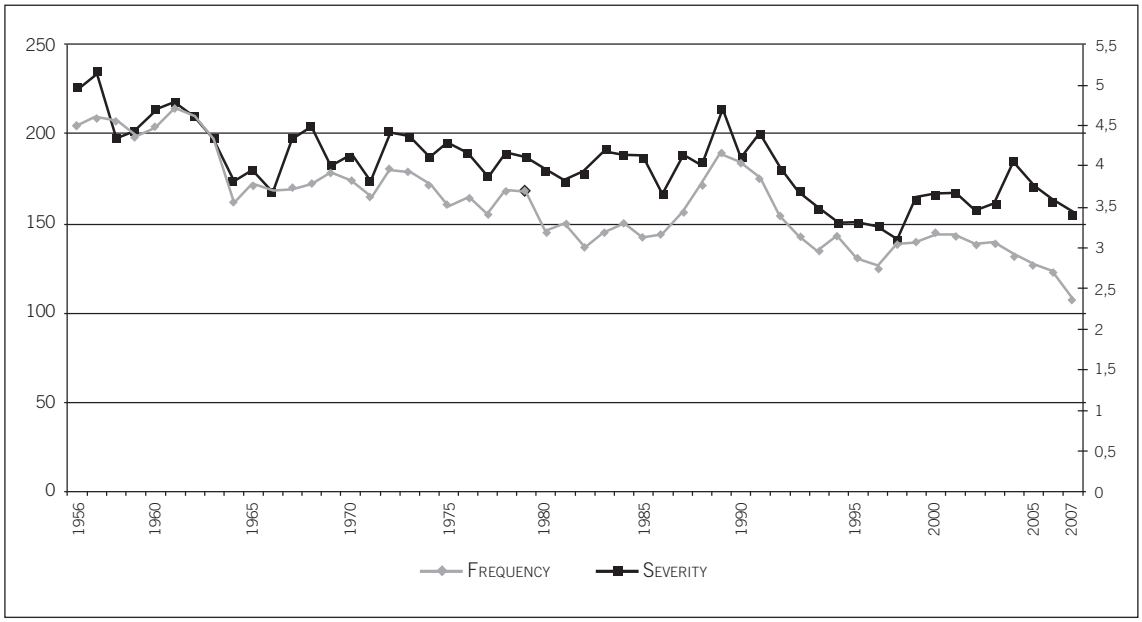
13.9. As part of their normal duties, experienced employees may be required to assist in the training of others by monitoring and coaching their work during the gaining of practical experience. The Company may utilise external registered training organisations and/or qualified training personnel as required.

13.10. Vocational training and education may be offered to employees as part of a formal training plan determined by the Company relative to operational requirements or on application by an employee. In determining access to workplace training the Company will have regard to the provisions of sub-clause 13.5 and the principles of fairness and equity. In all cases, the Company shall have the right to determine who is trained and to what extent.

13.11. Employees who consider they have been unfairly denied access to training can apply to have the decision reviewed in accordance with the provisions of the Personal Grievance Procedure set out in Schedule 3 of this Agreement.

by the port employers' association (Centrale des Employeurs au Port d'Anvers, CEPA) to the tune of €5–6 million per annum.[19] OCHA began operations in 1980 with general induction training, which has since been extended to cover engine drivers, tally clerks, signalmen and lashers, straddle-carrier drivers and gantry crane drivers. Training courses in handling dangerous goods were introduced in 1994 alongside "back-to-school" training for existing dockworkers who need to be brought up to date with new cargoes, new cargo handling methods and any new health and safety procedures or risks from these new cargoes or handling methods. By engaging in social dialogue on training as a basic principle for the development of skills training, Antwerp has become a safer place to work, as illustrated in figure 2.1, and one of the most efficient ports in Europe (Barton and Turnbull, 2002).

Figure 2.1. Accidents in the Port of Antwerp, 1957–2007



Note: "Frequency" is measured on the left hand (vertical) axis and "Severity" (LTIF) on the right hand (vertical) axis

By sharing the benefits of productivity gains, the social partners in the port of Antwerp have created a virtuous circle of efficiency, growth and decent work. The port has an enviable record on industrial relations (Turnbull and Sapsford, 2001) because, in the words of the President of CEPA, "A key feature of the port is management by consensus – everybody has a voice" (quoted in Turnbull, 2006, p. 28). Training is generally regarded as a "win-win" issue for the social partners as skills development can contribute in many positive ways to the interests of all parties. Even in countries without the institutions or culture of social dialogue as found in the port of Antwerp, training creates opportunities for the social partners to engage in meaningful discussions on the professional status and welfare of port workers, protecting and promoting health and safety, securing the greatest possible social and economic advantages from advanced methods of cargo handling, improving the efficiency of port operations and the quality of service to port clients, protecting the environment and promoting sustainable jobs.

[19] There is a 5–10 per cent subsidy from the Flemish Labour Office and dockworkers are entitled to unemployment benefits borne by the National Labour Office during periods of training.

3. Competency-based approaches to training

3.1. Introduction

This chapter explores the generic dimensions of competency-based approaches to training and development, with examples from the maritime and ports industries. In everyday language, if an individual is "competent", then he or she can adequately perform the task or job in question, although not necessarily demonstrating any particular expertise in executing that role (Winterton et al., 2005). As a result, a distinction is often made between "being competent" (i.e. meeting the job demands) and "having competencies" (possessing the necessary attributes to perform competently) (Burgoyne, 1988),[20] which in turn gives rise to very different approaches to developing competence.

A "work-process oriented" approach takes work as the starting point by identifying work activities that are central to a particular job role and then identifies the personal attributes required to achieve appropriate outcomes. A "worker-oriented approach", in contrast, defines competence in terms of the attributes possessed by workers, typically represented as knowledge, skills and attitudes (KSA) as well as various personal traits required for effective work performance (Sandberg, 2000, p. 49). Both approaches have their merits, and limitations, leading to "multi-method oriented" approaches (consistent with the multi-dimensional model summarized in table 1.1) that involve aligning personal attributes with work activities to create a more comprehensive framework for training and development.

The multi-dimensional or holistic approach to competence is gaining ground over narrow approaches, and the public authorities and social partners in many countries are developing more integrated approaches along these lines (Winterton et al., 2005, p. 40; Engle et al., 2001). A unified typology of competency is therefore presented before we define "who is a competent person" and "what is a competence". This is part of a broader discussion of competency standards that are used to design education and training curricula and qualifications. These standards identify key roles, which are then broken down into a number of "units of competence" 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). Both generic and port-sector specific examples are provided in this chapter.

Competency-based training is often developed within a national qualifications framework (NQF) which provides a mechanism for the recognition of learning outcomes and for linking education and training to the labour market. The NQF includes the institutional arrangements, regulations and processes relating to the quality assurance of qualifications, their assessment, and the qualification awarding process.[21] Nationally recognized qualifications also play a role in linking organizational strategy with individual learning needs; they are used more widely in the management and development of organ-

[20] A distinction is often made between "output competencies" (being competent) and "input competencies" (having competencies).

[21] A "qualification" typically means a formal outcome of an assessment when a competent body determines that an individual has achieved a certain level of knowledge and skills and their application to a given standard. Competency-based qualifications are fundamentally a statement that a person is qualified to work in the particular field in question.

izations and individuals (e.g. for job design, recruitment, individual and team development, career planning and appraisal). The portability of qualifications (i.e. their recognition by employers in different sectors of the economy) is crucial for workers, both in terms of their willingness to invest in training and their mobility in the (external) labour market.

In general, where VET systems have sought to (re)structure their outcomes according to employer demand, the competency-based approach has been favoured by policy-makers. With greater use of technology, there has been an increasing demand for knowledge of the work process – to "understand" and not simply "perform" – as well as an ability to deal with risks and contingencies. Not surprisingly, employers have placed much greater emphasis on "soft" (interactive) as opposed to "hard" (technical) skills, most notably problem-solving, independent decision-making and the ability to communicate with co-workers. These skills – typically designated as "employability skills" – can be incorporated into a competency-based approach, which can also accommodate the greater flexibility needed in a world where innovation cycles are shorter and the emphasis shifts from initial VET to lifelong learning.

The United Kingdom was one of the first countries to develop a VET framework based primarily on competency-based outcomes and is therefore taken as an example of national vocational qualifications. The United Kingdom's system of national occupational standards describe good practice – what is required in the workplace rather than what people are like – with the emphasis on functional competence and the ability to demonstrate performance to the required standards of employment in a particular work context (Winterton et al., 2005, p. 28; Knasel and Meed, 1994). Many UK employers, however, have adopted a multi-dimensional as opposed to a functional–behavioural model of competence (see table 1.1), and this approach is certainly preferred by trade unions.

In effect, there are two parallel views of competence: a narrow view where "competent people" are those who follow rules and procedures without question (competence means compliance); and a broader view that emphasizes flexibility, adaptability and the need for individuals to take more responsibility. The former view has typically been applied to "routine jobs" and the latter to "responsible jobs" (Mansfield, 2004, p. 303). In our discussion of how competency units are developed and packaged into qualifications it is important to remember that labour is not a commodity – workers want decent jobs and the opportunity to undertake increasingly more challenging tasks throughout their careers. In the modern-day transport industry, port work is increasingly "responsible work".

3.2. Multi-dimensional competence

The holistic approach to competence, combining knowledge, skills and attitudes (Gonczi, 1994), embraces four dimensions, is depicted in figure 3.1. Cognitive, functional and social competencies are widely acknowledged and these categories are consistent with the long-standing KSA approach of the training profession derived from Bloom's taxonomy of learning.[22] Meta-competence, in contrast, is rather different; it is concerned with an individual's knowledge of his or her own intellectual strengths and weaknesses, how to apply skills and knowledge in various task situations, and how to acquire missing competencies (Nelson and Narens, 1990). Thus, meta-competencies typically include "learning how to learn" (Nuthall, 1999; Nyhan, 1991) and "coping with uncertainty" (i.e. being able to adapt, anticipate and create, see Brown, 1994).

[22] Benjamin Bloom (1956) identified three domains of educational learning that have been widely used and developed over the years. 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). 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). 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).

Figure 3.1. Unified typology of competence

	Occupational	Personal
Conceptual	cognitive competence (knowledge)	meta-competence (facilitating learning)
Operational	functional competence (skills)	social competences (attitudes and behaviours)

Source: Winterton et al., 2005, p. 40.

Meta-competencies are concerned with facilitating the acquisition of other substantive competencies and are therefore central to an effective system of VET. As workers typically identify with their occupation, vocation or profession (rather than their competencies), they generally expect, and certainly desire, a degree of occupational security, which not only creates a sense of identity but also community (Standing, 1999). Institutionally, occupational security must be supported by a flexible system of career-learning, as well as frameworks for standards, regulation and forms of income protection. The competencies required of an occupation such as port work are usually described in multi-dimensional terms because in practice, as opposed to analytically (as depicted in figure 3.1.) people must have underlying knowledge *and* functional skills *and* appropriate social behaviour if they are to be effective and satisfied at work (Winterton et al., 2005, p. 41).

Intellectual capabilities are evidently required to develop knowledge, although knowledge is not simply the result of intelligence (capacity to learn) as the interaction with situation (opportunity to learn) is also important. Knowledge therefore includes underlying theory and concepts in addition to tacit 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" (Proctor and Dutta, 1995, p. 18). The ability to operationalize knowledge and develop skills is a prerequisite to developing competence, along with other social and attitudinal factors (Winterton et al., 2005, p. 17). In this respect, ability, knowledge, understanding, skill, experience and motivation are all factors affecting the development of competence and will all influence an individual's degree of competence.[23] So who is a competent person and what is a competence?

3.3. Defining competence and competent workers

"Competence" is usually defined as a combination of knowledge, skills and attitudes (KSA) and their application according to workplace standards. 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 per-

[23] These factors should not be regarded as *dimensions* of competence – to reiterate, they are factors affecting the *development* of competence. For example, someone may be competent but not motivated, or motivated and not competent.

formance are expected (e.g. precision, speed, quality) along with compliance with industry codes, regulations and procedures (e.g. security and safety requirements).[24] These performance criteria are usually allied to a "range statement" that specifies, inter alia, 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 or 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 (ILO, 2006c).

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, 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 principle, for each task, job, and occupation a competency standard can be developed that describes the minimum requirements. These standards provide the basis for:

- development of skills and supervisory training programmes according to standards of competency required by the workplace;
- continuing training and skills upgrading from lower to higher levels (resulting in more advanced qualifications) and from narrower to broader scope of workplace performance;
- improved skills assessment, certification and recognition of skills acquired on the job;
- recognition of competencies/qualifications within and across industries;
- improved matching between job requirements (job profiles) and the capabilities of the labour force; and
- assessment and elimination of any skills gaps within the workforce for the purpose of safety and productivity improvement.

As it is not practical to develop competency standards for each individual workplace, national competency standards usually try to capture the principal workplace performance requirements across an entire industry or several related industries. These national standards can then be adjusted to the requirements of the individual enterprise and/or establishment. A fairly typical approach is to combine generic (compulsory) and more specific (optional) competency units. For example, forklift truck drivers are employed in a variety of industries and there are generic competencies involved in this task. Driving a forklift truck safely and efficiently in a port will require more specific competencies (e.g. stuffing cargo in a container, working in a ship's hold, handling empty containers, etc).

[24] 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 in March 2004 (see box 2.1).

Table 3.1. Generic structure of a unit of competency (UoC)

Unit title and descriptor	The *unit title* is a succinct 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, or function (e.g. record weight) associated with the unit.
Industry-specific competencies performance criteria	These are 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. For instance, for harbour masters in the United Kingdom it involves the following knowledge areas: "Maritime and Aviation Security Act", "collision regulations", "international and European environmental legislation" (PSS, 2004). For marine pilots in the United Kingdom, such areas of knowledge involve "cargo types and precautions", "bridge procedures" and "means of communication" (PSS, 2000).
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 execution skills, task management skills, and contingency management skills in a specific workplace. For instance, in the port sector such competencies may involve: "Locking out and preparing the pendant overhead crane, conducting routine inspections on the pendant overhead crane, maintaining and repairing the crane controls, etc." The *job-specific* knowledge areas will also vary across occupations. For harbour masters in the United Kingdom, this involves: "limits and areas of jurisdiction for harbour masters", "dredging application procedures and methods", "disposal at sea" and "emergency procedures" (PSS, 2004). For marine pilots in the United Kingdom, such knowledge areas involve "anchorages: names, locations, depths of water, and limitations" and "methods of discharge at ports" (PSS, 2000).
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. General literacy and numeracy skills may be added if they are critical prerequisites for undertaking the work.
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 meanings 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).

The combination of compulsory (core) and optional (elective) competency units provides employers with flexibility (packaging units of competency to meet workplace requirements) and access to a larger pool of labour (e.g. workers from other industries who might only need to be trained in several elective competency units in order to perform the job). This approach also offers benefits to workers, most notably by providing a degree of occupational security as core competencies are recognized within and across industries. These positive outcomes are more likely if competency standards are developed through extensive consultation between government and the social partners, as well as skills development professionals and education and training institutions.

In order to demonstrate how competency standards can be expressed in a way that can be clearly understood by all parties, table 3.1 describes the main elements of a "generic structure" for a unit of competency, with examples from the maritime and port sectors.

3.4. National qualifications frameworks (NQF)

A national qualifications framework (NQF) 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 (Tuck, 2007; see also Allais et al., 2009a, 2009b). 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, NQFs allow qualifications to be related to each other and placed at different levels. Thus, people may have different *breadth* of acquired competencies (more or fewer competencies at the same level) and different *levels* of acquired knowledge and skills and their application in the workplace. When qualifications are recognized through a formal assessment process, resulting in awards (qualifications) at different levels (e.g. certificates, diplomas), then the NQF will offer benefits to both learners and employers:

Benefits to learners

- *Progression*. Frameworks can make it clearer to the learner how they can progress through the qualifications system by mapping out how the qualifications link up, facilitating progression and supporting lifelong learning. Frameworks can also make it easier to move flexibly between further education and higher education.

- *Recognition of prior learning*. Qualifications on a framework are specified in terms of agreed levels of competencies, which makes it possible for individuals to attain a certain level through informal learning as well as formal qualifications. It can allow existing skills to be recognized by employers, enabling individuals with informal training to market their skills more widely. It can also allow learners who already have skills to progress to higher levels of qualification, saving both time and resources.

- *Mobility within and between occupational and industrial sectors*. Frameworks provide a basis for comparison and recognition throughout the area they cover, and make learners employable across different regions, and within and across different sectors.

- *International mobility.* An NQF makes qualifications more transparent, enabling comparison of any given qualification with an international equivalent. It therefore provides the basis for international recognition and can increase the mobility of labour.

Benefits to employers

- *Labour mobility*. Frameworks ensure that qualifications can be widely recognized and understood. They make it easier for employers to see if a potential employee has the skills they require. Comparable qualifications and recognition of prior learning can also provide a greater pool of qualified workers, who can respond to employment opportunities within and across regions and sectors.

- *Employers are involved in standard setting*. This gives them an opportunity to influence the types of skills that are required in the framework, and to ensure that training meets the skills needs of industry and the nation (Collett, 2008).

Designing an NQF involves more than agreeing on a set of technical features (a hierarchy of levels of learning). It is about creating a platform for cross-institutional and cross-sectoral dialogue and – eventually – mutual trust.[25] For instance, the creation of an NQF does not itself improve progression for individuals – it is the social partners, the learning providers and the qualifications agencies that make the benefits of an NQF available to individuals. The most important contribution of the NQF may thus be to strengthen mutual trust by promoting dialogue and coordination between the partners in the qualifications system (Bjornavold and Coles, 2010, p. 15).

The process of developing a framework of qualifications must take into account the need to foster trust between the various stakeholders so that they can have confidence in the integrity of the resultant framework. For example, the starting point in deciding on the number of levels must be the current understanding among stakeholders about key qualifications and their relationship to each other. An NQF is unlikely to be accepted or even understood by citizens if it does not correspond to "common sense", certainly in respect of the most significant qualifications. It is vital, therefore, to identify the stakeholders and advance consensus-building mechanisms in framework development through (social) dialogue (Tuck, 2007).

The importance of social dialogue, and the involvement of a range of different stakeholders, was highlighted in a recent ILO study of 16 countries that had introduced a NQF (Allais, 2010).[26] However, the weakness of trade unions in many countries proved to be a major concern, leading to the conclusion that: "If employees' interests are going to be addressed in NQFs or other education and training policies, clearly there needs to be more public concern for building and supporting the involvement of trade unions" (ibid. p. 4). The involvement of employers was also a matter of concern in many countries. In fact, nearly all 16 case studies suggested that the lack of employer involvement in the existing systems was a key reason why qualifications did not meet their needs. In many countries, one reason for the introduction of a NQF was a lack of willingness on the part of employers to participate in education and training systems. Many of the countries in the study had attempted to implement competency-based training prior to the introduction of a qualifications framework, often with considerable donor support. Except for one instance where the NQF was described as being created on the basis of a previously successful competency-based training reform, in most instances it was hoped that an NQF would solve the problems that previous reforms had not been able to overcome (ibid.).

---

[25] Developing the framework itself may be a relatively quick exercise. However, it can take a substantially longer time to build other supporting elements, most notably trust and credibility. An NQF may take more than a decade to take root in society and achieve its objectives. See Tuck (2007).

[26] The research involved five "early starter" qualifications frameworks (Australia, England, New Zealand, Scotland and South Africa); two countries that started work on the development of labour competence frameworks in the late 1990s, even though they do not yet have NQFs per se (Chile and Mexico); three "second generation" NQFs (Botswana, Malaysia, and Mauritius); and six of the most recent cases where countries have sought to develop a NQF (Bangladesh, Lithuania, Russian Federation, Sri Lanka, Tunisia and Turkey).

Ideally, NQFs should:

- offer a certain number of qualification levels regarding knowledge, skills and their application;
- apply clear descriptors for distinguishing between the qualification levels;
- offer a range of qualification types and titles (names) in relation to the different qualification levels; and
- apply a set of regulations for developing qualifications and assign them to levels (i.e. placing them on the NQF's levels).

Education, training and on-the-job experience may lead to different types of learning outcomes or qualifications, some of which are purely educational (for instance, the Secondary School Leaving Certificate) while others are mostly applied/experiential (learning which takes place on the job) such as a trade certificate. However, most learning processes are a combination of theoretical study and practical instruction, which come in different combinations and may result in different types of qualifications and awards. Some awards such as trade certificates may be equally acquired through a structured course in a training institution or mostly through learning on the job and subsequent assessment and certification.

Qualifications resulting from general education are commonly called "general education qualifications" and mostly involve generic competencies as opposed to industry-related skills. Qualifications leading to trade-related skilled jobs are commonly called "vocational" or "technical" qualifications. Those qualifications which require a significant or predominant role for structured educational studies (such as the acquisition and application of theories, concepts) refer to "higher education qualifications" – diplomas or degrees.

Most industrialized countries have a NQF that incorporates all three types of qualifications – general education qualifications, vocational qualifications and higher education qualifications. By specifying the competencies that qualifications of a certain level represent, qualification frameworks facilitate the comparison of qualifications among the different education and training sectors as well as within and between occupations and sectors. However, some countries have focused on the development of a national *vocational* qualifications framework (NVQF), as in Bangladesh, Botswana, Chile, Mexico, Singapore, Sri Lanka and Tunisia (Tuck, 2007, pp. 67–8).

Frameworks can also be regional, spanning a number of different countries. In fact, globalization has put a premium on labour mobility and promoted qualification frameworks that are specifically designed to improve international comparability. The most prominent example is the European Qualifications Framework (EQF), developed by EU Member States to serve as a mechanism enabling comparability between national qualification systems and thereby enhancing transferability and mobility of labour within a true *European* labour market.[27] The descriptors of the EQF are presented in table 3.2 and express:

[27] The EQF was formally adopted in April 2008. In 2004 there were a handful of countries (Australia, France, Ireland, New Zealand, South Africa, United Kingdom) with NQFs, whereas today more than 50 countries around the world have frameworks and at least 20 more countries are considering the decision to develop one. These developments have been stimulated by international organizations, including the OECD, the ILO and the European Training Foundation, promoting NQFs as instruments for the modernization of education and training systems and emphasizing their potential for facilitating lifelong learning. European NQF developments are currently particularly strong (see Bjornavold and Coles, 2010). There are also regional qualification frameworks in the Caribbean (the Caribbean Community CARICOM qualifications framework) and Southern Africa (in June 2005 the Southern African Development Community Integrated Council of Ministers approved the development of a Southern African Qualifications Framework) while under the Association of Southeast Asian Nations (ASEAN) Australia Development Cooperation Program, the Enhancing Skills Recognition Systems in the ASEAN project has been designed to assist ASEAN countries to keep their skills recognition arrangements under review in order to meet emerging industry and employment needs across the region. The Pacific Islands countries are developing a unified register, Pacific Regional Qualifications Register, with the longer-term aim of expanding it to a qualifications framework, and a transnational framework is being developed for small (by population) Commonwealth countries. The latter is defined as a "translation instrument" and includes higher education and post-secondary technical and vocational qualifications (see Allais, 2010, pp.18–19).

- *knowledge*, which can be either theoretical or factual;
- *skills*, which can be either cognitive (the use of logical, intuitive and creative thinking) or practical (manual dexterity and use of methods, materials, tools and instruments); and
- *workplace situation requirements*, involving certain levels of responsibility and autonomy in the workplace.

Of the eight qualification levels presented in table 3.2, one is "pre-vocational" (Level 1). There are three "vocational" levels (2–4), while the four remaining levels (5–8) are "higher education" awards. Levels 1–4 constitute the European Vocational Qualifications Framework (VQF) while levels 5–8 constitute the European Framework for Higher Education Qualifications (FHEQ). These two frameworks are designed to be complementary; however, as the higher education (HE) qualifications are mostly broad knowledge-based, the transfer from vocational Level 4 (high-skilled trade worker) to HE Level 5 (commonly the level of technician/associate professional) is not always straightforward and requires very different education and training programmes.[28]

The EQF is a voluntary framework which sets comparable standards for qualifications across Europe, but leaves the interpretation and implementation of these standards to the national authorities. It facilitates consistent standards and quality by providing a common terminology for qualifications and reference levels that describe learning outcomes, which helps European employers and education providers peg specific qualifications against a European benchmark. While some EU Member States have reservations about the benefits of the EQF and developing their own NQF,[29] which in many respects reflects the "stage of development" of the country in question (as described in box 3.1), in general terms and in most national settings it is probably reasonable to expect benefits in some or all of the following ten areas (Bjornavold and Coles, 2010, pp. 15–23):

- increased consistency of qualifications
- better transparency for individuals and employers
- increased recognition and value of single qualifications
- recognition of a broader range of learning forms
- a national/external reference point for qualifications standards
- clarification of learning pathways and progression
- increased portability of qualifications
- acting as a platform for stakeholders for strengthening cooperation and commitment
- greater coherence of national reform policies
- a stronger basis for international cooperation, understanding and comparison

[28] A common feature of qualifications frameworks is the lack of equivalence between qualifications issued in the general education, VET and HE sectors, as these qualifications recognize different types of learning outcomes.

[29] Outside the European Union, many of the countries that have adopted an NQF were concerned about poor articulation between qualifications and actual skills needs in the workplace. For example, Ghana, Jamaica, South Africa and Trinidad and Tobago all needed to rectify the poor credibility and quality of existing qualifications and training programmes. See Tuck (2007) and Allais (2010, especially p. 23).

Table 3.2. Qualification levels and their descriptors in the European Qualifications Framework (EQF)

		Outcome statements		
Qualification levels		**Knowledge**	**Skills**	**Workplace situation requirements: The ability to use knowledge and skills in workplace or study situations**
		Described as theoretical and/or factual	Described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and use of methods, materials, tools the of and instruments)	Described in terms of responsibility and autonomy
Level 8	**HE**	Knowledge at the most advanced frontier of a field of work or study and at the interface between fields	The most advanced and specialized skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice	Demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research
Level 7	**HE**	– Highly specialized knowledge, some of which is at the forefront of knowledge in the field of work or study, as the basis for ongoing thinking and/or research – Critical awareness of knowledge issues in a field and at the interface between different fields	Specialized problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	– Manage and transform work or study contexts that are complex, or unpredictable, and that require new trategic approaches – Take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
Level 6	**HE**	Advanced knowledge of a field of work or study, involving a critical understanding of theories	Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialized field of work or study	– Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts – Take responsibility for managing professional development of individuals and groups

Table 3.2. Qualification levels and their descriptors in the European Qualifications Framework (EQF) *(Continued)*

	Outcome statements		
Qualification levels	**Knowledge**	**Skills**	**Workplace situation requirements: The ability to use knowledge and skills in workplace or study situations**
Level 5 HE	Comprehensive, , specialized factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	A comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems	– Exercise management and supervision in contexts of work or study activities where there is unpredictable change – Review and develop performance of self and others
Level 4 Vocational	Factual and theoretical knowledge in broad contexts within a field of work or study	A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	– Exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change – Supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities
Level 3 Vocational	Knowledge of facts principles , processes and general concepts in a field of work or study	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information	– Take responsibility for completion of tasks in work or study – Adapt own behaviour to circumstances in solving problems
Level 2 Vocational	Basic factual knowledge of a field of work or study	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools	Work or study under supervision with some autonomy
Level 1 Pre-vocationa	Basic general knowledge	Basic skills required to carry out simple tasks	Work or study under direct supervision

Source: Based on The European Qualifications Framework for lifelong learning (EQF), 2008.

Box 3.1. The six-stage process for a national qualifications framework (NQF)

1. The *exploratory stage*, during which there is no agreement yet on whether the country would need a NQF. This stage is used to discuss the pros and cons of an NQF as a policy tool and alternatives (e.g. Norway and the Netherlands, at the time of writing, are pursuing discussions on the advantages and disadvantages of comprehensive NQFs).
2. The *conceptual stage*, during which countries discuss, develop and define the rationale and the main outline of a future framework.
3. The *design stage*, used to design the national framework and to agree between stakeholders on how it should be implemented (e.g. Sweden and Finland have during the last two years moved from the orientation to the conceptual and design phase).
4. The *testing stage*, used to test and develop the tools for implementation and support the operational planning for implementation (e.g. Austria and Germany are close to moving from conceptualization and design to testing).
5. The *implementation stage*, which normally starts with capacity and institution building, populating the framework with qualifications, and is followed by more attention to quality assurance linked to assessment, certification and delivery processes and the coordination, regulation and/or management of the framework, including ensuring sustainable funding and ICT systems (Belgium has now moved towards actual implementation of their framework).
6. The r*eview stage*, to review the progress and impact of the framework, often followed by re-conceptualization, redesign, testing and implementation (e.g. in Ireland a review is nearing completion while in England, Wales and Northern Ireland re-conceptualization of the existing NQF is complete and a new qualifications and credit framework has been launched).

Source: Bjornavold and Coles, 2010, pp. 25–6.

The recent 16-country study of NQFs undertaken by the ILO found that the widespread expectations that qualifications frameworks "can achieve the ambitious policy objectives claimed for them in relatively limited time periods seem to be ill-founded" (Allais, 2010, p. 2). The research suggested that the key factor, in particular for developing countries, is the need for serious consideration of policy priorities as well as the sequencing of policies:

> Countries that have been most successful have been those which have treated the development of frameworks as complementary to improving institutional capability rather than as a substitute for it or as a way of re-shaping institutions, and have seen outcomes of qualifications and programmes leading to them as intimately related rather than separable. Successful use of learning outcomes seems also to be based in strong professional associations and strong educational institutions. *Sectoral approaches for specific industries seemed more viable than attempting to create one system for all education and training and for all industries*. (Allais, 2010, p. 4, emphasis added).

NQFs involve a range of individual qualifications; these are commonly defined on the basis of *learning outcomes* which can be achieved through education and training. This is not inconsistent with qualifications awarded to a person who has acquired the relevant skills through on-the-job experience rather than through a structured education and training course. In any case, a qualification can be awarded only when certain learning outcomes are achieved and confirmed through the relevant assessment.

A national vocational qualifications framework (NVQF) involves different levels which reflect the levels of education and training outcomes achieved. If the descriptors used in defining national qualifications are the same as those used in defining the NVQF levels, then the number of national qualifications is equal to the number of the NVQF levels because they reflect the same learning outcomes. If the number of descriptors of qualifications exceeds the number of descriptors used in defining the levels of NVQF, the number of qualifications may exceed the number of levels. The additional descriptors which are sometimes used in defining the qualifications are:

Table 3.3. Examples of national vocational qualifications, United Kingdom

NVQF levels	National vocational qualifications	Objectives
4	**Level 4 vocational certificates**	– Specialist learning involving detailed analysis of a high level of information and knowledge in an area of work or study – Appropriate for people working in technical and professional jobs, and/or managing and developing others
3	**Level 3 vocational certificates** (e.g. Level 3 Certificate in Aeronautical Engineering)	– Demonstrated ability to gain or apply a range of knowledge, kills and understanding, at a detailed levels – Appropriate for working independently, or (in some cases) supervising and training others in their field of work
2	**Level 2 diplomas** (e.g. Diploma Beauty Specialists) **Level 2 vocational certificates** (e.g. Agricultural Crop Production)	– Demonstrated knowledge and understanding of a subject – Demonstrated ability to perform variety of tasks with some guidance or supervision
1	**Level 1 introductory diplomas** **Level 1 vocational certificates**	– Basic knowledge and skills

Sources: http://www.direct.gov.uk/en/EducationAndLearning and http://www.qca.org.uk.

- the objectives of the training programme (leading directly to the labour market or to a career/further study);
- the duration of training (expressed in notional hours of learning); and/or
- the content of the programme (industry/job specific or more generic).

This may result in different vocational qualifications being placed on the same NVQF levels. For this to happen, the outcomes of different training programmes should be comparable in terms of complexity/depth/breadth of knowledge and skills and their application. This means that if different qualifications share the same NVQF level they are broadly similar in terms of the demands they place on the learner. In the United Kingdom, for instance, Level 2 diplomas and Level 2 vocational certificates are awarded at the same NVQF level, as described in table 3.3.

National qualifications are formal certifications issued by an approved body in recognition that a person has achieved competencies relevant to identified individual, professional, industry or community needs. Individual qualifications require detailed descriptions and guidelines to allow for their identification and to link programmes of learning and the assessment tools to these qualifications. NQF implementation manuals commonly contain such descriptions, which may also describe how they can be acquired (e.g. through a training course or recognition of prior experience) and the notional time taken to gain a qualification, as well as the authority responsible for issuing the qualifications.

Table 3.4 describes features of Australian vocational certificates at four different NVQF levels expressed as the learning outcomes (acquired competencies). Since the competencies, by definition, involve possession of knowledge and skills and their application in the workplace, the NVQF levels and relevant qualifications in Australia are distinguished on the basis of the following major determinants:

- breadth, depth and complexity of knowledge and skills required at the workplace;
- operational knowledge versus theoretical knowledge;
- handling routine/predictable versus unpredictable activities/problems in the workplace; and
- assigned responsibility or autonomy for personal/team outcomes.

Table 3.4. Distinguishing features of learning outcomes related to vocational certificates, Australia

Requirements	Certificate I	Certificate II	Certificate III	Certificate IV
Demonstrate knowledge	Able to demonstrate knowledge by recall in a narrow range of areas	Able to demonstrate basic operational knowledge in a moderate range of areas	Able to demonstrate some relevant theoretical knowledge	Able to demonstrate understanding of a broad knowledge base incorporating some theoretical concepts
Demonstrate skills	Able to demonstrate basic practical skills such as the use of relevant tools	Able to apply a defined range of skills	Able to apply a range of well-developed skills	Able to apply a range of well-developed skills
Coping with complexity of the situation in a workplace	Able to perform a sequence of routine tasks given clear direction	Able to apply known solutions to a limited range of predictable problems	Able to apply known solutions to a variety of predictable problems	Able to apply solutions to a defined range of unpredictable problems
		Able to perform a range of tasks where choice between a limited range of options is required	Able to perform processes that require a range of well-developed skills where some discretion and judgement is requir	Able to identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas
Handling information at work	Able to receive and pass on messages/ information	Able to assess and record information from varied sources	Able to interpret available information, using discretion and judgement	Able to identify, analyse and evaluate information from a variety of sources
Taking certain responsibility and autonomy at work		Able to take limited responsibility for own outputs in work and learning	Able to take responsibility for own outputs in work and learning	Able to take responsibility for own outputs in relation to specified quality standards
			Able to take limited responsibility for the output of others	Able to take limited responsibility for the quantity and qualit of the output of others

Source: based on AQF Advisory Board, 2007.

Industry representatives are commonly involved in the development of national vocational qualifications. It is also common for NVQFs to be driven by the national vocational education and training sectors, to a greater or lesser extent, as these organizations are interested in improving the mobility of vocational graduates within the different pathways for education and training.

Despite the involvement of the social partners and specialist training organizations, national vocational qualifications may not entirely fit the conditions or requirements of individual enterprises and workplaces. As a result, industries sometimes develop and award their own sectoral vocational qualifications which are not always recognized by the government as national awards. The competency standards on which such qualifications are based are industry-specific and may not be relevant to other sectors of the economy. Major employers may also develop their own qualifications which may not be entirely relevant even to other firms in the same industry. In some countries, the social partners and/or leading firms are forced to develop such qualifications because there is no NVQF. In other situations, where companies have very specific organizational and technological requirements, they usually prefer to train mostly on the job and offer their own awards or records of achievement. There are many such examples in the port sector, as described in Chapter 4.

3.5. Developing and packaging competency units

It goes without saying that in drafting competency units care should be taken to avoid any direct or indirect bias or discrimination, to support participation by a diverse workforce, and to encourage successful job outcomes. 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.[30] If standards are developed nationally (through a NVQF), scoping commonly takes account of the industries where similar jobs exist and standards tend to be occupationally based and more generic. Where standards are developed by the industry to meet its particular needs, then scoping should gather information, inter alia, on the following:

- size, diversity and scope of the sector
- geographical area of 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 multi-skilling)
- 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)
- key stakeholders, such as employer associations, industry advisory bodies, trade unions and professional groups
- 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.[31] This analysis involves:

[30] It is critical at this stage to secure agreement and support from industry stakeholders in general and the social partners in particular.

[31] Functional analysis is usually undertaken by the relevant stakeholders with the assistance of a facilitator or external expert.

- job boundary analysis based on the initial scoping and organizational charts
- job process flow analysis to clarify inter-linkages 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
- output analysis to identify measurable outputs for the task/job, which is then used to develop measurable performance

On the basis of results of 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
- the need for generic/employability skills required in the job/industry

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. As a result, each job can be attributed a competency profile against which the competency profile of potential candidates or incumbent job holders can be screened to identify any "skills gap".

As previously described, qualifications are created by combining units of competency (UoC) into groups which meet job roles and are meaningful in the workplace, a process known as "packaging". There are five main models for packaging UoCs, summarized in table 3.5.

The United Kingdom's pathway for "Level 2 – Port Operations" (stevedoring) is an example of a "core and specialization" model (see Annex I). Trainees must complete nine units for the qualification including two mandatory units and then at least two (but no more than three) units from Group A (12 available units), at least one (but no more than two) units from Group B (four available units) and at least two (but no more than four) units from Group C (27 available units), as detailed in Annex I.[32] The Annex also provides details of one of the Group C units.

The Australian system, in contrast, is a fully elective system. Table 3.6 provides the detail of how units of competency must be packed in the Australian port sector.

[32] A guiding principle of the UK system is that while the available units should cover all possibilities, workers do not need to be competent in all tasks (e.g. dockworkers on a Ro/Ro terminal do not need bulk cargo handling skills).

Table 3.5. Models for packaging units of competency (UoCs)

Core-only model	All the UoCs making up a qualification are core units and must be achieved for the qualification. Although this approach provides no flexibility in structure and assumes that all workplaces require exactly the same competency application, it may sometimes be required by industry.
Core and electives model (core of mandatory units and choice from a group of units as electives)	This model is a common qualification packaging approach. The core defines the competencies essential for all workplaces while the electives 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 in the electives.
Core and specialization model	There is a core of essential units but a choice is made from defined *groups of units* – specializations – rather than a choice between individual units. This is a useful model where particular specializations are widely recognized in an industry.
Core, specialization and electives model	This approach tends to be used for larger, more complex qualifications frameworks, covering a wide range of skill areas. It is useful where the qualifications structure accommodates multi-skilling or a range of previously separate occupational specializations.
Electives-only model	This approach is used rarely, as it can result in combinations of competencies that do not reflect realistic workplace outcomes. This specifies only the minimum number of units, drawn from a single overall group aligned to a particular qualification.

Table 3.6. Packaging UoCs for certificate qualifications in the Australian stevedoring industry

	Certificate I	**Certificate II**	**Certificate III**	**Certificate IV**
Total number of UoCs available for packaging into a qualification	14	35	40	28
Total number of units to be accomplished to qualify for the award	7	14	21	28

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

- each qualification resulting from packaging UoCs 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 flexible application of qualifications in different enterprises and industries, enabling them to adjust their specific operational requirements ;
- individual UoCs can be included in more than one qualification;[33]
- units sourced from other qualifications should be used in new qualifications at the same level;[34] and
- the packaged UoC should refer to the titles of national qualifications whenever possible.

In the light of these developments, it is unsurprising that modern-day systems of training and the qualifications available to dockworkers are very different from those of yesteryear. These systems are explored in more detail in Chapter 4, with examples from ports around the world.

[33] This will improve the portability of skills for individuals across a range of workplaces and industries, and also support efficient training delivery.

[34] Caution should be exercised in importing units at higher qualification levels which require more responsibility and autonomy in handling tasks of higher complexity.

4. Training provision in the port sector

4.1. Introduction

Over the years, training *needs* in the port sector have largely been driven by technological developments. Training *provision*, in contrast, has largely been driven by labour market conditions, the organizations of employers, the involvement of trade unions, and the role of the State.

Historically, work on the waterfront was "rarely anything but strenuous, always dirty, often unhealthy, and sometimes decidedly dangerous" (Morrison, 1984, p. viii).[35] Even in the early 1960s, working conditions on the waterfront were reported to be "notorious in all countries" (Jensen, 1964, p. xi).[36] For break-bulk cargo-handling operations, the general assumption was that dock work did not require any prerequisite skills or education, it was "work that any mortal possessed of will and sinew can undertake" (Booth, 1889, p. 16; see also ILO, 2002b, para. 74). Any skills required could be acquired on the job, often within close kinship networks where the father taught his son, the uncle taught his nephew, the neighbour taught his friend.

Under casual systems of employment, employers would typically hire dockworkers only for the duration of the vessel's stay in port, or only for the duration of specific loading and unloading activities. As a result, they had little inclination or incentive to train the workforce. To be sure, they wanted men who were physically fit and capable of performing the work in question, and they recognized the need for some specialist skills for handling certain cargoes or vessels, as well as the importance of cooperation and teamwork within the gang,[37] but employers were usually not prepared to invest in the workers' training under a casual system of employment. If an employer hires a worker today but tomorrow the very same worker is employed by a rival firm, why should he invest in the docker's human capital? In ports where casual employment still prevails, this system of hiring "continues to have a harmful effect on the safety, health and occupational training of dockworkers" (ILO, 2002b, para. 136).

All this changed as technological developments gathered pace in the twentieth century, most notably with the onset of containerization. Although mechanization signalled a shift from labour-intensive to capital-intensive operations on the waterfront, the human element was still the basic, and decisive, factor that determined the speed, quality and cost of cargo handling (Evans, 1969). By the mid- to late-1960s it was widely recognized that "there was no way that casual employment could

[35] John Morrison worked on the Melbourne waterfront in the late 1930s and 1940s. His *Stories of the waterfront* recall the brutal conditions of work at the time, the vagaries of the hiring system, the camaraderie of the men, and the conflicts within the union movement and between the wharfies and their bosses. Many other dockworkers have similar stories to tell, for example: Jack Dash: *Good morning brothers!* (London, Lawrence & Wishart, 1969) (Port of London) and John Campbell: *Corner Kingdom* (Belfast: Lagan Press, 1999) (Port of Belfast).

[36] The conditions that prevailed in the ports of the industrialized world in the 1960s can still be found in many ports in developing countries around the world.

[37] This often led to the hiring of entire (well-established) gangs rather than individual workers.

provide the adequate, responsible and skilled workforce necessary to move cargo through a modern port using advanced equipment" (Couper, 1986, p. 63). This conclusion was reiterated in the 2002 ILO survey of Convention No. 137 and Recommendation No.145, which at several points emphasized that "the use of modern equipment requires the employment of a skilled, trained and responsible workforce. The systematic use of casual labour cannot offer the same guarantees" (ILO, 2002b, para. 137; see also paras. 75, 77, 88 and 113).

Opinions differed on the skill content of container vs. break-bulk operations, with many dockworkers complaining that "stowing containers is only marginally more imaginative than stacking bricks of equal size", whereas the stowage of general cargo "takes the form of a conceptual frame within which the dockworker weaves a fabric of cargo" (Connolly, 1972, p. 560; see also Mills, 1980).[38] To be sure, container work could be repetitive and at times appear "sterile", but it must always be performed with speed, dexterity, precision and delicacy under conditions not so uniform as they may at first appear (Finlay, 1988). "Like musicians playing to the beat of a metronome, longshoremen working modern technology improvise around the tempo of the hook" (Wellmann, 1995, p. 165). Familiarity with the work, and regular employment with the same company, enhances the worker's skill, knowledge and other attributes necessary to do the job, such as the ability to improvise and adapt to changing circumstances. *Ceteris paribus*, dockworkers who are familiar with the equipment, vessels, terminal layout, and standard operating procedures of the company in question record much higher productivity (Dally, 1981, pp. 1–4).

By the turn of the millennium, employers, governments and many influential international agencies proclaimed the port institutional models developed in the early twentieth century to be a "constraint" on the ability of ports to "compete effectively on a service quality basis" (World Bank, 2007, p. 7).[39] During the current era of "commercialization", the objective is "to make the port responsive to the market and thus satisfy client needs" (UNCTAD, 1995, p. 2). By encouraging private-sector investment in ports, governments and international agencies have opened the door to trans-national companies – both shipping lines such as Mærsk/APM Terminals and specialist container terminal operators such as PSA International, Hutchison Port Holdings, DP World and Eurogate – who have developed global networks of port operations. Trade unions have reported that these companies are more likely to regard port work as "skilled" or "professional" work, rather than "general labouring", certainly when compared to public port authorities, local stevedores or the State (Turnbull, 2009).

Given the massive investments made by these global terminal operators (GTOs) it is inevitable that they should invest more heavily in the training and development of portworkers. These companies also spread "best practice" around the world. Mærsk, for example, runs its own dedicated training centre in Svendborg (Denmark) as well as training centres in China, India and the United Kingdom. The latest training programmes offered by the Mærsk Training Centre (MTC) are based on the CraneSIM simulator concept, launched in 2006, which aims to take new drivers from the quayside to crane cabin in five days.[40] Specially converted air-conditioned (40-feet) containers house a full-specification crane simulator and the units, like any container, are transportable to wherever they are

[38] John Connolly was a crane driver in the Port of London before rising through the union hierarchy to become National Docks Secretary of the Transport & General Workers' Union (TGWU) and Chairman of the Dockers' Section of the International Transport Workers' Federation (ITF). Herb Mills was a US West Coast longshoreman. According to Sir James Sexton, although he might be considered by outsiders to be just a casual labourer, the all-round docker of the break-bulk era "required the intelligence of a Cabinet Minister, the mechanical knowledge and resource of a skilled engineer, and, in addition, the agility and quick-wittedness of a ring-tailed monkey" (Sexton, 1936). For a contemporary view on this long-standing debate, see ILO, 2002b, para. 74.

[39] Modern-day port operations favour the "landlord" model of port organization and administration. See, inter alia, ILO (2002b), para..32; Barton and Turnbull, 2002; and Turnbull and Wass, 2007.

[40] This is followed by a ten-day supervised programme in a real crane.

required. Tests have demonstrated that simulator-trained people are safer operators, and data collected by MTC has shown that drivers trained on the CraneSIM programme reach levels of maximum efficiency quicker than those trained by traditional methods. The CraneSIM containers are hired out to terminals around the world for a minimum of three months[41] and MTC will even train the local trainers (which has the benefit of overcoming potential difficulties caused by language, custom or local procedures, as well as establishing a local network of mentors for future training initiatives). In addition to these "hard" (technical) skills, MTC offers courses in "soft" (human) skills such as communications, conflict management, cultural awareness and leadership.

Following a brief historical review of training in the port sector during the periods dominated by casualism, containerization and commercialization, examples of port training provision in a number of ports and countries are explored in the next section to highlight both the diversity of training practices and moves towards competency-based training programmes for dock workers. While commercialization overlays the employment arrangements and agreements negotiated during the process of containerization, and while technological developments in their turn transformed the casual system of hiring in the world's ports, these historical and spatial (r)evolutions are examined in turn for ease of exposition.

The subsequent case studies presented should serve as an invaluable tool for practitioners to broaden their horizons in relation to what is possible, and practicable, in terms of training and development, safety and health, productivity and service quality. To facilitate critical reflection, both in relation to the case studies that are presented in section 4.3 and the reader's own port and country, sufficient detail must be provided on the case in question. At a minimum, this implies attention to the environment for skills development in each country under consideration, the role of social dialogue and the influence of key stakeholders, and the model of training that has been adopted.

4.2. Casualism, containerization and commercialization

The one fact that dominated employment on the waterfront around the world at the turn of the twentieth century was the unpredictability of work. This was perhaps inevitable, given the marked fluctuations in shipping attributable to the business cycle, seasonal trades, and the daily ebb and flow of traffic that was regularly disrupted by "wind and wave". Some labour might be hired for the duration of the vessel's stay in port, others would be hired on a daily or even an hourly basis as the workload dictated. Some workers had more specialist skills that ensured more regular work, while others might be friends with the foreman or hiring boss, although favouritism usually "gave a man an edge over his equals but not over his superiors" (Hill, 1976, p. 23). The work itself was physically demanding, usually dirty and often dangerous. Deaths from industrial accidents at work were all too frequent. Table 4.1 summarizes the data for sickness, injury and deaths in ports in the United Kingdom, collected by the National Dock Labour Board (NDLB) between 1947 and 1967[42] and based on an average for the year in question. These data indicate that, for example, on a "typical" (average) day in 1950, 2,032 registered dockworkers were classified as being sick and therefore unable to attend work, which constituted 2.7 per cent of the total (average) number of men registered as dockworkers during the year. While sickness might be caused by work or unrelated illness (e.g. influenza), "injuries" were caused at work. Separate figures were recorded for absence, whether "excused" (authorized) or "not accounted for" (unauthorized).

[41] Programmes are designed for four drivers per week to graduate from the simulator.

[42] The casual system of employment was abandoned in September 1967 in favour of permanent employment.

Table 4.1. Sickness, injuries and deaths in UK ports, 1947–67

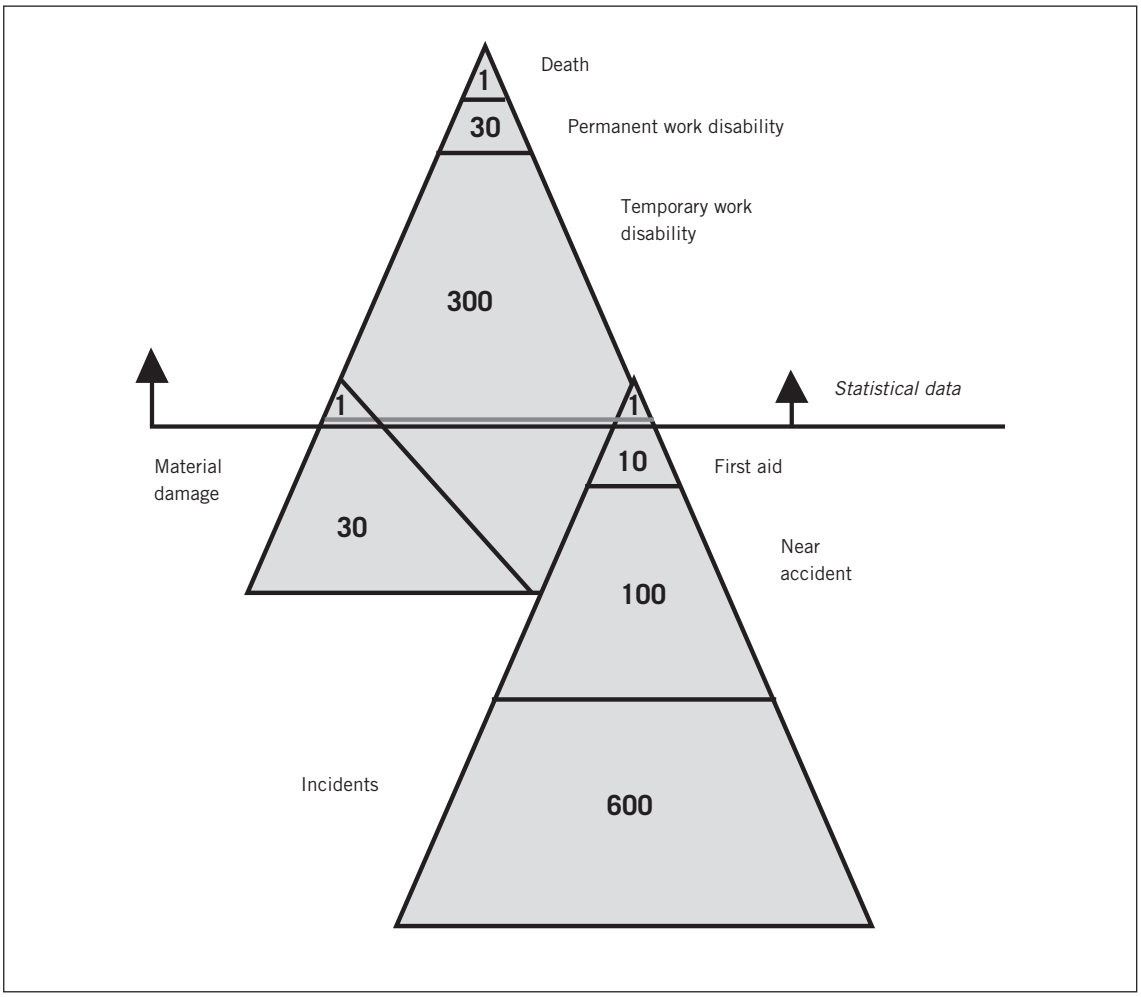
Year	Number of dockers sick (daily average)	% of total workforce sick	Number injured of dockers (daily average)	% of total workforce injured	Deaths from industrial accidents (annual total)
1947	n.a.	-	n.a.	-	23†
1948	n.a.	-	n.a.	-	38
1949	n.a.	-	n.a.	-	22
1950	2 032	2.70	527	0.70	32
1951	2 403	3.00	585	0.73	37
1952	1 963	2.46	526	0.66	30
1953	2 037	2.71	541	0.72	21
1954	2 031	2.71	494	0.66	17
1955	2 065	2.56	508	0.63	33
1956	1 968	2.50	457	0.58	21
1957	1 986	2.59	468	0.61	29
1958	1 905	2.57	437	0.59	23
1959	1 976	2.75	489	0.68	17
1960	2 024	2.79	530	0.73	23
1961	1 885	2.63	487	0.68	12
1962	1 791	2.68	474	0.71	17
1963	1 919	2.97	485	0.75	20
1964	1 794	2.80	526	0.82	15
1965	1 863	2.86	501	0.77	6
1966	1 901	3.04	456	0.73	15
1967*	1 979	3.29	547	0.91	7

Notes: † Second half year only. *37 weeks. n.a. = not available.

Almost every year during the lifetime of the National Dock Labour Scheme (NDLS), around 20 dockworkers lost their lives at work. Between 1947 and 1974 over 500 registered dockworkers in Britain were killed at work. After 1974 the NDLB no longer reported figures for "deaths at work" separately from "all deaths in service".

Research undertaken by the Port of Antwerp reveals that for every death at work there are typically 30 permanent work disabilities and as many as 300 temporary work disabilities. But this is just the "tip of the iceberg", as figure 4.1 clearly illustrates, because statistical data is very rarely available for "near accidents" and "incidents", not to mention "material damage" to cargo and/or equipment.

Figure 4.1. Division of death, disability and damage in the Port of Antwerp, 2009



Source: Belmans, 2009.

Given the special features of casual labour markets on the waterfront – the continuity of irregular demand as vessels come and go, the attachment of both employer and worker to the market, because work is always possible, if not always likely, and the frequency of short-term engagements (Morewedge, 1970) – there have always been specific (protective) measures to guard against insecurity. In all industries, the period from 1945 onwards was characterized by the steady expansion of labour rights and entitlements, which took the form of seven types of security (see table 4.2). On the waterfront, *insecurity* was the order of the day under the casual system of employment, as summarized in the right-hand column of table 4.2.

Table 4.2. Security and insecurity in the port sector

Seven forms of security	Insecurity
Labour market security – adequate employment opportunities through state-supported "full employment" policies.	Unemployment and underemployment caused by excess labour seeking occasional (casual) work, especially during an economic downturn.
Employment security – protection against arbitrary dismissal, regulations on hiring and firing, imposition of costs on employers, etc.	Hiring-and-firing on a daily basis at the "call" or "shape-up", often accompanied by bribery and corruption (e.g. "kickbacks" paid to the hiring foreman/pier boss).
Job security – a niche designed as an occupation or "career", plus tolerance of demarcation practices, barriers to skill dilution, craft boundaries/unionism, etc.	Some "specialist trades" are recognized (e.g. the distinction between stevedoring/ship's hold and dock work/quayside operations) but most workers are classified as "general labourers".
Work security – protection against accidents and illness at work through health and safety regulations, limits on working time, unsocial hours, night work, etc.	Very high accident rates and frequent deaths at work, culture of additional financial compensation for dirty/dangerous work rather than addressing underlying health and safety issues, expectation that dockers will work overtime and/or "work the vessel to a finish".
Skill reproduction security – widespread opportunities to gain and retain skills through apprenticeships, VET, etc.	Informal on-the-job training ("learning by doing" rather than structured/recognized training programmes).
Income security – protection of income through minimum wage machinery, wage indexation, comprehensive social security, progressive taxation, etc.	Fluctuating income arising from casual (irregular) employment, leading to considerable variation over time (weekly wages) and across workers (between those more regularly employed and those only occasionally hired).
Representation security – protection of collective voice in the labour market through independent trade unions and employer associations incorporated economically and politically into the State with the right to strike/lock-out, etc.	Unions find it difficult to organize casual workers (occasional dockers have no long-term attachment to the ports sector or the union), employers are often divided (e.g. shipping lines vs. local stevedoring companies) and industrial relations tend to be "adversarial".

Source: Adapted from Standing, 1997.

As dockworkers faced an extreme form of *insecurity* in each of the seven areas listed in table 4.2, specific regulatory measures or "dock labour schemes" were introduced in many countries around the world. Examples are provided in Annex II. In brief:

- Measures to limit total labour supply (e.g. employment restricted to union members or a state registration scheme to identify *bona fide* dockworkers) were designed to mitigate *labour market insecurity*.
- *Employment* and *job insecurity* might be countered through statutory employment rights, either nationally based or port-specific measures, a union-controlled hiring hall or state-run employment centre, and relevant provisions in collective labour agreements.
- Statutory health and safety legislation might address *work insecurity* and it was not uncommon for collective agreements to place restrictions on "onerous workloads" or unsafe working practices.
- A system of "work or maintenance" would address the issue of *income insecurity* by guaranteeing the dockworker either gainful employment or financial compensation when he was available for work but no job was on offer. This might take the form of "attendance payments" and/or a minimum weekly wage if any earnings (plus attendance pay) fell below an agreed level of subsistence.

- Where dock labour schemes were introduced by the State, as in the United Kingdom, there were often specific provisions for the participation of the social partners, thereby mitigating *representation insecurity*.

Training was to become the principal mechanism to promote *skill reproduction security*, but also played a vital role in *work security* (specifically health and safety training),[43] *job security* (by identifying specific jobs or tasks that required formal, dedicated and more advanced forms of knowledge and skills) and *income security* (higher skills ensured more regular and better remunerated work).[44] In addition, if dockworkers are trained in a wider range of skills, then the total number of workers required to meet daily operating demands can be reduced, as there is less likely to be a "mismatch" between the skills demanded by employers and the skills on offer amongst the workforce, which thereby promotes *labour market security*.[45] This will also reduce the costs of attendance pay and guaranteed wages (*income security*) as these costs are typically levied on the employers' wage bill and/or the cargo, and are often supplemented by state unemployment benefits (see Annex II, right-hand column).

Given the *disincentives* for employers to train dockworkers under a casual system of employment – due to the absence of a long-term relationship whereby the returns on investment in training can be fully recovered – formal (certified) training programmes were rare. The exceptions were found where the state played an active role in the dockland labour market and/or labour was in short supply.

Under the National Dock Labour Scheme (NDLS) 1947, which initially covered 84 British ports, the National Dock Labour Board (NDLB) was responsible for making satisfactory provision for the training and welfare of dockworkers, including port medical services, *in so far as such provision does not exist apart from the Scheme*.[46] In other words, if employers failed to train dockworkers, the NDLB would assume this responsibility.[47] By the late 1960s the NDLB had seven training schools that provided basic, advanced and specialist training as required (the first schools were located in the two major ports of London and Liverpool).[48] Basic training included standard health and safety procedures in the industry. In 1961 the Board reported that "the Schools are having the desired effect of bringing into the docks men with a general knowledge of the industry and some technical ability in safe and efficient methods of cargo handling and the operation of mechanical equipment" (NDLB, 1961, para. 44).[49] Even though the provision of equipment was the responsibility

---

[43] The ILO review (2002b) of Convention No. 137 and Recommendation No. 145 concluded that: "The first argument in favour of training is undoubtedly the reduction in the risk of accidents to which training in safe cargo-handling methods can contribute" (para. 148).

[44] In the mid-1950s, the least skilled dockworkers in the Port of Manchester (England) – locally described as the "drifters" who were only hired to make up a gang when labour was short – would typically earn only half the wage of the most highly skilled dockers. They also endured much greater variation in their pay from one week to the next. In the mid-1960s, the differential between the most highly skilled and least skilled dockworkers in the Port of London was four-to-one (£40 vs. £10) (see Liverpool University, 1954; Devlin, 1965).

[45] It is not uncommon for surplus labour and shortages to coexist in a port on any given day, because some workers may be available for work but do not have the skills required, while employers have work to offer but cannot find labour with the requisite skills.

[46] Dock Workers (Regulation of Employment) Order 1947 (No.1189).

[47] The cost of training, as with the more general costs of running the NDLS, was financed via a levy on the employers' wage bill.

[48] The initiative to establish these schools came from the social partners on the National Joint Council for the Port Transport Industry (NJC). The NJC was also the forum for collective bargaining.

[49] The initial three-week training programme for new recruits was often cut short (or "condensed") into just one to two weeks when there were labour shortages. In Liverpool, for example, where the Training School opened in April 1961, the pre-entry training course was reduced from three weeks to just one week throughout 1963–65 because of labour shortages.

of public port authorities and private employers, the industry still looked to the NDLB for specialist training. The NDLB's view, in contrast, was that specialist workers, such as crane drivers or new equipment operators, should be trained by the employer, especially when these specialist workers were employed on a "weekly" or regular basis by the employer in question.[50]

In Rotterdam, permanent employment was "forced" on the employers as a result of a severe labour shortage during the period of post-World War II reconstruction. By 1952, the number of permanently employed dockworkers in Rotterdam exceeded the number of casual workers and by the mid-1960s over 80 per cent were "regular" men. This encouraged firms to raise the status and invest in the training of their fixed (as opposed to variable) human capital. Vocational training in the Port of Rotterdam was introduced as early as 1949 and the 1962 contract negotiated by the social partners recognized the function of *stuwer* (stevedore) as a skilled profession, which was remunerated accordingly (Nijhof, 2000, p. 419). By the early 1990s there were three port training schools in Rotterdam providing training for all levels of port work. Two schools offered apprenticeship training for young people between the ages of 16 and 24 years, while a third school provided adult training for all categories of port personnel.

As technological developments gathered pace, these trends were reinforced in ports around the world: "paying dockworkers, as in the past, at the same rate as labourers or unskilled workers does not take into account the improvement in the quality of dock labour and the special skills acquired in modern terminals. In other terms, a rise in the level of dockworkers' skills should be matched by an increase in their wages. Observance of this principle is all the more crucial when it is considered that a port's activities and their economic effects depend essentially on these skills" (ILO, 2002b, para. 157).

Containerization had a dramatic effect on workers' knowledge, skills and attitudes. For example, under casual employment arrangements, dockers "saw themselves as servants of the industry rather than of this or that employer" (Connolly, 1972, p. 547), which suited most employers, who were happy to draw on a pool of general labourers as demand dictated. With containerization and the specialization of skills and terminal operating procedures, employers wanted "company men" not "servants of the industry", they wanted skilled professionals, not general labourers, and they wanted consummate cooperation rather than perfunctory consent. Maintaining high levels of efficiency and service quality on a modern-day container terminal requires concentration, consistency, precision and effective communication skills (see Finlay, 1988).

Investment in physical capital must be matched by investment in human capital. Above all, terminal operators need to ensure the reliability of *all* their investments. Accidents, breakdowns or other stoppages can be very costly.

The benefits that flow from a highly-skilled workforce on a container terminal are readily demonstrated. For example, a study of dockworkers' skills in Melbourne and Antwerp undertaken by Patrick Stevedores of Australia, which loaded and unloaded exactly the same vessels as Hessenatie NV in the port of Antwerp, found that Belgian dockers had a knack of anticipating, avoiding and recovering from delays, which maintained the "rhythm" and "integrity" of cargo-handling operations. Moreover, Hessenatie NV achieved much higher crane rates as a result of faster spreader positioning time (i.e. greater precision in locating and locking the crane spreader on top of the container box

[50] By the mid-1960s around a quarter of the registered dock labour force in the United Kingdom was employed on a weekly basis. The remainder were required to report for 11 of the 12 "turns" (8 a.m.–12 noon and 1–5 p.m.) each week (Monday to Saturday).

prior to lifting), which is predominantly a function of the operator's skill and aptitude (*Lloyd's List*, 18 March 1996). On almost any measure, Antwerp is one of the most efficient ports in Europe (Barton and Turnbull, 2002).

Vocational training in the Port of Antwerp started in 1980 and the dedicated port training centre – Opleidingscentrum voor Havenarbeiders (OCHA) – now offers a range of training courses for general dock work, forklift and other engine drivers, lashing, tally clerks, signalmen, straddle carrier drivers and ship-to-shore gantry cranes. To become a straddle carrier driver, for example, workers spend a week in school in the straddle carrier simulator, followed by a two-week practical training course on the site of OCHA in a straddle carrier. Once assigned to a container terminal, straddle drivers must become acquainted with the terminal structure, planning procedures and electronic devices used for sending orders. They must then work for 150 hours on the job with a qualified mentor, during which time they must pass three further driving tests. Table 4.3 provides details of the theoretical and practical training provided by OCHA for different job categories in the Port of Antwerp.

Table 4.3. Training programmes in the Port of Antwerp

Category	Duration (weeks)	Theoretical instruction	Practical instruction
Dockers	3	41.75 hours – Codex (collective agreement), hoisting materials, dangerous goods, handling general cargo, work safety	67 hours – loading and unloading general cargo, handling containers, stuffing and stripping containers
Engine drivers	4	20 hours – stability forklifts, working of engines, safe working with forklifts	125 hours – learning to drive forklifts with different hoisting aids, tug-masters, reach-stacker
Lashing and securing	4	24 hours – forces in the hold of a ship and on a truck, ways of lashing different cargoes	121 hours – lashing different goods in the hold, container, wagon, truck
Signalman	2	10 hours – stability on cranes, crane driver signals	62.50 hours – working with ship pedestal crane, practical knowledge of all the signals
Tally clerk	5	1 week – types of containers, different commodities, damage codes, computer programme	4 weeks – working on the gates, ship, railroad and trucks, practical knowledge of the computer programme
Straddle carrier	4	1 week – stability of straddle carrier, different types of containers, safety rules on the terminal (including simulator training)	3 weeks – two weeks driving at the training centre, one week on the quayside, working together with other straddles and gantry cranes
Gantry crane	6	2 weeks – stability of cranes, influence of the wind (including simulator training)	4 weeks – loading and unloading ships and barges, working with twin spreader, extendable twin spreader and dual hoist spreader

Source: CEPA/OCHA.

The proportion of permanent workers in the Port of Antwerp doubled between 1960 (around 20 per cent) and the early twenty-first century (over 40 per cent). Permanent employment gives operating companies the assurance of a return on their investment in human capital (ongoing training and development in higher-level skills) while also providing access to well-trained general and specialist workers from the labour pool (daily workers hired as required). Technical progress generates an increasingly urgent need for suitably trained personnel able to take on greater responsibilities, which generally implies greater specialization. On the other hand, it often proves necessary to increase flexibility in the use of the available labour, which in one sense implies multi-skilling in terms of jobs and qualifications. As the ILO report on Convention No. 137 and Recommendation No. 145 pointed out, "At first sight, the trend towards multi-skilling may seem the opposite of specialization, but that is not necessarily the case, as the two trends can be combined by giving workers specialized training in different but related fields, which allows them to perform a greater range of tasks. Labour flexibility and the efficiency of the enterprise may therefore benefit substantially" (ILO, 2002b, para. 75). In the Port of Rotterdam, for example, European Combined Terminals (ECT) spent up to 10 per cent of its annual turnover on training to ensure that all its portworkers could undertake up to four different jobs on the container terminal. The company's collective agreement provided for "functional combinations" of two or three jobs to be performed within the same shift. These changes, in conjunction with increasing automation and the phasing out of non-container operations, enabled ECT to reduce wage costs from over 60 per cent of its operating costs in 1996 to just over 50 per cent by 2000.

The costs of running a labour pool are typically shared between employers and the State in most European ports (see Annex II), although most labour pools have been placed on a more commercial footing in recent years as the State cuts back or ends financial support. In Rotterdam, for example, the labour pool was "privatized" in 1995 when the State discontinued financial support (previously it shared the costs of guaranteed wage payments with employers in the port). By 1997, Stichting Samenwerkende Havenbedrijven (SHB), the new labour pool, was losing Fls 1.2 million per month and was effectively bankrupt. Port employers demanded large-scale redundancies, but SHB embarked on a major programme of temporal and functional flexibility. In June 1998, four new shift patterns were introduced (incorporating various combinations of day, evening and night shifts, weekend work, and "on-call" shifts); higher-skilled workers were now required to perform lower-skilled tasks; and new training programmes were introduced to ensure that all pool labour was multi-skilled. As a result, more than 75 per cent of the pool was classified as "multi-functional" by the end of the 1990s compared to less than 20 per cent in the mid 1980s.

The desire to make the workforce more flexible – the "multi-functional" or "multi-task" dockworker – became increasingly common in ports around the world in the 1990s (ILO, 1996, p. 21). This broadening of the scope for the deployment of the workforce was achieved in various ways, most notably by training operators of cargo-handling equipment for a range of vehicles and machinery or even assigning warehouse duties to dockworkers when no ships were available (e.g. in the Port of Singapore). In a survey of port unions affiliated to the ITF undertaken in Spring 1994, almost three-quarters of the unions reported that ongoing port reforms – the privatization of port services, the deregulation of employment (dock labour schemes), the liberalization of competition, and the introduction of more flexible working arrangements – had already resulted, or was likely to result, in increased skill levels of portworkers (Turnbull and Wass, 1995).

Another survey undertaken at the time by the ILO (in conjunction with UNCTAD) focused specifically on human resource management and training in Asian ports. This survey revealed widespread concern about the effectiveness of training conducted so far, despite the fact that all the ports included in the survey had training facilities in place. This was attributed both to the need for new training methods and subjects as well as the fact that some training centres did not have the required

Table 4.4. Training facilities and education programmes in the port sector, 1995 (percentages)

	Global			Europe			South & Central America			South-East Asia		
	Yes	No	n.a.	Yes	No	n.a.	Yes	No	n.a.	Yes	No	n.a.
Are facilities sufficient?	67	23	10	73	16	11	50	50	-	60	25	15
Do educational programmes meet port needs?	59	28	13	68	21	11	37	37	26	60	25	15

Note: n.a. = not available.

Source: ILO, 1996, p. 28.

skills (trainers) to develop new training programmes (ILO, 1996, p. 27). These findings echoed those of an ILO study conducted a decade earlier, which found that all too often "training tasks are peripheral, *ad hoc* and inadequate" (Couper, 1986, p. 114).

On a comparative basis, using data from the more extensive global survey undertaken by the ILO in the mid-1990s (ILO, 1996), it was clear that training facilities were often deficient in South and Central America as well as Asia, at least when compared to ports in Europe, as shown in table 4.4. In many cases, no specific training objectives or policy had been agreed as part of a port human resource development programme. Instead, the objective was simply to provide training and as a result the outcomes of any training undertaken – in terms of productivity, health and safety, work organisation and the like – was often not measured or systematically evaluated.

Having already identified these deficiencies a decade earlier (Couper, 1986), in 1987 the ILO developed a new training strategy called the Portworker Development Programme (PDP) which was targeted specifically at developing countries to help them set up systematic and effective training programmes in order to draw the full benefit of technological progress in the sector.[51] The objective of the PDP is to enable government and port authorities in developing countries to establish training programmes to improve the efficiency of cargo handling, conditions of work, safety and the status and welfare of dockworkers. The PDP training materials are designed as independent, self-contained but interrelated units or modules for interactive (small group, typically 8–12 trainees) instruction under the guidance of a trained instructor. Classroom sessions are fully supported by practical exercises, both indoors and outdoors, and by organized visits to operational and other port facilities. The first 30 modules of the PDP, listed in table 4.5, cover training of personnel in container handling, and have been adopted in almost 50 countries worldwide.[52] The users of PDP are listed in Annex III. The unit introduction to C.4.1, "Safe working on container terminals", is reproduced in Annex IV. As part of its technical assistance programme, the ILO also helps users develop the necessary framework to use the PDP materials properly.

[51] The PDP started with a pilot project in Kenya and the United Republic of Tanzania, financed by the Government of the Netherlands.

[52] The PDP training materials are available in the following languages: Arabic, Bahasa Indonesia, Chinese, English, Greek, Korean, Portuguese, Russian, Spanish and Turkish. Similar training materials for bulk handling operations are currently being developed.

Table 4.5. Titles of PDP units (and unit code)

Course content	Days' training*
Container operations	
Container terminal operations (C.1.1)	
Container ship loading and discharging operations (C.1.2)	
The container terminal quay transfer operation (C.1.3)	
The container yard: the storage operation (C.1.4)	
The container terminal receipt/delivery operation (C.1.5)	
Container freight station operations (C.1.6)	16½
Container ships	
Container ship construction (C.2.1)	
Container ship stowage plans (C.2.2)	
Container securing systems (C.2.3)	
Container ship loading/discharge lists and work-plans (C.2.4)	15
Containers	
Container construction (C.3.1)	
Container numbering and marking (C.3.2)	
Container inspection (C.3.3)	
Packing of goods in containers: 1. Principles and planning (C.3.4)	
Packing of goods in containers: 2. Working practices (C.3.5)	14½
Safety	
Safe working on container terminals (C.4.1)	
Safe working aboard container vessels (C.4.2)	6
Container performance	
The container terminal and international trade (C.6.1)	
Measuring container terminal performance (C.6.2)	
Analysis and review of container terminal performance (C.6.3)	13
Ports: General	
Handling dangerous cargoes in ports (P.3.1)	
Supervisory principles	
The port supervisor: organisational status (S.1.1)	
The port supervisor: tasks and duties (S.1.2)	
The port supervisor: supervisory skills (S.1.3)	
The port supervisor: personal attributes (S.1.4)	12
Supervision of container ship discharge and loading (S.2.1)	
Supervision of the container terminal quay side transfer operation (S.2.2)	
Supervision of container yard operations (S.2.3)	
Supervision of the container terminal receipt/delivery operation (S.2.4)	
Supervision of container freight stations (S.2.5)	15

Note: *Based on programme duration at TPT School of Port Operations.

Source: PDP, available at http://www.ilo.org/public/english/dialogue/sector/sectors/pdp/pdpunits.htm.

Despite these international efforts, it was clear by the mid-1990s that a major problem was "the lack of specific training policies set by management to improve port services and encourage a more client-oriented approach in port operations" (ILO, 1996, p. 27). 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 to signify its central importance to the success of the organization. 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 desired effect or outcomes of the policy;
- *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 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 success of the organization and the need for highly skilled dockworkers. The wording might read as follows:

> [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 sex, age, marital status, disability, race, religion, colour, ethnic or national origin or sexual orientation.

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 dockworkers. 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.[53] Given the importance of health and safety 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 follows:

[53] 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.

[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.

Under a more commercial operating environment, especially one dominated by global terminal operators (GTOs), "best practice" training policies and practices are more rapidly disseminated around the world. These policies and practices not only embrace customer service but also health and safety. APM Terminals, for example, has a programme to systematically share and benchmark progress on safety with other companies in order to extend "best practice" and protect more people in the workplace. The Company's "Safety for Life" programme is designed to improve safety practices throughout its global terminal network, with safety education, training, drills and rigorous measurement all designed to raise focus and awareness and bring positive results to the programme. Based on the broadest measure of workplace safety, APM Terminals saw its lost-time injury frequency (LTIF) rate fall by 42 per cent in 2009 to 4.1 LTIF per million man-hours worked. In absolute terms, injuries declined from 890 recorded in 2006 to 330 reported in 2009, over a period of ongoing expansion of the business.[54]

In the early 1990s, almost a third of the trade unions affiliated to the International Transport Workers' Federation (ITF) who responded to a survey on structural adjustment in the world's ports (Turnbull and Wass, 1995, p. 14) reported that new recruits to the industry did not receive any (formal) basic training when entering the job and only two-thirds of the sample reported specialist training for more experienced workers (e.g. the acquisition of mechanical equipment skills).[55] Today, major GTOs provide extensive training for new recruits. Eurogate, for example, provides basic training on all internal regulations, rights and obligations of the workforce; familiarization with the port area, the organization, terminal equipment and operational practices; general safety training and health and safety related to specific areas/functions; management integrated systems (e.g. UNI EN ISO 9001:2000 and UNI EN ISO 14001); security regulations (ISPS Code); and operational communication systems (VHF, RDTS). Each new recruit receives 40 hours of theoretical training in the classroom and then practical training of varying duration, as indicated in table 4.6.

[54] The "Safety for Life" programme is part of a company-wide safety culture programme which emphasizes personal responsibility for safety in the workplace. Safety culture workshops were provided to 17,000 APM Terminals employees in one year alone, with training materials made available in 12 different languages including Arabic, Dutch, English, Mandarin, Portuguese and Vietnamese. Terminal fatalities, one of the designated priorities for APM Terminals, declined from nine in 2008 to four in 2009. These results placed APM Terminals in the top quartile of safety performance in the ports and terminal industry.

[55] Thirty-six unions, who together represented two-thirds of all dockworkers affiliated to the ITF, responded to the survey. A data appendix to the report provides details of training provision in more than 30 countries around the world, based on an earlier survey undertaken by the ITF in 1992–93.

Table 4.6. Eurogate's training programme for new recruits

Job category	Theoretical phase (hours)	Practical phase (hours)
Checker – rail/gate	40	36
Checker – reefer	40	80
Rail-mounted gantry (RMT) operator	40	80
Ship-to-shore (STS) crane operator	40	80
Forklift truck operator	40	80
Rubber-tyre gantry (RTG) crane operator	40	80
Maintenance worker	40	160

Although training provision and training standards still vary enormously around the world, there is at least now widespread recognition that dock work is skilled and highly responsible work. In a commercial operating environment, today's ports can no longer afford to neglect training and employee development. However, one area that is still neglected is the training and development of women dockworkers. When the ILO undertook its General Survey of reports concerning the Dock Work Convention (No. 137) and Recommendation (No. 145) in 2002, the report forms sent out to member States contained a question on specific measures concerning women dockworkers. Reports were submitted by 92 member States, but "no pertinent information was provided on this subject in the reports" (ILO, 2002b, para. 22).

Throughout the transport sector, and not just ports, the recruitment, acceptance and retention of women is problematic: "This is due to the fact that working time, workplace culture, facilities and working conditions, and health and safety remain male-centred in most of the transport sectors" (ETF, 2005, p. 8). As jobs in the transport sector are still widely perceived as either "feminine" or "masculine", these perceptions continue to influence hiring and firing decisions, training and career development, as well as rewards and responsibilities. In almost all transport sectors, women are overwhelmingly concentrated in administrative (white-collar) jobs and services while men predominate in technical (blue-collar) occupations. This pattern is especially marked in transport jobs that traditionally involve a high physical workload, such as ports.

However, as already documented in Chapter 1 (table 1.2), port work has been transformed in recent years as a result of mechanization and other technological innovations (e.g. information technology). This has led to rather contradictory pressures. On the one hand, there has been a massive reduction in labour requirements as a result of containerization and other modern cargo-handling methods, so "it is very likely that the sector will remain male dominated as there will be less 'room' for the recruitment of women" (ETF, 2005, p. 21). On the other hand, technological developments have dramatically reduced the physical demands of dock work and transformed many other jobs on the waterfront (e.g. tally work, ship planning and other IT-based jobs) thereby creating a demand for skills and competencies that women possess in equal measure to their male counterparts. Moreover, it may well be that with the recomposition of port work in the form of complex logistics chains, where data handling and manipulation take prime place, traditional "women's work" may increasingly move to the centre of what is currently regarded as "port work".

With the dramatic increase in EU port traffic in recent years (e.g. double-digit growth at Europe's major container terminals) some ports have seized the opportunity (i.e. increasing demand for labour) and the potential (i.e. the creation of jobs that women can perform as well as men) to fundamentally transform their gender profile and workplace culture. A recent study of women dockworkers in four major European ports found very different levels of female participation and a concentration of women in particular jobs (Turnbull et al., 2009).

In Valencia, Spain, women now constitute 12 per cent of the *Estiba*,[56] the port labour pool, which is probably the highest proportion of women dockers in any European port. At Felixstowe, United Kingdom, women constitute around 1.6 per cent of the manual workforce. In Antwerp there are separate contracts for dockworkers and logistics workers. Women make up less than 2 per cent of the dock labour force but more than 15 per cent of the logistics workforce. Of the women registered as dockworkers, the vast majority (almost 80 per cent) are tally clerks for container and general cargo operations. There are only four women in the craft grades in the Port of Antwerp, out of a total of 943 workers who are registered for this work.[57] In the Port of Felixstowe, all new dockworker recruits are trained to drive tugs.[58] In theory, the women recruited by the port could also work in general stevedoring (lashing) but no women have yet passed the required strength test. There are no women employed on lashing activities in the Port of Antwerp and only one in Valencia. In Germany, a port logistics apprenticeship programme has been developed by the ports of Bremerhaven, Hamburg and the new container port at Wilhelmshaven. There are approximately 370 different apprenticeship schemes in Germany, which around 60 per cent of all German students follow after secondary school. The port logistics scheme is specifically targeted at long-term unemployed workers in the local port areas and also includes a commitment to employ at least 10 per cent female workers.

Contemporary port training programmes must therefore reflect the commercial demands of clients, the technological demands of new cargo handling methods, and the age-old concerns of dockworkers arising from insecurity on the waterfront. In addition, the composition of the workforce is changing alongside the culture of the industry. These changes demand new "soft" skills to complement the "harder" technical skills that are changing apace.

4.3. Modern-day port training programmes

The examples of modern-day training programmes presented here consider the broader context of VET in the country in question and not simply the detail of port training practices. In any country or port we expect some divergence between formal policy and actual practice and it is important to look beyond official training documents that can be readily downloaded from the internet. In the United Kingdom, for example, there is a well-established (although frequently revised) NQF. Vocational qualifications for port operatives have been developed by Port Skills and Safety (PSS). On paper, as summarized in box 4.1, the system meets the key criteria for an effective system of competency-based training as outlined in Chapter 3. For example, the national vocational qualification structure is explicitly tied to the safe and effective operation of actual tasks in the workplace, and the individual's skills, knowledge and understanding are fairly assessed against transparent national occupational competence standards that have been developed through robust stakeholder consultation.

[56] Sociedad Estatal de Estiba was established in 1986 as a non-profit-making company that supplies dock labour to all the operating (cargo-handling) companies in Spanish ports.

[57] At the fourth case study port (Duisport, Germany) there were no women dockworkers (Turnbull et al, 2009).

[58] These vehicles transfer container boxes from the quayside to the container stack, and vice versa. After their initial training, new recruits must complete 100 hours driving under the supervision of a mentor before they are fully qualified.

Box 4.1. Port operative vocational qualifications, United Kingdom: A summary

Port vocational qualifications
The United Kingdom has a national programme for competence-based vocational qualifications (VQs) in the workplace. VQs exist for port operations and supervision of port operations. Port operation VQs have been used in the workplace since 1998.

National occupational standards (NOS)
NOS specify the skills, knowledge and understanding required to undertake tasks. They are the standards against which a candidate is assessed in a VQ. Port Operations NOS have 65 different task areas, listed in Annex I, such as "Work safely with dangerous cargo", "Transfer loads through slinging and signalling", "Work safely at heights" or "Load and unload cargo transport units". Details of the latter unit (1.1.4) are summarized in Annex I.

NOS quality assurance comes in three parts:

- NOS can only be submitted to the national database by recognized skills organizations (assessed by government).
- Skills organizations must conduct thorough employer and other stakeholder consultations when developing and renewing NOS.
- NOS will only be accepted onto the national database if they meet published quality and procedure requirements (assessed by government).

Developing vocational qualifications
Development of VQs from NOS requires skills organizations to work with independent awarding bodies (to award the certificate) and independent colleges or universities (who deliver the training), to produce qualifications. A qualification includes training and assessment structure and content. It must be submitted to and approved by, an independent accrediting process (government controlled) before it can be recognized as a nationally accredited qualification.

Qualification quality assurance also comes in three parts:

- Awarding bodies are government licensed and must meet transparent quality assurance requirements.
- Universities and colleges are government licensed to operate and must meet transparent quality assurance requirements.
- Universities and colleges are licensed by awarding bodies to operate that body's VQs, via transparent quality assurance requirements.

Delivering vocational qualifications
VQs are assessed in the workplace and are based on demonstrable competence in the actual task. Other assessment methods, e.g. simulation, are used where it is not safe or practicable to carry out the task live (see, for example, box 5.3). There is transparency: candidates are fully informed of what is expected of them and how they will be assessed. The requirements are threefold:

- VQ assessments must be conducted in a consistent, systematic and well-documented manner, collecting objective data into an evidence portfolio.
- VQ assessors must be qualified to a standard nationally recognized qualification and must themselves know and understand the tasks that they assess.
- The arrangements for VQ assessment are published by the awarding body. Standards conformity is internally verified and independently externally verified. Internal and external verifiers must be qualified to a standard nationally recognized qualification.

In practice, however, the take-up of these voluntary qualifications is rather limited, as most ports have their own in-house dedicated training requirements and systems in place.

Training in UK ports ranges from "best practice" at major ports such as Felixstowe (HPH) which has its own very well resourced training centre with on-site simulators, to labour supply agencies whose attitude to training owes more the days of casualism than to containerization or commercialization. A recent study for the UK Department for Transport, for example, which looked at 45 labour agencies, found that the majority (62 per cent) did not provide any training for the dockworkers they supply to ports, either because they assumed that the port would provide induction training or because they assumed that: "There are generally little to no educational requirements to work on a port. All that workers typically require is relevant experience, which tended to be considered as over a year doing a job similar to the one they had applied for i.e. cargo handling, general labour etc" (Databuild, 2010, pp. 46–7). At least 44 ports in the United Kingdom use labour agencies and the majority of these (68 per cent) are major ports. At any given time there are estimated to be between 1,700 and 2,200 agency workers in UK ports.

The reform of VET in the United Kingdom, driven by the adoption of a competence-based qualifications framework and definitions of respective qualifications, has subsequently influenced similar developments in other English-speaking countries – most notably Australia, Canada, Cyprus, Malta and New Zealand – as well as in the European Union. This is evident in the NQFs of several countries as well as the European Qualifications Framework (EQF) (see table 3.2).

While UK ports have a well-articulated national (NQF) and industry-specific (VQ) system of competency-based training within which to operate, *should they so desire*, other countries have found it far more difficult to develop a coherent framework with acceptable and widely recognized industry standards.[59] This is certainly the case in Mexico, as the summary in box 4.2 makes clear. However, Mexico's experience suggests that a strong sectoral focus, with effective stakeholder participation, can bring forward more positive results. In the port sector, the Instituto de Educación Naútica y Portuaria (IENPAC) has overseen the development of three key documents for portworker training:

1). *Technical guidance for the functional map* – a structured set of functions are graphically represented in this document, using the North American Industrial Classification System (NAICS).

2). *Technical guidance for the development of the standard of competence* – this serves as a benchmark to evaluate and certify the competence of portworkers (described in terms of knowledge, skills, attitudes and "fitness for work").

3). *Technical guidance for the preparation of competence assessment instruments* – these are the mechanisms that determine whether a person is "competent" or "not yet competent".

While industry-wide standards are developed under the auspices of IENPAC, it is worth noting that over 3,000 portworkers in Mexico have been trained under the ILO's PDP, while GTOs such as Hutchison Port Holdings (HPH) have recently brought international "best practice" to Mexican ports.[60] Policy-makers would like to see the dissemination of such practices to all ports in the country.[61]

---

[59] Unless qualifications are recognized in the labour market they will not attain the intended "value". When new qualifications and certificates are introduced, both employers and workers often display a preference for the "old currency".

[60] HPH operates four terminals in Mexico: Ensenada International Terminal, Lazaro Cardenas Terminal Portuaria de Contenedores, Terminal Internacional de Manzanillo and Internacional de Contenedores Asociados de Veracruz.

[61] As expressed by Miguel Angel Osuna Rodriguez, IENPAC, contribution to the 2nd Meeting of the Working Group of Experts for the Development of Draft ILO Guidelines on Training in the Port Sector, Geneva, July 2010.

Box 4.2. Labour Competence Framework, Mexico

Mexico does not have an NQF, but has many years experience in the development of a Labour Competence Framework which shares aims and characteristics with many NQFs. The framework has five levels, and originally had 12 horizontal divisions, but this was later changed to 11, and then later again to 20.

The framework has been developed through two different projects, both of which were broadly concerned with vocational, technical, and workplace training as well as broader human resource development. The first project began in 1994, through the Secretariats of Labour and Social Provision and of Public Education, and was funded through a World Bank loan. Influenced strongly by the United Kingdom's NVQ model, a key part of this project was the Labour Competence Standardization and Certification Systems, which aimed to create a transparent set of labour competence standards which, it was hoped, would lay the foundations for a future reform in both technical upper-middle education, and workplace-based training. The National Council for Standardization and Certification of Labour Competence (Consejo Nacional de Normalización y Certificación de Competencias Laborales – CONOCER) was created, with broad stakeholder and interdepartmental representation, to establish an integrated unitary framework of 12 competence areas and five levels, to develop the labour competence technical standards with which to populate this framework, and to develop an assessment and certification system and the regulatory framework for awarding bodies.

The framework was designed in 1995. Lead bodies, including employers, workers and sector experts, produced labour competence technical standards based on the functional analysis approach of the United Kingdom's NVQs. Awarding bodies were accredited by CONOCER to verify the quality of assessment centres where candidates were to be assessed against standards. From 1996 to 2003, the Standardisation System registered 601 labour competence technical standards or qualifications, with mainly low-level qualifications being developed. From 1998 to 2003, 256,282 certificates were issued against these qualifications. Of these, one qualification generated 29.7 per cent of the certificates issued, while 80.7 per cent corresponded to only 26 qualifications. Most qualifications remained unused, while many that were used were linked to specific government-driven training projects. Although the overall project included a focus on educational institutions, in most instances the standards developed did not relate to their courses, which developed their own standards.

After the project ended there was an impasse from 2003 to 2005, and the Labour Competence Standardization and Certification Systems almost collapsed, partly due to lack of finance and partly because of contestation between government departments about the status of CONOCER. This caused a serious problem with certification. In 2005 a new project began, funded by the Inter-American Development Bank. CONOCER was reorganized. This time the emphasis was on ensuring that the Labour Competence Framework related to educational institutions as well as human resource development strategies in companies, and that stakeholder participation was improved. The grid was changed to include 20 sectors. There was a stronger sectoral focus in implementation, with ten strategic sectors identified, although so far there is poor industry participation in many of them. From 2006 to 2009, CONOCER issued 121,598 certificates on 128 labour competence technical standards (20 per cent were based on the older standards). Both projects of which the Labour Competence Framework was a component have seen many different formulations of the competence standards. The problem of unused qualifications persists. Most recently there has been an attempt to broaden the notion of standards in the qualifications, and an emphasis on what are described as "demand-oriented standards". The first project was highly complex and contested, with different components led by different arms of government. The complexity of the project with so many different participant interests became more difficult to manage as time went by. The second project is led only by the Secretariat of Public Education. In 2008 the Mexican Government decided to re-launch CONOCER with a new approach, which is described as working closely with enterprises and producing demand-oriented standards.

Source: Allais, 2010.

Competency-based training packages are developed by Australia's eleven Industry Skills Councils (ISCs), as described in Annex V. The Transport and Logistics Industry Skills Council (TLISC) is responsible for the port sector.[62] There are almost 700 competency units under the Transport and Logistics Training Package, grouped into the following categories:

A Handling cargo/stock (66 units)
B Equipment checking & maintenance (96 units)
C Driving vehicle (39 units)
D Load handling (40 units)
E Communication and calculation (18 units)
F Safety management (33 units)
G Teamwork (5 units)
H Route planning and navigation (4 units)
I-C licensing units (4 units)
I-C licensing units (1 unit)
I Customer service (19 units)
J Quality (8 units)
K Computers and technology (5 units)
L-IC licensing units (1 unit)
L-IC licensing (12 units)
L Resource management (41 units)
M Training (4 units)
O Security (19 units)
P Business planning (12 units)
P Pathways certificate (5 units)
Q Financial management (14 units)
R Contract procurement (11 units)
S Installation and commissioning (14 units)
T Records (10 units)
U Environment (7 units)
V Pallet operations (9 units)
W Carrying out operations on equipment and systems (13 units)
X Construction (28 units)
Y Material logistics (36 units)
Imported units (116 imported units)

[62] TLISC is responsible for three general training packages, namely Aviation (AVI08), Maritime (TDM07) and Transport and Logistics (TLI07).

As the Transport and Logistics Training Package is fully modular, trainees can pursue specialist qualifications in areas such as warehousing, rail operations, road transport and stevedoring, with competency units packaged together to meet the specific basic operational needs of occupations while also providing options for multi-skilling. The first level of the Certificate in Transport and Logistics (Stevedoring) is summarized below (see Annex V for a description of the Australian Certificates within the Australian VET system).

Certificate I in Transport and Logistics (Stevedoring) (TLI10307) is a general qualification for the stevedoring industry. Successful completion requires competency in units that relate to work defined as aligned at Australian Qualifications Framework (AQF) Level 1. Thus, the breadth, depth and complexity of knowledge and skills would prepare a person to perform a defined range of activities, most of which may be routine and predictable. Trainees must successfully complete a total of seven units aligned at AQF Level 1, comprising:

- at least five units and up to seven units from those listed below; and
- up to two suitable units drawn with appropriate contextualization from either other Transport and Logistics Certificate I qualifications, or other relevant endorsed training packages.

Competency units

A Handling cargo/stock
TLIA107C Secure cargo

B Equipment checking and maintenance
TLIB2807B Maintain and use hand tools

C Driving vehicle
TLIC107C Drive vehicle

D Load handling
TLID107C Shift materials safely using manual handling methods
TLID207C Shift a load using manually-operated equipment

E Communication and calculation
TLIE307C Participate in basic workplace communication
TLIE507C Carry out basic workplace calculations

F Safety management
TLIF107C Follow occupational health and safety procedures
TLIF207C Conduct housekeeping activities
TLIF907C Conduct cleaning operations in enclosed spaces

G Teamwork
TLIG107C Work effectively with others

I Customer service
TLII207D Apply customer service skills

L Resource management
TLIL107C Complete workplace orientation/induction procedures

O Security
TLIO207D Follow security procedures

By way of illustration, Unit TLIA107C: Secure cargo involves the skills and knowledge required in preparing to secure cargo/containers, lashing and unlashing cargo, protecting cargo from weather, and packing and unpacking 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 shown in table 4.7.

Table 4.7. Performance criteria for securing cargo, Australia

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
	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

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, Australian Dangerous Goods (ADG) and International Maritime Dangerous Goods (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 (OSH) 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.
- Australian and international standards, codes and regulations relevant to the securing of cargo or freight including the Australian and International Dangerous Goods Codes.
- Relevant bond, quarantine or other legislative requirements.
- Relevant handling and safety codes.
- Relevant OSH and environmental procedures and regulations.

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 • organisational procedures • established procedures
Information/documents may include:	• goods identification numbers and codes • manifests, bar codes, and container identification/serial number • Australian and international codes of practice and regulations relevant to the securing of cargo • Australian 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 Australian standards and certification requirements • quality assurance procedures • emergency procedures
Applicable regulations and legislation may include:	• relevant codes and regulations for the securing of cargo • Australian and international regulations and codes of practice for the handling and transport of dangerous goods and hazardous substances, including: ○ Australian and International Dangerous Goods Codes

  - Australian Marine Orders and the International Maritime Dangerous Goods Code
  - International Air Transport Association Dangerous Goods by Air regulations
  - Australian and International Explosives Codes
- licence, patent or copyright arrangements
- water and road use and licence arrangements
- export/import/quarantine/bond requirements
- marine orders
- relevant Australian standards and certification requirements
- relevant state/territory OH&S and environmental protection legislation
- workplace relations regulations
- workers compensation regulations

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 included 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 consistentl y 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.

In addition to the technical skills and knowledge listed above, there are clearly specified "employability skills" for the Certificate I in Transport and Logistics (Stevedoring). These may vary depending on the package options, but will typically include:

Communication

- Use communication systems and procedures required in basic stevedoring operations.
- Read and interpret relevant regulations, instructions, signs and labels applicable to
- stevedoring operations.
- Speak clearly and directly on matters related to stevedoring operations.
- Write basic documents as part of duties, including completion of relevant forms and incident and accident reports.
- Recognize and interpret non-verbal signs, signals and behaviour.
- Use relevant communication equipment.

Teamwork

- Assist in the resolution of any interpersonal conflicts that may arise during stevedoring operations.
- Avoid and prevent the harassment of others in the workplace.
- Collaborate with others in the course of stevedoring operations.
- Work with persons of different ages, gender, race, religion, political persuasion, etc.

Problem solving

- Identify and solve or report problems arising in the course of stevedoring operations.
- Monitor and anticipate problems that may occur in the course of stevedoring operations including hazards and risks and take appropriate action to report or resolve the problems within limits of responsibility.
- Recognize hazards and risks in a range of stevedoring situations and take appropriate precautions.
- Use mathematics to solve problems such as various basic calculations related to stevedoring operations.

Initiative and enterprise	• Modify activities dependent on differing situations and contingencies that may arise during stevedoring operations. • Take appropriate initiatives in a range of operational situations such as those above. • Respond appropriately to any changes in equipment, standard operating procedures and the working environment.
Planning and organizing	• Follow and apply operational and emergency plans, systems and procedures. • Check own compliance with stevedoring and safety regulations and codes of practice. • Implement the workplace security and safety management systems. • Check own operational performance. • Collect and interpret basic information needed in the course of stevedoring operations. • Organize and plan own work activities. • Manage time and priorities in the course of stevedoring activities.
Self-management	• Interpret and apply regulations and instructions. • Establish and follow own work plans and schedules. • Check own work performance.
Learning	• Adapt own competence in response to any changes in the stevedoring operations. • Update own knowledge and skills required for stevedoring activities.
Technology	• Use equipment and tools required during stevedoring operations. • Follow and apply operational and servicing instructions for equipment used during stevedoring operations. • Follow and apply OSH procedures when using stevedoring equipment and facilities.

Under the Australian system, competency units can be packaged together to meet the specific operational needs of the occupation while also providing options for multi-skilling. As a result, while units are discrete from each other, they may be clustered and delivered and/or assessed concurrently (i.e. as training proceeds) and/or at the end of the training programme. This flexibility of packaging within the qualifications framework is both a strength and a potential weakness of the Australian system (see Annex V).

While units can be combined to meet the specific operational needs of the employer and/or the skill requirements of the worker, this can also create a situation where co-workers have very different

skills, knowledge and other attributes needed to perform the job. Ideally, training should be "delivered for purpose" (i.e. to ensure that employees have the necessary skills and knowledge to perform safely, efficiently and with due regard for customers needs) whereas registered training organizations (RTOs) who deliver the training are also motivated by "commercial" factors (such as making a profit). This can lead to distorted qualifications and market failure.

If there are information asymmetries in the system (e.g. RTOs know more about the relevant training package than the employer does, and/or if employers lack the skills and/or resources to verify a worker's qualifications), then training may be designed to suit the provider (the RTO) rather than the client (the employer/employee). For example, the RTO might package together several units that can most easily be delivered in the classroom (rather than the workplace) in order to minimize time and cost (e.g. Level 1 units on communications, customer service and basic workplace calculations). If the employer is a large organization with a professional personnel function, as in the stevedoring industry where Australian ports are dominated by just two major employers (Patrick Corporation and DP World), then training is more likely to be conducted in-house and there is little if any scope for RTOs to "play the market". But in other areas, such as road transport where there are many small-scale operators, an employer may hire a driver who is required to deliver loads to the ports even though she or he has no training in how to secure cargo. This scenario is possible under the "flexibility" of the Australian system and might well represent a danger to dockworkers if such drivers are delivering and/or receiving goods in the port.

In order to address these and other shortcomings, TLISC has developed a "skills builder" on its website (http://www.tlisc.com.au or http://myskillsbuilder.com.au/index.php) that allows users to explore the different combination of units for different qualifications. This should help to shift the balance away from RTOs towards the employer, making it easier for companies to identify the competencies they need rather than being "sold" a package by the RTO. There is also a clearer identification of "core" and "elective" units to ensure that all employees in a particular place of work possess the necessary competencies. Training packages are in fact reviewed and revised on a regular basis, with the involvement of the social partners, and TLISC in cooperation with the Australian Transport Council undertakes an annual "environmental scan" that reviews skills requirements, the changing nature of workforce demands, key workforce planning issues and the like.

While the involvement of the public authorities in training activities is not always necessary (ILO, 2002b, para. 150) or even welcome on the part of some companies, many ports have clearly benefited over the years from extensive state support. The Port of Singapore is a case in point. The transport and logistics industry is vital to the economic prosperity of Singapore. As the world's largest transhipment port, Singapore boasts the world's largest container port, handling almost 28 million Twenty-foot Equivalent Units (TEUs) in 2010, and is home to more than 3,000 international and local logistics companies, including 21 of the world's top 25 third-party logistics companies (3PLs). Not surprisingly, there is ongoing demand for logistics workers, even in the current financial crisis, with the Ministry of Manpower recently (2009) reporting vacancies for Class 4 drivers qualified to drive trailer trucks and prime movers in the port, warehouse assistants and crane operators (yard cranes and quay cranes to load and unload containers onto prime movers and shipping vessels). The PSA Institute is a major training provider for prime mover drivers, crane operators and forklift drivers, not just for the port sector but the entire economy. The Port of Singapore employs well over 6,000 staff and engages a further 3,000 contract workers, principally for prime movers and lashing operations. In 2008, the Institute trained around 2,000 prime mover drivers[63] and over 200 crane drivers.

[63] Turnover is very high (around 50 per cent) amongst contract workers. Many of these workers are immigrants from neighbouring countries.

Unlike other major ports around the world, where dockworkers typically start their employment on general stevedoring (e.g. lashing and break-bulk operations) and then "progress" to forklifts, top-loaders, straddle carriers, rail-mounted or rubber-tyre gantry cranes and eventually quay cranes, the Port of Singapore hires crane drivers directly from the external labour market. Recruitment can prove difficult, given the nature of the job (shift-work, long hours, monotony and limited communication with co-workers, other than via a radio and computer screen), but the port offers steady employment and regular income, which attracts qualified workers from other sectors such as construction. Under a national VET system with mutual recognition (see Annex V) qualifications are portable across sectors.

Training for crane drivers is based on an initial five-week programme of theory and practical work, including training on a quay crane simulator that allows drivers to be tested ("risk free") under both standard and unusual or adverse operating conditions. If drivers pass the assessment at the end of week 5, they then progress to a further four weeks on-the-job training under the guidance of a mentor. A further assessment takes place at the end of this period, and after nine months incident-free driving the worker can be allocated to other terminals in the port (inter-terminal transfers gives the port maximum flexibility to meet operational requirements).

The PSA Institute is a well-established training centre, having trained more than 400,000 employees from the port and related sectors since its inception, including workers from PSA International's overseas operations. The Institute is the training arm of PSA Singapore, under the general direction of the HR Division. It is not only an approved training centre for nationally certified courses by the Ministry of Manpower, Singapore's Institute of Technical Education (ITE), the Workforce Development Agency (WDA) and the Maritime & Port Authority of Singapore, but is also the industry leader, together with ITE, in setting skills standards for the ports sector.[64]

The Institute offers extensive training programmes for forklift drivers, prime mover drivers, signalmen, hazardous material transport drivers and supervisors. It is in fact the largest forklift training provider in Singapore, offering courses in English, Mandarin, Malay and Tamil. The initial one-day WSQ Forklift Operating Theory Course is designed for aspiring forklift drivers who must pass this course before progressing to the WSQ Forklift Operating (two- or four-day) Practical Course. The one-day Theory Course is a "knowledge only" training course – at the end of the course, participants should be able to *state* the correct and safe methods of operating forklifts – which covers the following elements:

- the Workplace Safety and Health Act
- introduction to the forklift
- importance of daily checks
- capability and limitation of forklifts
- forklift stability factors
- operation do's and don'ts
- cargo-handling symbols and instructions
- traffic management

[64] As of 2009 there were 24 Singapore Workforce Skills Qualification (WSQ) systems, but a WSQ has yet to be approved for the transport and logistics industry. PSA Institute offers approved WSQ courses in a variety of areas such as forklift operations, teamwork in the workplace, delivery operations, 5S techniques, warehouse operations, quality systems, workplace health and safety, and stock control and housekeeping.

The follow-on WSQ Operating (two-day) Practical Course is also open to forklift drivers who possess a Class 3 driving licence and is designed to enable drivers to operate forklifts "safely and proficiently". The course covers the following elements:

- pre-operational checks
- familiarization with controls and gauges
- travelling forward/reverse in straight line and around corners
- travelling forward/reverse in figure of eight
- picking and placing empty pallets
- picking and placing loaded pallets
- stacking/un-stacking dummy cargo safely, neatly and within timeframe

At the end of the course, successful participants receive a Certificate of Successful Completion from PSA and a Statement of Assessment (SOA) from WDA (see Annex V). Qualified forklift drivers can progress further to heavy forklifts. If they successfully complete this four-day course, drivers with a PSA pass have a new code embossed on their pass and are permitted to operate heavy forklifts (e.g. top-loaders) within PSA premises.

The advantages that accrue to a single port operator (PSA Singapore) with its own dedicated training arm (the PSA Institute) should be immediately apparent. All workers who enter the port must carry a PSA pass, which identifies the worker and his or her qualifications. Prime mover drivers, for example, may be employed by contractors rather than PSA Singapore, but they are all required to undertake the approved training as a condition of service. The same applies to trailer drivers who enter the port, many of whom may well have been previously trained by PSA Institute. All hauliers who enter the port must be trained on PSA's standard operating and safety procedures. As an example, PSA Institute offers a three-day course, Understanding and Applying IMDG Code, which is designed for personnel from shipping, freight forwarding, logistics, transportation, warehousing companies or any other service providers in Singapore who are engaged in the transport of dangerous goods by sea.

The importance of training is embedded in the culture of PSA Singapore. For example, it is one of the organization's key performance indicators (KPI), with a target of 70 per cent of all staff receiving a minimum of 16 hours training per annum. PSA Singapore spends around 4 per cent of its payroll on training every year, demonstrating the organization's commitment to safety, efficiency and customer service through its people. The two port unions – the Port Officers' Union (POU) which represents staff grades and the Singapore Port Workers' Union (SPWU) which represents manual grades – are also ardent supporters of training. Kelly Tan, who drives double-stack trailers in the port and is an SPWU delegate, explained how she came to appreciate the importance of training through her involvement in the union: "I did not understand at first why the union is always asking us to upgrade our skills and go for training. Now as a union delegate I realize the importance of training and retraining. I have learned so much from the experienced union leaders and from attending leadership training courses on communication, on how to resolve work-related issues and about workers' rights and responsibilities and more. It opened up a whole new world for me" (Koh, 2003).

Health and safety is a priority for the Port of Singapore. PSA Institute offers a range of health and safety courses[65] and makes extensive use of "accident flash" cards during induction training.

[65] Safety courses include: Hazardous Materials Transport Driver Course, Lifting Supervisors' Safety Course, Principles of Fire Fighting, Safety Course for Ship Supplier Personnel, and Safe Prime Mover Driving in the Port.

These cards display photos of accidents on the terminal, describe the cause, and provide learning points for trainees. All accidents are systematically recorded, which facilitates the analysis of common causes, patterns or trends over time. For example, it is found that most accidents occur during the first few months of the new recruit's employment on the terminal. With experience, accidents decline, but after a year there is a tendency for accident rates to rise again (possibly as complacency sets in). To counter such trends, the port uses "line trainers" to deliver on-the-job training during standby or other periods of idleness (e.g. if a vessel is delayed).

The Port of Singapore reorganized its training system in the late 1990s, using more line (on-the-job) trainers as opposed to full-time (classroom) trainers employed by PSA Institute (who might sometimes "lose touch" with developments on the terminals). Thus, in addition to the Institute's 30 full-time staff there are more than 200 line trainers who are trained to be trainers by PSA Institute. Potential line trainers are identified by departmental managers – at a minimum, they should be accident-free, have a good work record and proven communication skills – and they are paid a higher wage rate when on training duties to compensate for the loss of incentive pay (which is a significant component of a portworker's pay packet in Singapore). According to one of the port's most experienced trainers, the role of a trainer "is a calling, rather like being a priest" (interview, February 2010).

4.4. Summary

It should be clear from Chapter 4, and in particular the varied and often complex experiences of ports around the world, that there is no "one best way" to organize, deliver and certify dockworker training. In every country, the socio-economic and political environment will play a crucial, and very different, role in the development of VET, as will the organizations of management and labour. Learning from the experiences of others requires understanding and reflection. In practical terms, it will involve adaptation and not simply emulation.

Having said that, functionalist models of competence seek to isolate or neutralize the impact of contextual factors, as far as possible, by focusing on practical skills in the workplace. While this approach fails to meet the wider goal of decent work that is at the heart of the ILO's constitutional objectives, it can be very seductive as it offers very practical guidance for employers and training providers by identifying the competencies needed for a given function. Part I has sought to demonstrate that competence should be a holistic concept, embracing the whole person and incorporating different dimensions such as the occupational, the personal, and the inter-personal. If people are required only to perform narrowly prescribed (context-bound) competencies, they tend not to develop the knowledge, skills or, indeed, the motivation to perform tasks or deal with situations beyond the prescribed outcomes. With this in mind, Part II seeks to provide practical guidance without losing sight of the "active employee" who plays such an important role in constructing knowledge and developing skills.

PART II

PUTTING COMPETENCY-BASED TRAINING INTO PRACTICE

5. Training in the port sector: Physical and human resources required

5.1. Introduction

Building on the general principles and policy instruments for training and development discussed in Chapter 2, Part II of this international assessment of training in the port sector shifts the focus from the general (Chapter 3) and port-specific (Chapter 4) context in which competency-based training has developed to the "nuts and bolts" of such training. In this chapter we first consider the conditions under which competency-based training is most likely to flourish. In doing so, three distinct but interconnected levels are identified:

- Macro (national or economy-wide conditions)
- Meso (industry or sector-specific conditions)
- Micro (workplace or company-wide conditions)

The absence of specific supporting conditions at any one level does not necessary mean that competency-based training will not flourish, rather that policy-makers and the social partners may need to consider alternative mechanisms to support their efforts to protect and promote safety and health in ports, improve the skills development and status of the workforce, maximize the potential of new technologies, raise productivity and the quality of service to port clients, protect the environment, and promote sustainable employment.

Before considering the actual processes of competency-based training in the port sector (Chapters 6 and 7), we draw attention to certain "building blocks" that provide the necessary foundations on which to construct a solid system of training for portworkers. These include the physical, human and financial resources needed to develop and deliver appropriate training for portworkers with respect to safety and health in ports, the technical or "hard" skills required to perform the job in question, and "softer" skills such as communications, team-working, self-management and learning. Given the long history of portworker training around the world, and the experience and expertise developed over recent years by the ILO through its PDP, there is accepted "good practice" to draw on in this chapter.

Portworker training in developed countries is typically but not universally built on sound foundations.[66] Previous studies by the ILO have noted that most developing countries have some form of training facilities and a large proportion have appropriate equipment and other resources for practical training, but many suffer from a shortage of properly qualified and experienced instructors (De Boer, 1990). This problem is exacerbated by the sheer range and frequency of training courses

[66] Even within the European Union there are some notable shortcomings. A recent study by the European Sea Ports Organisation, for example, noted that, in the case of Malta, "there is no formalised training, so new workers have to be trained on the job". It was only recently that training for currently registered portworkers was introduced in Malta. See ESPO, 2004.

needed in a modern port, which demands high-quality training materials (constantly updated) as well as the financial wherewithal to deliver such training. The physical and human resources needed to train portworkers is the primary focus of this chapter.

In order to bring the theory and prescription of competency-based training to life, two very different cases will be called upon throughout Part II. Germany has a very well established system of VET and is widely regarded as a "role model" for other countries to emulate or at least aspire to in terms of the outcomes of this system (i.e. a highly trained, highly productive workforce that enjoys decent work and a very high standard of living). Recognized qualifications are the "currency" of any labour market but, like banknotes, they depend for their value on the status that is accorded to them within the socio-economic system. Qualifications in Germany are accorded very high status because of the "buy-in" (investment) by workers, the social partners and other stakeholders.

This stands in stark contrast to the experience of many developing countries. In South Africa, where policy-makers have found that while introducing a new national qualifications framework may be a relatively quick (if expensive) exercise, it can take a substantially longer time to build other supporting elements, including trust and credibility (Tuck, 2007). Along a continuum from the "functional–behavioural" to the "multi-dimensional" model of competence (table 1.1), the South African approach is much closer to the former whereas the German system is much closer to the latter. These differences provide useful points of contrast in the practical examples that follow.

5.2. 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 ("soft skills") will also be desired, such as communications, team-working, problem solving, self-management, initiative and enterprise, learning and the use of digital technology. These are skills that can be transferred across jobs – and indeed across industries, highlighting the importance of a national qualifications framework for nationally recognized (competency-based) qualifications (see Chapter 3, section 3.4). 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 life-long learning.

At the economy (macro) level, competency-based training will be more effective where it is supported by:

- 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

At the industry (meso) level, competency-based training will be more effective where it is supported by:

- 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, time off for workers to undertake training)
- a recognized system of certification and assessment for the port sector and associated (maritime and logistics) industries

At the company (micro) level, competency-based training will be more effective where it is supported by:

- bipartite social dialogue
- senior management commitment (with training as a key performance indicator)
- an explicit training policy (see Chapter 4, section 4.2)
- 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 for 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 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

As previously stated, not all these conditions will necessarily prevail in all the ports of any given country at any particular point in time. Dockworkers in many developed countries, for example, do not enjoy paid leave for training. Some portworkers enjoy "professional" status, others are simply classified as "general labourers" (Turnbull, 2009) and therefore do not occupy a recognized occupational job category; as a result, any qualifications they possess do not necessarily map onto the national qualifications framework (assuming a NQF exists in the country in question). Conversely, in the United Kingdom there is a NQF and clearly documented industry training standards (see Annex I), but only a minority of portworkers possess these qualifications. This is not to suggest that UK portworkers are unqualified – dockworkers at major ports such as Felixstowe and Southampton are very well trained – but simply to point out that shortcomings can be found in almost any system of VET, even those of advanced industrialized economies, both in terms of training provision and attitudes towards skills development and the requirements of the job.[67]

To further illustrate this point, the systems of VET in Germany and South Africa are summarized in the following section. Starting with the macro level, the broad parameters of VET and the recent experience of these two countries is briefly summarized, thereby enabling the reader to contextualize and better understand the policy choices that have been made at the meso and micro levels. These choices are highlighted on numerous occasions in subsequent sections, as Germany and South Africa provide the core cases (ma-co maritimes competenzcentrum e.V. and Transnet Port Terminals) for Chapters 6 and 7.

5.3. VET in Germany and South Africa

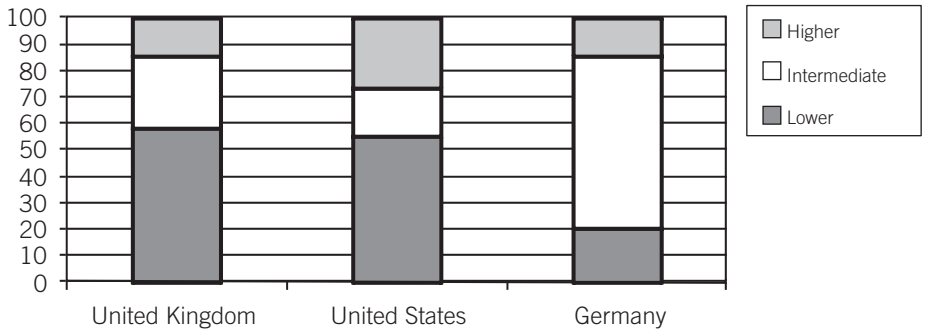
Unlike the training systems found in liberal market economies such as the United Kingdom and the United States, the German system of VET supports very high levels of firm-sponsored/funded training. Unlike other coordinated market economies, such as Japan, the German model also embodies strong collective elements that ensure training conforms to standards, in both quality and content, where these standards are established and enforced at the national level.[68] Whereas skill formation in liberal market economies tends to focus on the notion of "skill as practice", with only a minimum role for theoretical knowledge, the German system distinguishes between "knowing that" or theoretical knowledge (*Wissen*) from "knowing how" or practical knowledge (*Können*) and integrates both in a "dual system" of simultaneous training at vocational school and in an enterprise. The key features of the German system of VET are summarized in box 5.1.

[67] A recent survey by the ASEAN Ports Association (2004) found that while 52 of the 56 respondents provided training on port safety and environmental protection for their own staff, only 43 of the 56 respondents provided similar training for contractors.

[68] "Collectivist training regimes", as found in Germany, are based on the production of occupational skills and require more encompassing organization and coordination on both the employer and labour sides (this leads to very high participation by firms in the training system). Under more "segmented" training systems, as found in Japan, training is mostly undertaken by large firms for their own recruitment and retention purposes (see Thelen and Busemeyer, 2008).

Box 5.1. Germany's VET system

VET systems can be distinguished between those which focus on the education of the person for an occupation (*berufliche Bildung*) on the one hand, and those which are aimed at the employability of individuals, on the other. The former is typically based on an "institutional pathway" to education and training, which is characteristic of the German "dual system" of VET,[1] whereas the "individualized pathway" is more commonly found in open labour markets such as the United Kingdom and United States (Heinz, 2003). The German education system incorporates a well-established vocational route via a system of apprenticeship,[2] which is essentially a work-based system of training underpinned by theoretical knowledge as well as general education. These are all important elements of a *Beruf* or vocation, which is deeply embedded in German society. Vocational training offers an alternative to the strictly academic route, providing a distinct educational and occupational pathway that has produced a strong "intermediate" workforce, as illustrated below, with its own distinct identity and social recognition.



Source: National Institute for Economic & Social Research (UK).

Recognized occupations include training for a wide range of tasks that a skilled worker in a specified field is expected to perform. The variety of skill is set out in corresponding occupational profiles *(Berufsbilder*) for each occupation. These profiles are structured in a number of elements (*Berufbildpositionen*) which are designed to cover the necessary skills and knowledge to fulfil all the tasks of a vocation. The attainment of a skilled worker qualification with a recognized occupation and subsequent employment in a related vocational sector are the basis for a person's classification in the wage system and access to social security. Moreover, vocation is widely used to inform an impression of a person, such that one's vocation can become a determining factor of both status and identity (Ertl, 2002).

German employers are required to demonstrate that they can effectively supervise on-the-job training of apprentices, which must be conducted by trainers with higher qualifications than the trainees. The system is therefore industry-led and centred on the workplace (a characteristic shared with the United Kingdom) as opposed to being centred on school (as in France and Italy). Another characteristic of the German VET system is that it is closely regulated by the State (as is also the case in France) whereas other European countries (such as Italy and the United Kingdom) are market led (Winterton, 2006). With the exception of professions and certain occupations that require a university degree, occupations in Germany are developed by the Federal Institute for Vocational Training (Bundesinstitut für Berufsbildung, BiBB). A notable feature of this system is the legally defined involvement of the social partners.[3] The positive role of the trade unions in this system is reinforced by their broad industry-based coverage (see table 2.1). As a result, German unions have avoided the pitfalls of a craft union mentality found in many countries, whereby the union attempts to "monopolize labour markets by seeking to establish lines of demarcation between the various occupations" (Bosch and Charest, 2008, p.433).

Box 5.1. Germany's VET system *(Continued)*

For qualifications to have "currency" and "value" in any labour market they must be recognized by the relevant parties and signify a level of quality that employers in particular have come to trust and understand. In Germany, the qualification awarded on completion of training, typically over a period of two to four years, serves as a guarantee of "occupational capability" (*berufliche Handlungsfähigkeit*) or the ability of the qualification holder to perform competently within the scope of the occupational field. There is a strong link between a training qualification and the particular occupation, which is principally the result of the involvement of the social partners and therefore the widespread recognition and acceptance of qualifications and adherence to their specified standards (Deissinger, 1997).

Despite its widely acknowledged advantages, the German dual system has been criticized in recent years for a lack of flexibility and questions have been raised about whether it can adapt to more rapid socio-economic change. In addition, there are pressures to adapt the German system to the competency-based European Qualifications Framework (EQF) summarized in table 3.2, which favours the introduction of a modular system of training with clearly defined training outcomes. While moving in this direction, the social partners are keen to leave the basic structures of the dual system in place and protect the concept of "vocation". In fact, it would be "unrealistic to propose reform measures that are incompatible with the concept [of vocation]" (Ertl, 2002, p. 57). As a result, an "expansion" concept of modularization is favoured, whereby modules assume the function of coherent and self-contained part-qualifications on top of the "normal" qualification, such that the overall function of the qualification is expanded; or alternatively a "differentiation" concept of modularization, whereby complex vocational profiles are dismantled into smaller, differentiated parts which can be assessed and credited individually. Under the latter approach to modularization, the same modules can be used for different qualifications within one occupational area, such as logistics (including stevedoring). Consequently, if a trainee changes career, shared modules can be accredited towards a different (second) qualification which is related to the original one. Recent developments in the training of portworkers in Germany are set within this changing context.

Notes:

[1] The "dual system" refers to simultaneous training in an enterprise and at a vocational school.

[2] Germany has a very high participation in VET, with nearly two-thirds of the workforce having completed an apprenticeship or higher vocational qualification in 2006. In 2008 there were around 500 different apprentice-ships, compared to around 900 in 1950. Occupations have an "exclusive" status and young people (below 18 years) are only allowed to be trained in one of the recognized occupations (see Deissinger and Hellwig, 2006).

[3] The Vocational Training Promotion Law (Berufsbildungsförderungsgesetz 1981) regulates the responsibilities of the bodies involved in determining VET policy at the national level as well as monitoring and evaluating VET. The Vocational Training Law (Berufsbildungsgesetz BBiG 1969) defines the responsibilities of the 16 regional state committees for VET (Ländersausschuesse für Berufsbildung) and the Chambers (Berufsbildungsausschuesse der zuständigen Stellen). The Social Law III (Sozialgesetzbuch III, 1997) defines shared responsibility for employment and labour market programmes, including training, continuing training and re-training. The main board of BiBB, its Standing Committee (Ständiger Ausschuss) and the Joint Committee of the Federal States (Ländersausschuesse) comprise representatives of central government, employers and trade unions, alongside representatives of the Federal States (Länder). For example, the board of BiBB is comprised of eight employer representatives, eight trade union representatives, eight representatives of the state governments and five representatives of the federal government (see Winterton, 2006, p. 67).

Given the national system of VET in Germany, it is unsurprising to find systems of semi-autonomous team-working in the nation's ports. At Eurogate's operations in Bremerhaven, for example, teams of multi-skilled dockworkers must ensure that two ship-to-shore gantry cranes are available/operational at *all* times throughout the current shift and over the (24/7) shift cycle. Task allocation within specific shifts and over the shift cycle, including rest periods and days off, are determined by the team in consultation with the team leader. Any supplementary labour required for peak periods and/or unsocial hours (e.g. weekends and night shifts) is hired "as needed" from the port labour pool (see Annex II) whose dockworkers are also multi-skilled. To promote a polyvalent skills profile, Eurogate combines theoretical and practical training for different jobs, as documented in table 5.1. As a result of this training, 90 per cent of the company's dockworkers can perform all tasks on the container terminal.

Table 5.1. Eurogate's "Polyvalence Training Timeframe"

From …	To …	Theoretical phase (no. of hours)	Practical phase (no. of hours)
Checker	RMG, FLT, RTG	8	80
RMG, MHC, FLT, STS cranes, RTG	Checker – gate/ rail	4	36
RMG, MHC, FLT, STS cranes, RTG, Checker – gate/rail	Checker – reefer	8	120
RMG, STS cranes, FLT	RTG	8	60
RMG, FLT	STS cranes	8 + 6 h	80
STS cranes, RTG, FLT	RMG	8	60
STS cranes, RTG, RMG	FLT	8	60

Notes: RMG = rail-mounted gantry crane; FLT = fork-lift truck; RTG = rubber-tyre gantry; MHC = mobile harbour crane; STS = ship-to-shore gantry crane

Pressures for change in the German system of VET, as briefly described in box 5.1, have come largely from without rather than within. Greater exposure to international competition, the accelerating pace of technological change, and pressures to conform to the EQF are all notable examples.[69] While this has certainly impacted on portworker training, the pressures for reform are nowhere near as keen as those felt in South Africa.

Starting from a comparatively low base in terms of education and workforce skills, South Africa embarked on a major reform of its VET system in the mid-1990s, as documented in box 5.2. In the port sector, training was recently "put on hold" because of government plans to privatize port operations after Portnet, the single port division of Transnet, was divided into an operations business (Transnet Port Terminals, TPT)[70] and landlord (Transnet National Port Authority) in 2001. When the decision to privatize TPT was reversed in 2004, TPT had to revisit its training strategy and determined to introduce a new competency-based system.

[69] Thelen and Busemeyer (2008) discuss internal pressures for change in the German system, most notably the different interests of large vs. small/medium-sized enterprises. Changes to the system are subtle but nonetheless significant, and represent ongoing political manoeuvring in which all the relevant actors have tried to sell their preferred models as a way of shoring up (not dismantling) the traditional model (e.g. by reforming outdated training ordinances and adapting them to a new market context).

[70] TPT is a parastatal that operates 17 terminals across six South African ports.

Box 5.2. South Africa's VET system[1]

The national qualifications framework (NQF) in South Africa was introduced in 1995 as an ambitious attempt to address the educational, social, and economic problems caused by apartheid, which created one of the most unequal and racially segregated societies in the world.[2] South Africa had very ambitious hopes for its new qualifications framework, which was intended to completely transform education and training in South Africa. In brief, the NQF was designed to:

- combine education and training into a single framework, and bring together separate education and training systems into a single, national system;
- make it easier for learners to enter the education and training system and to move and progress within it;
- improve the quality of education and training in South Africa;
- open up learning and work opportunities for those who were treated unfairly in the past because of their race or gender; and
- learners to develop to their full potential and thereby support the social and economic development of the country as a whole.

The NQF aimed to replace all existing qualifications in the country with a set of new qualifications and part qualifications (called unit standards) designed by new, stakeholder-based structures, and expressed in the form of learning outcomes. The South African Qualifications Authority (SAQA), also established in 1995, had general oversight of the NQF, as well as the coordination of various sub-frameworks and any future development of the NQF. Twelve National Standards Bodies were established, with stakeholders given responsibility for overseeing qualifications and unit standards. Under each National Standards Body a large number of Standards Generating Bodies were created, comprised of representatives of experts and interest groups.

South Africa initially developed a single comprehensive framework of eight levels, which was intended to be the basis for the development of new outcomes-based qualifications to replace all other qualifications in the country. This would allow many individuals to obtain qualifications based on knowledge and skills that they already had.3

New qualifications and unit standards were developed and registered on the framework, but old qualifications linked to specific providers were also registered, resulting in a framework of 7,960 registered qualifications, as well as 10,582 unit standards or part qualifications. Many of the new qualifications were not used (despite the intention that they should replace all existing qualifications), principally because the NQF initially failed to become nationally accepted. Shortly after implementation got under way, disagreements and criticisms emerged and a lengthy (seven-year) period of policy reviews ensued.

The NQF proved slow to implement, with much time devoted to redesigning courses to comply with narrowly-specified standards. Attempts to create transparency seemed to exacerbate the delays, leading to so much specification that standards became overly narrow and very long – and inherently un-transparent. While minor qualifications were created and redesigned, major training needs remained unmet. The hope was that once qualifications had been specified, provision would emerge. In many cases this simply did not happen, and provision remains primarily based on those institutions which already existed.

The seven-year policy review was terminated by splitting the NQF into three separate but linked frameworks: (i) higher education; (ii) schools and technical vocational education and training; and (iii) trades and occupational education. The first two were to be under the Minister of Education, and the third under the Minister of Labour. The new NQF had ten levels. The outcomes-based model was largely abandoned, although many outcomes-based qualifications remained on the framework, and some were still being developed, notably in the port sector. Most of the outcomes-based qualifications and unit standards have never been used. Nonetheless, the language of learning outcomes still prevails, and there is still a single set of level descriptors.

More recently, things have changed again. In May 2009 the single Ministry of Education was split into a Ministry of Basic Education and a Ministry of Higher Education and Training. All aspects of training, including for trades and occupations, are being moved to the latter ministry. A Quality Council for Trades and Occupations was launched by the Minister of Higher Education and Training in February 2010. The South African Qualifications Authority has now lost most of its powers with regard to setting standards, as the large number of quality assurance authorities has been rationalized to just three Quality Councils (General and Further Education and Training, Higher Education, and Trades and Occupations). Operationally, these three Councils will take responsibility for the development of qualifications and quality assurance. Each of them will, in consultation with SAQA, develop criteria for the registration of their qualifications and qualification types by SAQA.

The National Qualifications Framework Act No. 67 of 2008 gives legislative effect to the new policy. The Act aims to strengthen South Africa's NQF by integrating education and training more effectively and streamlining implementation of the NQF, most notably by making it more responsive to the country's needs. While the original goals of the NQF remain, the new structures that have been created are not primarily stakeholder-driven and there is now a much greater emphasis on expertise. This approach is certainly in evidence in the port sector.

Notes: [1] This account draws heavily on Allais (2010). It is worth noting from the outset that models from Australia, New Zealand and the United Kingdom were influential in the design of the South African NQF.

[2] Apartheid was not just a political process of disenfranchising the black majority; it restricted most of them to intentionally inferior "bantu education", and systematically closed off or distorted their participation in the economy. Education and training policy was therefore central to apartheid. It was used to reinforce lack of democracy, as well as social and economic inequality, by destroying and restricting access to education and training, by providing poor quality education and training to most black people, and by controlling the content of syllabuses to reflect the interests of the apartheid State.

[3] Strong arguments were made against the use of examinations. Outcomes-based qualifications were seen as a mechanism to enable assessment to be site- and workplace-based as it was believed that this would ensure that all assessors would assess to the same standard. Moreover, the idea of separating qualifications from educational institutions was intended to remove the obsession with institutional learning as the measure of a person's worth – the new national qualifications would be blind as to where the learning took place.

The national VET system plays a crucial role in portworker training. For example, whereas the German education system delivers very high levels of literacy and numeracy, educational attainment in South Africa is much lower (especially among certain groups). This can create significant problems in the workplace, especially where outdated forms of employment prevail. As a draft white paper by the South African Department of Transport noted (December 2001, section 3.10),

> A large proportion of workers involved in port operations have low levels of skill and high levels of illiteracy. There is a high degree of reliance on casual labour. These factors limit the ability of the industry to adapt to technological change and improve efficiency and levels of service. The ability of the industry to adhere to internationally acceptable standards is also affected.

When we consider the basic building blocks for competency-based training in the port sector, we must therefore acknowledge that some countries have much deeper foundations than others. What, then, are the initial building blocks for portworker training at the industry (meso) and company (micro) levels?

5.4. Port training facilities and resources

Training facilities

Where a need for port training has been identified, appropriate training facilities and resources must be provided. In the past, port training centres or colleges were often established at the regional, national or port level, although constructing and maintaining facilities and resources on this scale demands a significant commitment and requires substantial funding. In the days of casual employment, training facilities were often provided by the State or were financed by employers on a collective basis (e.g. via a levy on the employers' wage bill or an additional charge on cargo handling fees).

For more than 30 years, the German maritime skills centre *ma-co* has offered excellent VET to employees and employers in German ports, including training for cargo handling companies, logistics, transport and shipping companies.[71] All told, *ma-co* provides services to around 100 companies

[71] The ma-co maritime competenzcentrum e.V. (ma-co maritime skills centre) was founded in 2008 by joining Fortbildungszentrum Hafen Hamburg e.V. (FZH), Hafenfachschule im Lande Bremen e.V. (HFS) and the professional school of Hamburger Hafen und Logistik AG (HHLA), with the goal of establishing uniform qualification standards.

via its facilities in the ports of Bremen, Bremerhaven, Hamburg and Wilhelmshaven. Each year, *ma-co* hosts almost 700 training sessions or seminars and around 7,500 participants. Its clients include shipping companies, shipyards, off-shore area companies, seaports, stevedores, transhipment companies, distribution companies and container freight stations.

Transnet's Port Academy has a more recent history. It was established in 1991 to offer in-house training to the ports of South Africa. Once a stand-alone business under Transnet's port consulting arm (Portcon), the Port Academy was then divided into two separate schools:

- The School of Port Operations under TPT focuses on equipment operator training and developing managers.
- The School of Ports managed by Transnet National Port Authority is responsible for marine training (pilots and tug masters) and infrastructure management training.

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, has 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 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, wherever this is feasible. Whether training is provided by a training centre/college or a dedicated in-house facility, the training unit must be designed and resourced to accommodate modern training strategies and methods.

Training resources

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. An aerial view of *ma-co*'s training facility in Hamburg is shown in the section of colour photographs between pages 112 and 115 (see page 112). The facility has six seminar rooms that can accommodate a total of 120 trainees, a large open area for equipment training, and even a ship section.

The various rooms in a training facility need to be appropriately equipped. The classrooms should be fitted with whiteboards and screens, a computer, overhead and slide projectors, DVD and videotape players and monitors. Training centres are now much more dependent on electronic presentation technology and this must be built into the design of learning spaces. 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 imag-

inative way.[72] 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 instructors and administrators so that 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.

In countries with a NQF and/or well-developed industry standards for training, these materials can often be obtained "off the shelf". For example, training for forklift drivers will comprise generic skills that are applicable across a range of industries where such equipment is used. Trainees can therefore follow these generic modules to learn to drive a forklift safely and efficiently. However, to drive a forklift safely and efficiently *in a port*, they will need to successfully complete specialist modules that familiarize the worker with the cargoes, layouts, hazards, etc., of a port environment.

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 demotivate trainees and undermine the effectiveness of portworker training. Given the availability of high-quality training materials in the port sector – from the ILO's PDP to the in-house materials developed and distributed (at a fee) by specialist training institutes, GTOs and the like – there is no excuse for using poor-quality training materials. A more significant constraint faced by many ports is too few properly qualified and experienced instructors (De Boer, 1990). The ILO's 10-day course for chief instructors to "train the trainers" (instructors), who will then deliver training courses based on the PDP, is explicitly designed to address this constraint. A summary of the 10-day course is provided in Annex VI.

As has been demonstrated in Chapter 1, many ports and operators make excellent use of simulators such as gantry crane or marine diesel engine control 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 such as Mærsk (see section 4.1). There is now general acceptance in the port sector of the great value of such devices in operator training, as summarized in box 5.3.

Box 5.3. The benefits of crane simulators

- They free up cranes taken off work duty to be used in training.
- They facilitate standardized training on a world-wide basis (universal benchmark for all ports).
- Local and freak weather conditions and tidal patterns can be programmed into the simulator.
- All trainees are assessed on an equal basis.
- Accident levels decrease with training (especially via training on recreated real accident situations).
- They offer all drivers the opportunity to think outside their own crane cabin.
- Trainees gain confidence in a stress-free environment.
- Time and manpower is more effectively used.
- They can be used 24/7.
- They provide basic training and can introduce new equipment to established drivers.
- Drivers can practise new procedures before they are implemented.

Source: Maersk Training Centre (MTC).

[72] Given the generic nature of these skills, ports should also consider whether some training modules or units can be offered by local technical colleges or other training providers.

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.

Design and layout of training areas

Ultimately, the desire to learn must come from the learner, although the organization has a duty to create a "learning culture" and instructors are responsible for creating an immediate training environment and conditions conducive to workers' motivation to learn. The types of training programme to be delivered within the training facility and the training methods used will affect the design and layout of the learning areas. Selecting the appropriate shape and size of classrooms and other work areas, equipping them and setting out the classrooms are important tasks for instructors. It is essential to get the atmosphere and room arrangement just right if the session is to work well. Any discomfort is a distraction and an irritant in the short term and can ruin the delivery of training materials or the experience of practical training sessions.

The training space must not suffer from noise, either from outside the building or from nearby rooms or corridors, nor be hot and stuffy; the temperature should be comfortable with good air circulation. 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.

In small terminal training centres it may be necessary to carry out most, if not all activities, in one classroom – primary instruction (using a computer or other audiovisual projector), informal discussion (using a whiteboard or flipchart), formal group work (requiring tables or desks, paper and pens, possibly pocket calculators, etc.), and even some practical work (demonstrations or gear and equipment, materials and procedures) – though large-scale practical exercises will usually require an open area, a workshop or access to a safe location within the terminal. For each activity, a different layout may offer the most suitable conditions for work, but it is more likely that instructors will have to compromise by adopting one layout that will have to serve for all types of activity. In many ports, dedicated areas for outdoor training are simply not available, in which case procedures must be put in place to reserve an area for a fixed training time and close it off to ensure safety.

Computer or overhead projection is the focal point of most portworker training sessions and so the classroom must be arranged to give each trainee a clear, close and unimpeded view of the screen or computer monitor. It is for this and other sound educational reasons that it is usually advisable to limit the size of class to groups of between eight and fifteen trainees at a time. With a small group there should be no difficulty in arranging projector, screen and audience so that everyone is sitting within the ideal viewing area.[73]

For group discussions, rows of seats facing the screen are not appropriate. Discussions work much better if the group sits in a circle, so that each participant can have "eye contact" with everyone else. Discussion groups are often arranged around tables which are set touching each other in a closed circle; with this arrangement, every participant has equal status – there is no "head of the table" in-

[73] A typical "rule-of-thumb" is a distance away from the screen of between 2.5 times and 3.5 times the screen width.

dicated by the seating. However, in a classroom setting, it is always desirable for the instructor, visiting experts and, indeed, the participants themselves to have easy access to a computer, chalkboard, whiteboard, flipchart or audiovisual projector during the discussion. Consequently, it is more satisfactory to adopt a compromise arrangement, setting out the seating area in an open circle, horse-shoe shaped or U-shaped layout. Using this arrangement will allow everyone to see the board or screen reasonably easily while still making good eye contact with the other participants. Equally important, it allows the instructor to "manage" the training session in subtle but significant ways by responding to the body language of trainees, involving shy members of the group and minimizing any disruption from noisy individuals.

Group work and exercises are best carried out around small tables, with each working group (usually two to four trainees) facing each other and separated from the other groups in the room. This separation allows the instructor to move easily between groups, encouraging, prompting and assisting as necessary.

There will inevitably have to be a compromise made in the layout of the training area depending on the size and shape of the room, the furnishings and fittings and the number of trainees. The main objective is to establish conditions that are conducive for adult learning. The room must be well lit and ventilated, with refreshments breaks provided at regular intervals. A motivating atmosphere can be generated by "dressing" the room with appropriate posters, wall-charts, plans and maps, and job-aids. The objective is to create a friendly, comfortable learning environment and a relaxed and motivating atmosphere that encourages informal but informed discussions and interaction.

Training sessions are an important opportunity for "networking" and social interaction between staff, with important "spill-over" effects in terms of communication, teamwork, and cooperation when employees return to their jobs on the terminal. They also provide an opportunity to reaffirm the organization's commitment to training and the value placed on workers' skills. The presentation of course certificates is an obvious way to reaffirm this commitment, especially if the presentation ceremony is attended by senior management. Providing graduates of the training session with follow-up information (e.g. updates on rules and regulations pertinent to the training in question) is another important reinforcement mechanism.

5.5. Port training instructors

Instructors are the bedrock of port training systems, with the primary responsibility of presenting learning sessions on a regular, timetabled basis. The initial recruitment and selection of effective instructors, and their ongoing assessment and career development, is a precondition for any port-worker training programme. A key factor in the development of a cadre of effective trainers in any port is adequate remuneration. Management typically seek to recruit the most able workers – potential trainers in South Africa, for example, must be able to consistently hit TPT's target of 26 container moves per hour – but workers will often lose bonus and overtime pay if they transfer from the terminal to the training school. Financial rewards are typically not the primary motivator for trainers, but inadequate remuneration can be a source of dissatisfaction and hinder the development of high-quality training.

Instructors 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 these tasks. 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 box 5.4.

Box 5.4. Generic characteristics of trainers

- Appropriate skills and industry experience
- Formal 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 learning difficulties and deliver just-in-time skills training as required and/or refer to appropriate personnel
- Ability to ask probing questions and listen actively/effectively
- Capacity to be creative and resourceful
- Possession of a good sense of humour!

Instructors have responsibility for collecting relevant information and preparing appropriate and well-structured learning materials based on the training needs of the organization. They also have responsibility for designing, setting up and arranging practical work, visits to operational areas, and the participation at particular sessions of local managers and experts. In addition, they assess trainees' knowledge and skills as they progress. Consequently, the selection of suitable instructors is of primary importance to the effectiveness of portworker training.

A broad consensus in the training field recognizes that an instructor's overall effectiveness depends on a combination of attributes such as the clarity of the instructor's lectures, the course organization, the degree to which the instructor motivates students and his or her success in building an interpersonal rapport with the trainees. The provision of training schemes for instructors is thus an essential requirement for any project designed to establish a competent local portworker training capability.

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

Content and training strategies

Instructors 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:

1) Analyse trainee and port/terminal needs.

2) Define subject content and training aims.

3) Identify training objectives and assessment goals.

4) Select training strategies and media selection.

5) Implement training.

6) Evaluate effectiveness.

7) 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.

Organization

Training materials should have a logical and systematic structure; for instance, the context should be made clear and the behavioural objectives well defined. Instructors must show mastery of the topic and an ability to introduce local examples, anecdotes and experiences from their own background. The successful running of a course depends on the instructor'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 by using computers and other interactive media.

Presentation skills

The instructor is the central figure in providing information and instruction either by lecturing, using audiovisual aids, facilitating discussions or class exercises or providing feedback to trainees. Lectures and practical demonstrations still form a substantial part of traditional portworker training schemes, and so it is essential that instructors develop their presentation skills to deliver learning material in a logical, clear and interesting manner. Important steps for successful lecturing include the following:

1) Use well-structured learning materials.

2) Have a clear "set, dialogue and closure" procedure (as summarized in box 5.5).

3) Use appropriate audiovisual aids.

4) Use questioning techniques to stimulate trainee participation.

5) Speak slowly and clearly.

6) Maintain good eye contact with trainees.

Box 5.5. Set–dialogue–closure procedure

Instructors have found it useful to adopt the set–dialogue–closure model when planning and preparing to lecture:

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 instructor must ensure the training environment is adequate with functional audiovisual aids, appropriate seating and lighting, and ideal location of audiovisual 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 instructor 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 instructor-centred dialogue initiated by the instructor in the delivery of content, or trainee-centred dialogue arising as a result of questions asked by the instructor. The balance between instructor-centred and learner-centred dialogue will depend on how the instructor 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 instructors 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.

Good presentational skills are an essential attribute for instructors. The oral presentation must be audible and the pace and stimulus varied for emphasis and interest. Learning points must relate to trainees' personal experience and ensure that the lecture content is topical and relevant. Modern training methods reflect a change from an "instructor-centred" approach to a "learner-centred" approach, a change of emphasis from "teaching" to "learning". There is a well-known adage that: "What we have to learn to do we learn by doing." Training sessions should recognize the participants' experience and ideas as a valuable resource, which can be accessed if the instructor combines exposition with asking and answering questions, challenging trainees to agree/disagree and to suggest their own ideas. Three basic principles guide this "active learning" approach:

1) *Reflection* enables us to take the meaning out of our experiences.

2) *Empirical data* help us to contextualize and compare our experiences.

3) *Theory* enables us to understand and explain our experiences.

Other practical tips for improving the quality of lectures is to allow sufficient preparation time (often underestimated); to use interesting audiovisual materials (models, slides, DVD and video, YouTube extracts, computer simulations, etc.); to maintain good eye contact with trainees and to ensure the full participation of the whole class. Clear explanations must be given with the key points emphasized, examples and applications given and good "sign-posting" adopted to guide trainees through the sequence of topics covered. Good instructors are enthusiastic about the subject they are teaching and use appropriate gestures. They need to be aware of the reaction of their audience and display good management of the training materials they are using (text-based, computer and digital media) and have good summary skills.

Group management skills

The final set of attributes is concerned with the instructor's ability to manage the group of trainees and, in particular, to handle sceptical, indifferent (and sometimes rebellious) attendees, as well as to maintain class discipline. The instructor 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 instructor. This is supported by clearly defining the trainee's role, by ensuring that all trainees are put at ease during sessions and that they are encouraged to take an active part and ask questions. Instructors have to be able to use open-ended and probing questions and allow attendees sufficient time to come up with appropriate replies.

Instructors have responsibility for ensuring that everything is ready for the trainees when they arrive for the course and that the room layout is appropriate (see section 5.4). This creates the right atmosphere from the start. Each session must start promptly and activities must keep moving to stimulate interest. It is the instructor'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. Instructors must be able to identify the most common kinds of "problem trainees" and possess a range of techniques to deal with them. Finally, instructors have a vital role in evaluating group work and their own performance and in assessing trainee knowledge – an integral part of the learning process. Testing and evaluation of course delivery has three distinct benefits:

1) Diagnostic testing allows the instructor to determine whether applicants for courses have the appropriate entry skills and to identify specific defects, whether in skills, knowledge or attitudes, with a view to suggesting or providing remedial action.

2) Assessment of learner achievement in tests or examinations enables instructors to monitor the performance of trainees. Analysis of the results of this type of test enables the instructor to review problem sections and to help any trainees who have experienced difficulties. Instructors need to develop skills in the administration, marking, analysis and interpretation of such results.

3) Evaluation of courses and teaching materials allows the instructor to gather information on the effects of the training programme, and to assess the value of the training. This evaluation considers learning materials, strategies and instructor performance.

A good instructor's responsibilities do not end with evaluation, however. Instructors 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.

Whatever the specific foundations (VET system) for portworker training, the need to construct solid building blocks is universal. But putting the physical (training facilities) and human resources (trainers) in place is only the first step. The following sections focus on the content, process and delivery of competency-based training, drawing extensively on the materials and training practices of *ma-co* and TPT's School of Port Operations.

6. Developing a framework for competency-based training in the port sector

6.1. Introduction

If a national qualifications framework (NQF) exists, portworker training can be developed within this framework with the involvement of the social partners, specialist training institutes and other stakeholders. Some port jobs will share competencies with jobs in other sectors of the economy, most notably other transport modes, distribution and logistics, but increasingly also IT (e.g. data processing skills) and the service sector (e.g. document processing skills). With a modular training system, common or basic modules shared across sectors can be complemented with industry-specific (specialist or elective) modules.

Given some of the limitations of the new NQF in South Africa, documented in box 5.2, it is perhaps unsurprising that national unit standards were all too often "generic and vague" and as such did not meet the requirements of Transnet Port Terminals (TPT). In particular, national standards benchmarked across industries tended to be "minimalist" whereas the company was looking for competitive advantage by performing *above* the generic benchmark. As a result, competency-based training programmes have been developed *within* the national framework – the School of Port Operations is accredited to conduct competency assessments and to issue Certificates of Competency according to the NQF and the South African Qualifications Authority (SAQA) unit standards – but the objective is to go *beyond* the national standards and develop training programmes that are tailored to the needs of the company and its workforce, as well as the performance standards expected by international customers.

In contrast to the dedicated company-specific framework for portworker training developed in South Africa, *ma-co* (Germany) was concerned to create a flexible training system that could accommodate the requirements of its many client companies (around 100 all told). All dockworkers must acquire the status of *Hafenfacharbeiter* (certified dockworker) but there is now a new professional portworker qualification (*Fachkraft für Hafenlogistik*, professional in port logistics) based on a modular Kompetenz Management System (KMS) with over 500 identified skills. The "certified dockworker" is not a widely recognized qualification beyond the port sector, whereas the new "qualified portworker" qualification has been developed in the context of the German Qualifications Framework (DQR) and with an eye to the European Qualifications Framework (EQF) (see table 3.2). The new skills management system represents a shift from input-oriented to output-oriented learning where the intention is not only to impart skills and abilities but to fill the gaps between knowledge and the proficient implementation of that knowledge.

The development of a framework for competency-based training in the port sector is reviewed in this chapter in two stages, drawing extensively on the recent experiences of South Africa and Germany. First, what is the relationship between the NQF and the requirements of the port sector in terms of standards, units of competence, assessment, etc.? Second, how are units of competency

packaged within this framework to create recognized qualifications that meet the needs of the workforce, the requirements of the employer and the demands of the customer?

While the frameworks developed by TPT and *ma-co* differ in term of their structure and relationship to national qualifications, their objectives are similarly based on "task-oriented training" with the focus on outcomes: specifically, can the portworker perform the job to the required standard? This is the critical test for any system of portworker training. If workers achieve the required standard, then port operations will be safe, efficient and sustainable.

6.2. Frameworks for portworker training

If stakeholders in the port sector are to develop effective training programmes for portworkers, they must always work within the established system of VET and increasingly, in a growing number of countries, they must reference the NQF. To be sure, some major port operators may have the resources, incentives and autonomy to operate outside the NQF and develop their own training programmes and qualifications, but they will still be embedded in the national VET system. In any event, there are always advantages to the different parties if training, assessment and qualifications map onto the NQF (see Chapter 3, section 3.4). In South Africa, for example, all companies pay a skills development levy of 1 per cent of their payroll to the government, but up to 70 per cent of this levy can be reclaimed if training to unit standards is aligned with the NQF. In Germany, the new professional portworker qualification is recognized under the NQF and will enhance workers' earnings potential, job security and labour market mobility.

Under the South African NQF, Standards Generating Boards (SGBs) have been instrumental in developing unit standards for industry-specific qualifications (which are updated every two years).[74] The SGBs recommend standards and qualifications to the National Standards Body (NSB), which in turn recommends standards and qualifications to the South African Qualifications Authority (SAQA) (see box 5.2) which can register (and deregister) these qualifications. Training providers are accredited by the relevant education and training quality assurance body. Thus, TPT's School of Port Operations is accredited by the Transport Sector Education and Training Authority and is thereby recognized to assess and evaluate trainees according to the NQF and the SAQA under the relevant NSB.[75] As an accredited training provider, the School of Ports can recommend unit standards and qualifications and work with the SGB to review and update those standards. The relationship between all the different agencies and training providers is depicted in figure 6.1.

One advantage of this new system is that it allows TPT to develop customized unit standards and qualifications for its different activities. For example, there are now training materials for all the different types of lifting equipment in the port (see table 6.1), each with unit standards and a code of practice. Under the relevant National Code of Practice,[76] accredited providers such as TPT's School

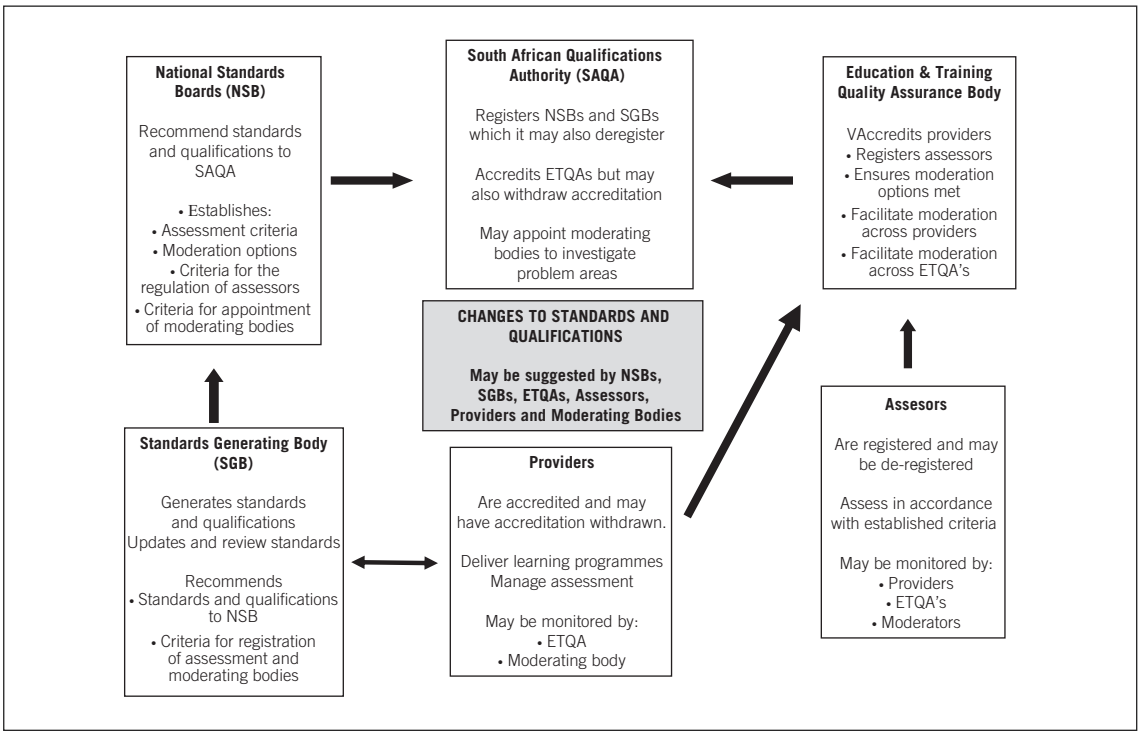
---

[74] Due to limited resources and capacity at the national level, SGBs were established to ensure that "customers" (learners, employers and other stakeholders) played a significant role in the process of developing unit standards and qualifications at the industry level.

[75] The relevant NSB for the port sector is "(11) Services". The other NSBs are: (1) Agriculture and Nature Conservation, (2) Culture and Arts, (3) Business, Commerce and Management Studies, (4) Communication Studies and Language, (5) Education, Training and Development, (6) Manufacturing, Engineering and Technology, (7) Human and Social Studies, (8) Law, Military Science and Security, (9) Health Sciences and Social Services, (10) Physical, Mathematical, Computer and Life Sciences, and (12) Physical Planning and Construction.

[76] The National Code of Practice for Training Providers to Lifting Machine Operators was incorporated into the Driven Machinery Regulation 18(11) on the recommendation of the Advisory Council for Occupational Health and Safety (under the Occupational Health and Safety Act, 1993, Section 27(1)).

Figure 6.1. South Africa's qualifications framework



of Port Operations are responsible for the implementation and maintenance of a quality management system which includes, inter alia, training system documentation as follows:

- an approved learning programme for each accredited lifting machine/equipment code;
- learner material or course notes per learning programme, which shall include safety rules, check-lists, load charts and illustrations of machine components;
- theoretical continuous (formative) and final (summative) assessment documents, including model answers for each lifting machine/equipment code;
- practical assessment documents, including assessment mark sheets for each category code;
- attendance register, with provision for learner and facilitator/assessor signatures for each day of training;
- a training register to record all certificates issued, to include: certificate serial number, date of issue, recipient's name, recipient's identification number, employer name, lifting machine/equipment codes, facilitator/assessor's name and accreditation number;
- the relevant information required in accordance with SAQA's National Learner Record Database, with proof of submission to the ETQA;
- the portfolio of competence of each learner is to include a signed copy of the learner's identity document and a copy of the certificate(s) issued; and
- evidence of the training register to be submitted on request and as specified by the authorized body.

Table 6.1. Training materials for lifting equipment in South African ports

Cranes			
C30	Overhead electric travelling crane (pendant-controlled)	116235	Operate a pendant-controlled overhea crane
C31	Overhead electric travelling crane (cab-controlled)	116231	Operate a cab-controlled overhead crane
C48	High reach stacker	260761	Operate a reach stacker
C49	Straddle carrier	260757	Operate a straddle carrier
C50	Ship-to-shore (STS) crane	260798	Operate a cantilever container crane (STS)
C52	Inland container gantry crane	260760	Operate an inland container crane (rail-mounted)
C52	Rail-mounted gantry	242976	Operate overhead/gantry cranes
C53	Mobile man lift	243276	Manage the transportation of mobile elevated work platforms (MEWP)
C55	Rubber-tyred gantry crane	260765	Operate a rubber-tyred gantry crane
C59	Wharfside jib crane (rubber-tyred)	260838	Operate a wharfside jib crane (rubber-tyred)
Forklifts			
F1	Counter-balanced lift truck below 3.5 ton (forklift)	242974	Operate a counter-balanced lift truck
F2	Counter-balanced lift truck below 7 ton	242974	Operate a counter-balanced lift truck
F3	Counter-balanced lift truck below 15 ton	242974	Operate a counter-balanced lift truck
F4	Counter-balanced lift truck over 15 ton	260818	Operate a counter-balanced lift truck in excess of 15 tons

Source: TPT School of Port Operations.

Unit standards registered with the SAQA follow a standard format (see figure 6.2), setting out the title, field (the relevant NSB) and sub-field, the level (set against the NQF) and credits (based on the indicative learning time). For each unit standard there will typically be some "pre-requisite learning" before the worker embarks on the training,[77] and every unit standard must state the purpose, range, outcomes and assessment criteria, along with any accreditation and moderation options. For the unit described in figure 6.2, these are as follows:

> *Purpose*. A learner will now be capable of demonstrating an *integrated practical and theoretical knowledge of receipt, dispatch and returns of freight procedures*, based on quality service to the customer and product care. The learner will be able to accept additional responsibility through knowledge of the whole process.

[77] For Unit 8024 (figure 6.2), the learning assumed to be in place includes: NQF 1 or General Education and Training Certificate; Operating Computer Systems; Allocation of Freight for Packaging and Grouping; and Occupational Health, Safety and General Housekeeping.

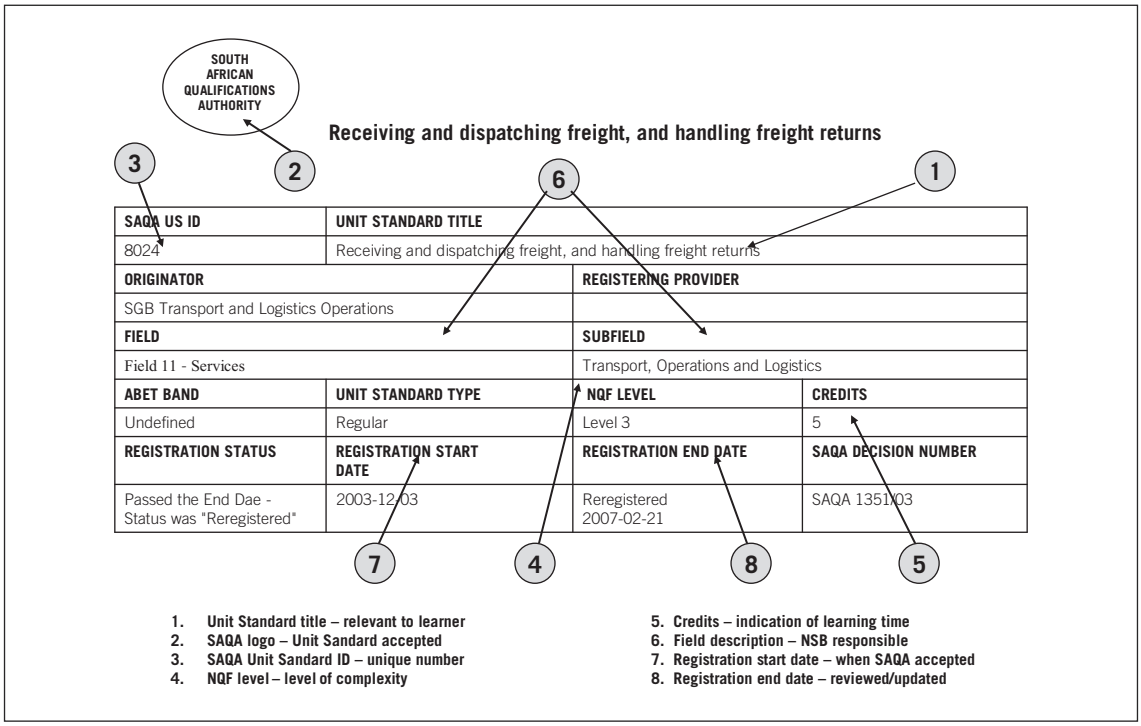
Range. The applied competence expressed in this Standard covers standard procedures requiring responses to familiar challenges, based on discretion and judgment. The learner has significant responsibility for quality and quantity of output and taking innovative and corrective action in the event of unfamiliar challenges throughout a *range of operational environments within the freight handling industry* as defined.

Outcome 1. Identify non-conforming (damaged/soiled) freight on arrival and departure and deal with freight in accordance with company policy and procedures (e.g. customer instructions) and relevant legislation.[78]

Assessment Criteria 1. Generate and consider options and possibilities for: (i) safe handling, correct identification and allocation of freight for timely delivery; (ii) the accurate and timely receipt of freight internally dispatched/moved in accordance with authorized documentation.[79]

Accreditation and moderation options. (i) anyone assessing a learner against this unit standard must be registered as an assessor with the relevant Education and Training Quality Assurance (ETQA) body; (ii) any institution offering learning that will enable achievement of this unit standard must be accredited by the Transport SETA and/or relevant ETQA; and (iii) moderation of assessment will be undertaken by the relevant ETQA at its discretion.

Figure 6.2. Unit Standard 8024 registered with the South African Qualifications Authority (SAQA)



[78] Just one outcome is listed for illustration.

[79] Just one assessment criterion is listed for illustration.

For each unit standard there will be "essential embedded (or theoretical) knowledge" that the learner must possess before she or he demonstrates their ability against specific outcomes. For the unit "Receiving and dispatching freight, and handling freight returns" (SAQA 8024), the learner must understand, explain and apply:

- the relevant legislation and international standards pertaining to storage areas and safety and security procedures and precautions concerning receipt and dispatch;
- current trends in storage patterns and methodologies used;
- special storage and handling conditions required based on storage and handling characteristics of freight (e.g. inherent vice);
- time management principles in order to maximize client satisfaction;
- efficient receipt, dispatch and returns administration procedures;
- optimal load limits and rates for specific transport modes;
- the transport routes and conditions, together with the mode of transport and how these factors affect the status of the freight for receipt and dispatch purposes;
- current trends in company inventory and stock control systems; and
- the need for strict compliance with customer instructions with due regard to all parties involved.

There will also be non-technical generic outcomes ("soft skills") – designated as "critical cross-field outcomes" (CCFOs)[80] – that inform all training and learning. Thus, for the unit in question (8024):

Unit Standard CCFO – Identifying
Recognize and solve problems by selecting applicable administrative, documentary and handling procedures followed in the receipt, dispatch and returns of freight across different modes of transport.

Unit Standard CCFO – Working
Work effectively with others in a team to demonstrate initiative in liaising between the planning section and the operations team.

Unit Standard CCFO – Organizing
Manage and organize activities to effectively and responsibly apply a process of continuous improvement of performance and methods.

Unit Standard CCFO – Collecting
Collect, analyse, organize and evaluate information contained in relevant legislation to ensure compliance with national safety standards and customs regulations within the work environment. Collect, analyse and evaluate information about freight characteristics and inherent vice for freight storage purposes.

Unit Standard CCFO – Communicating
Solve problems around returned freight. Communicate ideas and information about decisions made concerning treatment of returned freight (e.g. spillage, waste, downgraded).

[80] Many of these skills are designated as "employability skills" in other countries.

Unit Standard CCFO – Science
Use science and technology effectively in applying stock control measures to identify stock discrepancies and take corrective action if required.

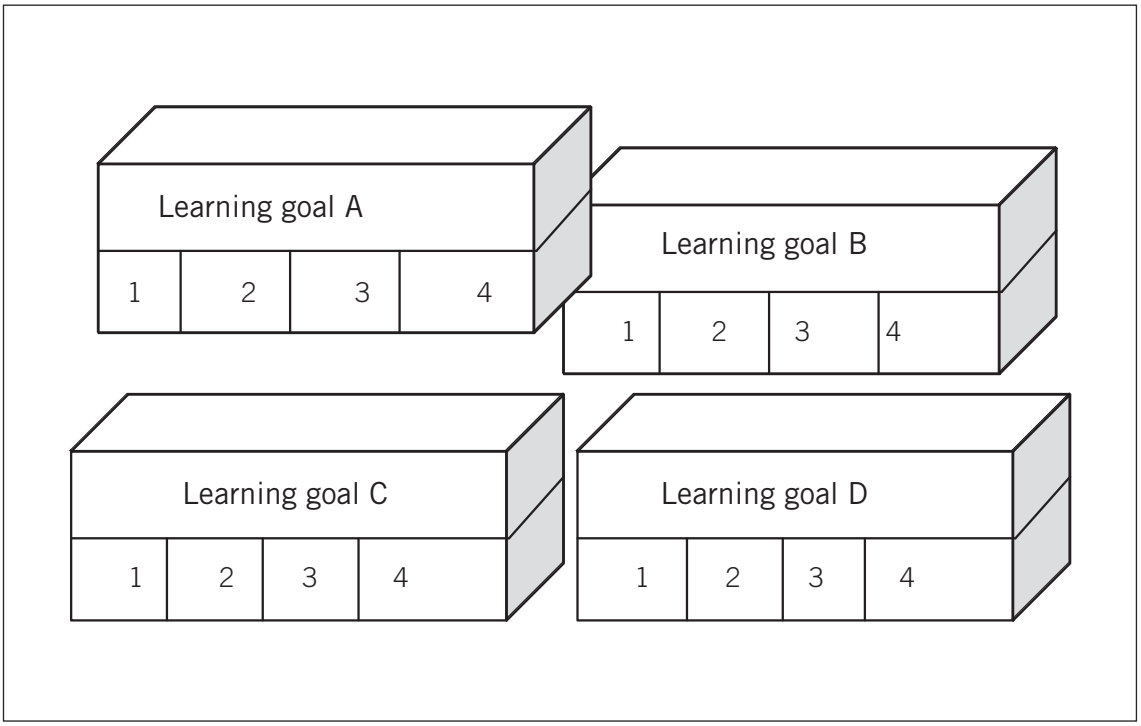
The German framework for portworker training has been developed in a rather different way. Learning objectives specified under *ma-co's* innovative modular training system[81] are sub-divided into four levels of learning: "knowing", "understanding", "applying" and "assessing", representing the "depth" of learning. For each level, verbs are used to define areas of general knowledge that is expected in the course of the training, where special emphasis is to be placed, and where trainees are expected to have detailed and precise knowledge. For example:

Level 1: *Knowing*	Verbs in this stage always describe general knowing (being informed): naming, mentioning, reporting, listing, stating, reciting, describing.
Level 2: *Understanding*	This level requires that the participant understands certain relationships: recognizing, grasping, comprehending, explaining, presenting, illustrating, describing, delineating, relating.
Level 3: *Applying*	Content should be understood and transferred (i.e. applied) to new tasks: transferring, compiling, implementing, accounting, evaluating, using, executing, calculating, assembling, dismantling, operating, shaping.
Level 4: *Assessing*	The knowledge that has been acquired is used to resolve new problems autonomously and/or to assess problems, and it leads to new results: justifying, developing, deducing, estimating, concluding, examining critically, deciding, evaluating, planning, taking a stand, assessing, deliberating, designing.

For each learning goal, therefore, designated A, B, C and D in figure 6.3, there are four (1, 2, 3 and 4) possible learning goal levels (i.e. knowing, understanding, applying and assessing). Skills are developed from the learning goals, such as the container inspection skill detailed in Annex VII. For example, the learning goal "Economic significance of inspection" requires trainees to understand (level 1), inter alia, the "costs and time expenditure due to faulty shipping" and "waste of resources due to unnecessary additional transport". The learning goal "Documentation during inspection/ship" demands *application* (level 3) with respect to "documentation during ship processing, loading and unloading papers and computer operation".

[81] In 2001, an innovative training plan was commissioned by the European Union and developed with the cooperation of the Koordinierungsstelle Weiterbildung und Beschäftigung e.V. (KWB) (further training and employment coordination office), the TU Hamburg Harburg (Hamburg University of Technology) and the Forschungsgemeinschaft für Logistik e.V. (FGL) (logistics research group). With finance from the European Social Fund and the Freie Hansestadt Hamburg – Schulbehörde (FHH) (education authority of the City of Hamburg), a modular databank geared to the flow of goods in the logistics chain was created. This databank was developed further into the Kompetenz Management System (KMS) (skills management system)

Figure 6.3. Individual learning goals with four subordinate goal levels, Germany



While TPT's system of port work training tends more towards the "functional–behavioural" model of competence, *ma-co's* KMS is a "multi-dimensional" model (see table 1.1).[82] Thus, the focus is on learning goals and levels, on the worker as well as the work process, on the multiple resources that the employee brings to the workplace and not simply the particular skills necessary to perform specific tasks (as specified by the employer).[83] Practical knowledge is underwritten by theoretical knowledge in accordance with Germany's "dual system" of VET (see box 5.1). This is clearly documented in the example of container inspection reproduced in Annex VII, where instruction is underpinned by theoretical knowledge and is closely linked to practical exercises.[84]

Under both these systems, different qualifications will utilize different unit standards/skills. Under the South African system, unit standards such as SAQA 8024 (figure 6.2) are available as either a core or elective unit for the National Certificate: Freight Handling (Level 3). Under the German system, several skills are combined to form a skills profile, and skills profiles are pooled to form a qualification. The process of packaging or pooling is vital if the system is to meet the needs of the workforce, the requirements of the employer, and the demands of the customer.

[82] TPT defines a competent person as somebody who can deliver the expected work process product/service deliverables at the required and specified quantity, quality, time and cost standards, over a specified range of operating conditions, and consistently over a period of time. In short, "Can the person do the job?" (TPT, 2010).

[83] Under the multi-dimensional model, competencies are usually the subject of negotiation and agreement by the social partners. The ma-co board of directors consists of three employer and three employee representatives.

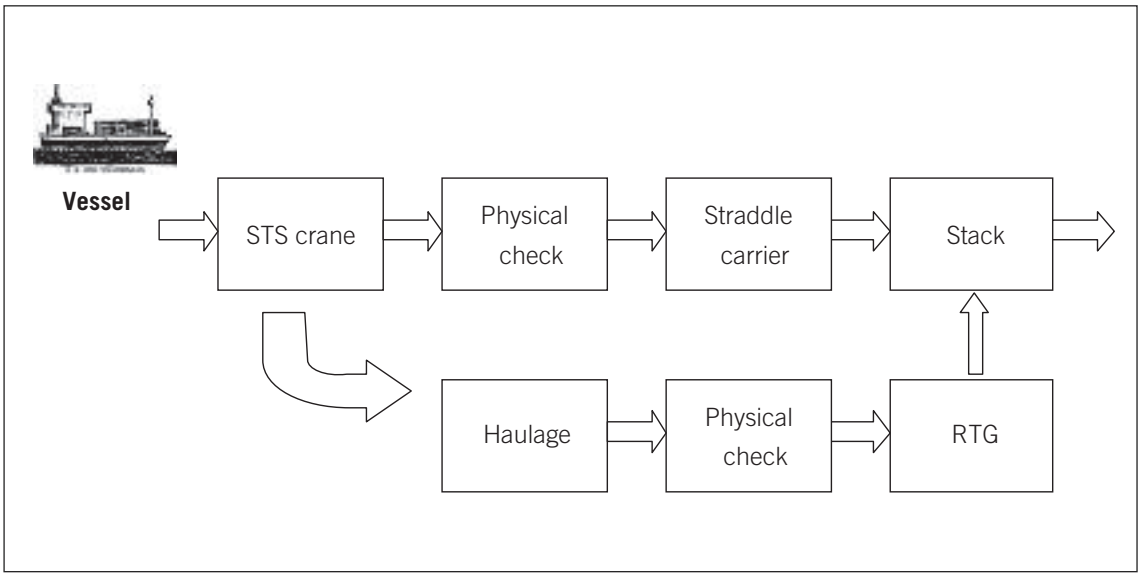
[84] An old Chinese proverb is worthy of note: "Tell me, I forget. Show me, I remember. Involve me, I understand."

6.3. Portworker qualifications

Under the South African system, the alignment of industry standards with the NQF is not mandatory. As an "in-house" training organization, the primary focus of the School of Port Operations is to meet the needs of the business. Put differently, unit standard alignment and the alignment of competencies or clusters of competencies to qualifications is not the primary objective, but rather a value added bonus.[85] Thus, the focus is on compiling a competency matrix that links individual competencies (skills and knowledge) to the company's different job profiles. The competency profiling process involves several sequential stages.[86]

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. For a container terminal, the process flow analysis is as simple as "following the container box" from the storage cells on the vessel to the stacking space in the yard, as depicted in figure 6.4.

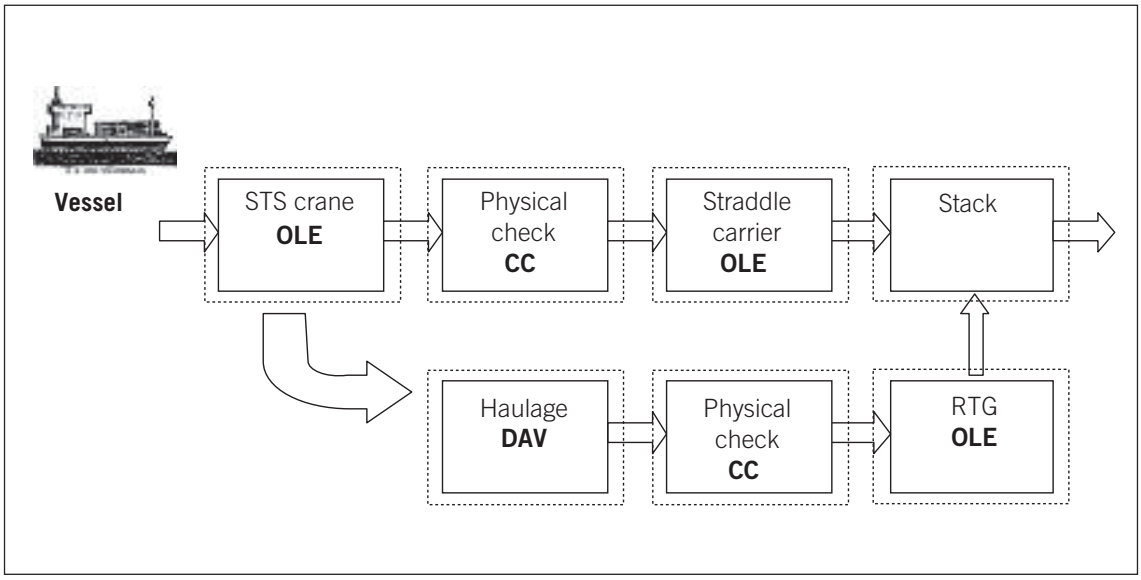
Figure 6.4. Container terminal, South Africa: Process flow analysis



[85] It is important to note that TPT never "deletes" from the national competency requirements. Where gaps are identified they are normally bridged by adding knowledge criteria only. Normally an 80 per cent fit principle is applied, as the company focuses on the "need to know" instead of "nice to know".

[86] The approach that is described here focuses on *existing* work processes as opposed to redesigning those processes under a business process re-engineering (BPR) or similar exercise.

Figure 6.5. Container terminal, South Africa: Job boundary analysis



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

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 boxes are off-loaded). The equipment used in each process boundary must be clearly specified, as must the outputs and inputs to the process. This allows a list of training requirements (competencies) to be developed for each process boundary.[87]

Job boundary analysis links the competencies to the relevant job profiles.[88] Job boundaries are (physically) drawn onto the process flow document, as illustrated in figure 6.5, 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.[89] For example, a "cargo coordinator" (CC in figure 6.5) might tally cargo, undertake physical checks (e.g. inspection) of container boxes, and monitor activities in the yard. An operator of lifting equipment (OLE) might drive a straddle carrier or a ship-to-shore gantry crane. Once complete, it is important that all relevant parties "sign

[87] 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".

[88] It is important to bear in mind that workers think in terms of "jobs" rather than the "competencies" required to perform the job.

[89] Once again, it is important to document "ideal" versus "actual" practice.

off" the job boundary analysis, especially worker representatives, as this process determines job content and will have a significant impact on remuneration, future skills development and career opportunities.[90]

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 inter-personal 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 identify the skill elements that make up the various competencies.[91] In addition to observation and one-to-one discussion with different job holders, 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 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, damages, LTIF).[92]

The resulting competency matrix links different competencies to the various job profiles, as illustrated in figure 6.6. Four broad categories of competencies are listed – "generic", "vehicles", "operating lifting equipment" and "systems" – along with competency numbers and titles (e.g. COO-01 "Conducting general duties in the container area").[93] Job titles are listed in the left-hand column under "job profiles", with an "X" 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).

Each competency unit must then be described in detail, typically in terms of process outputs, skill and knowledge elements. While TPT acknowledges the importance of attitudes, the School of Port Operations concentrates on functional training – the direct trainable skills and knowledge used to define the different competencies. Examples of the "desired workplace attitudes" (affective skills) typically sought by port employers are listed in box 6.1. Soft skills are incorporated into TPT's competency matrix, but the company's primary need for training is on the terminal (operations) or other specific requirements (e.g. equipment maintenance).

---

[90] It is important to maintain a centralized "competency library" when undertaking a job boundary analysis, using a systematic numbering system to identify all the different competencies (e.g. numbering aligned to the ISO system).

[91] This stage is more time-consuming as it involves detailed analysis of every competence.

[92] 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, TPT's formative assessment is 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 two months on the job.

[93] Supervisory competencies complete this particular matrix but are not listed in figure 6.6. They include "Coordinating work teams", "Controlling the loading/off-loading of containers", "Controlling fleet operations – containers", and "Planning the loading/off-loading of containers".

Figure 6.6. Competency matrix for container operations, South Africa

TRANSNET port terminals	Workplace competency units																	
	Generic			Vehicles				Operating lifting equipment (OLE)						Systems				
	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	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
Job profiles	COO-01	COO-02	COO-04	VLE-04	VLE-05	VLE-07	VLE-12	VLE-14	OLE-07	OLE-08	OLE-09	OLE-10	OLE-11	OLE-12	SYT-01	SYT-02	SYT-04	SYT-05	SYT-06
Operations coordinator	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Operations supervisor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Operator lifting equipment	X		X	X	X	X	X	X	X	X	X	X	X	X	X				
Cargo coordinator	X	X	X														X		
Driver articulated vehicle	X		X	X	X	X	X	X											
Planning supervisor			X												X	X	X	X	X
Planners			X												X	X		X	X
Process worker	X		X																

Box 6.1. Examples of desired workplace attitudes

- 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.

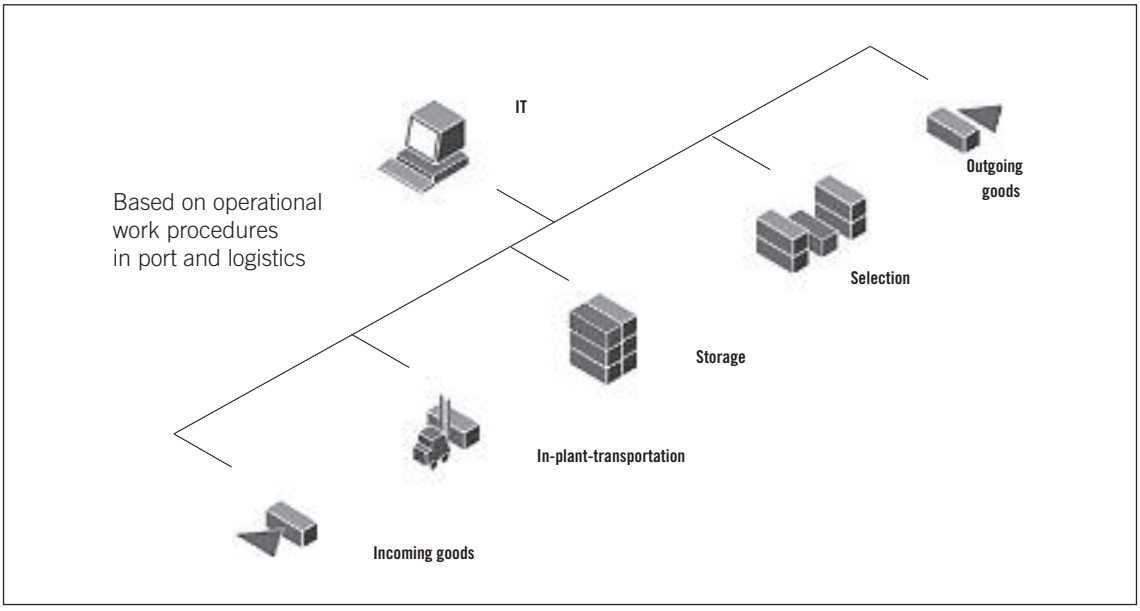
Process outcomes are defined as those which must be produced, provided or delivered. They are what must be the outcome if the employee applies the relevant knowledge and demonstrates the required skills. *Skill elements* are defined as that which can be demonstrated and which can be observed; they can also be defined as "knowledge applied". They are what must be done to deliver the required output. *Knowledge elements* are defined as that which 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. By way of illustration, figure 6.7 lists the outputs, skills and knowledge for COO-01: "Conducting general duties in the container environment".

Figure 6.7. Workplace training Unit COO-01: Conducting general duties in the container environment, South Africa

Outputs *that must be produced, provided or delivered*	
T-01	Completed duties
Skills *that can be demonstrated and which can be 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*	
K01	What are the standard tools and equipment used during normal operations?
K02	What precautions must be taken when using these tools/equipment?
K03	What will the implications be if the tools and equipment are not correctly cleaned, maintained and stored?
K04	What should be checked when conducting routine inspections on containerized goods?
K05	What precautions must be taken when working on or around containers?
K06	What is a safety hazard and why should any safety hazards immediately be reported to the supervisor?
K07	What general safety precautions should be taken when assisting with general operational activities in a container terminal?
K08	Why is it important to ensure that the works area is clean and tidy at all times?
K09	What personal protective equipment should be worn during any normal operations?

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

Figure 6.8. Modular-based learning, Germany



Competencies are combined in a rather different way to create qualifications under the German system. The maritime skills centre *ma-co* offers a wider range of training opportunities than many specialist port training organizations, including maritime shipping, port logistics and transhipment, logistics, dangerous goods, safety and security, IT, and leadership and management. The modular system KMS developed by *ma-co* for portworker training is based on operational procedures, as depicted in figure 6.8, with the six operational areas – incoming goods, in-plant transportation, storage, selection, outgoing goods and data processing – supported by modules that cover basic knowledge of the administration of inventory and logistics.

For each work process, the trainee starts with basic modules, then the main objects, technical systems, organization, activities, and management, with extensions in special fields. Thus, for incoming goods, the modules are as follows:

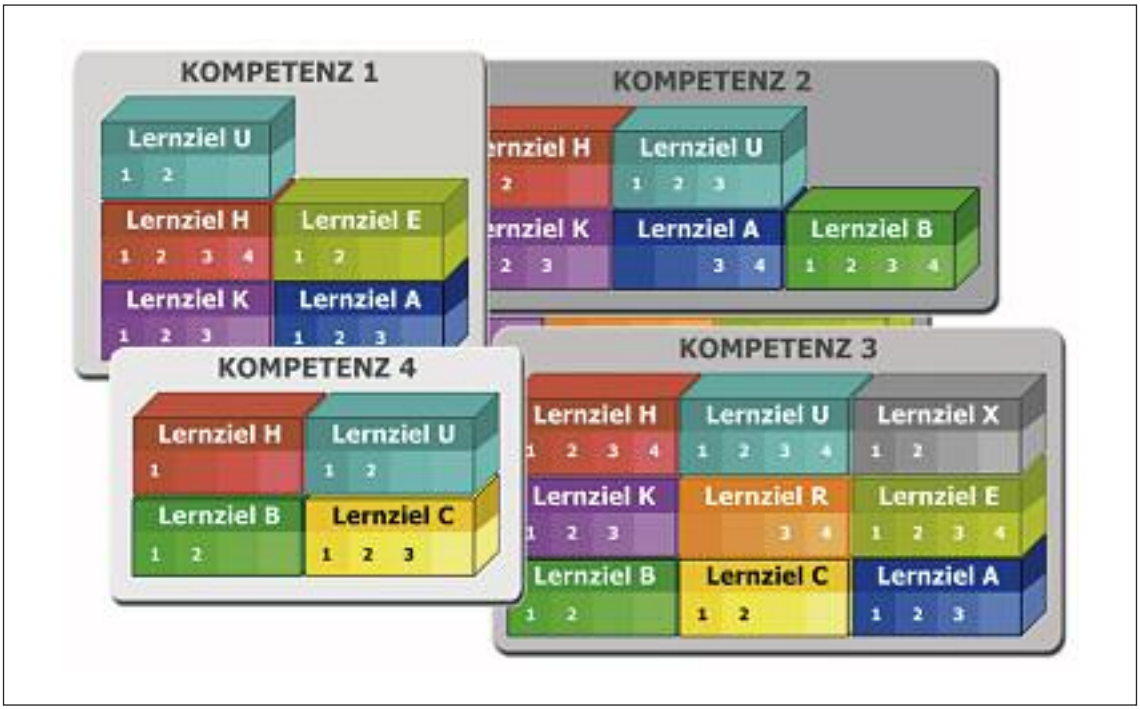
Basic	GWE 1 Basics of incoming goods (Grundlagen Wareneingang)
Objects	GWE 2.1 Types of incoming goods GWE 2.2 Specific working equipment (WE) in incoming goods GWE 2.3 Specific additional working equipment (AWE) in incoming goods
Technical systems	GWE 3.1 Information systems in incoming goods GWE 3.2 Material flow systems in incoming goods
Organization	GWE 4.1 Organizational structure of incoming goods GWE 4.2 Process organization of incoming goods
Activities	GWE 5.1 Operative activities in incoming goods GWE 5.2 Planning activities in incoming goods GWE 5.3 Administrative activities in incoming goods
Management	GWE 6.1 Strategies in incoming goods GWE 6.2 Structures in incoming goods
Special fields	GWE 7.1 IT in incoming goods GWE 7.2 Operations management (OM) in incoming goods GWE 7.3 Handling of dangerous goods in incoming goods GWE 7.4 Sectoral aspects of incoming goods

Extension modules are also available in eight areas, namely: external (off-site) transport, waste management and environment, maintenance and spare parts management, planning and dispatching, health and safety management, dangerous goods, customs, and leadership and management. When combined with the basic modules, this creates a matrix of more than 230 modules, as illustrated in the diagrams in the colour section between pages 113 and 115.

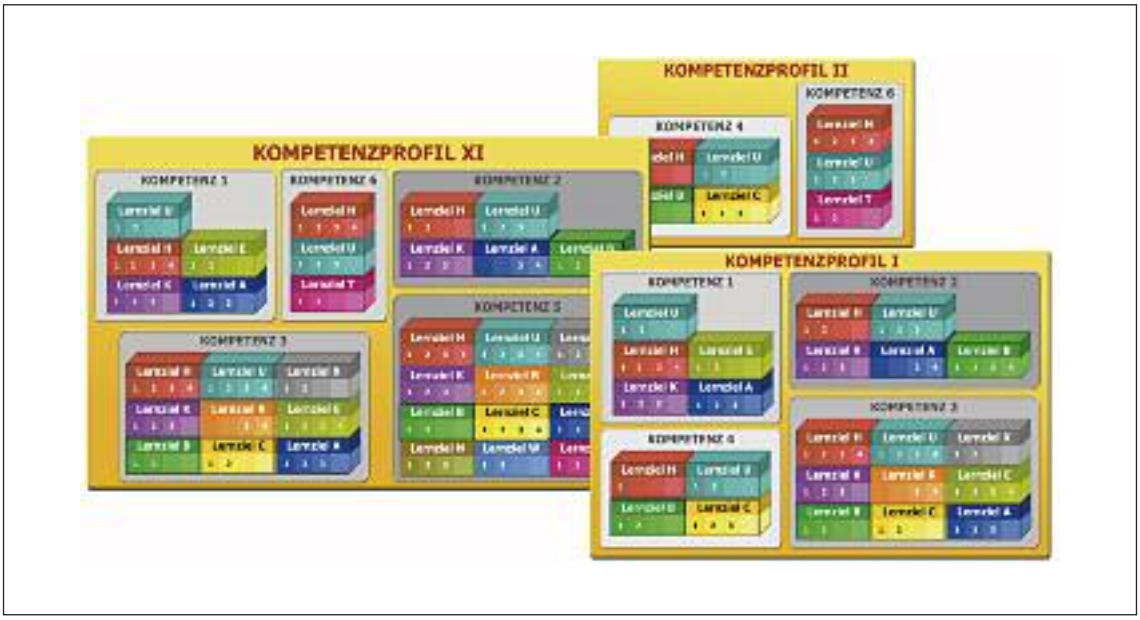
Aerial view of the training facility at ma-co maritime competenzcentrum e.V., Hamburg, Germany. The facility has a large yard area for practical work (driving and cargo handling), including a section of a vessel, as well as offices, classrooms and simulators.

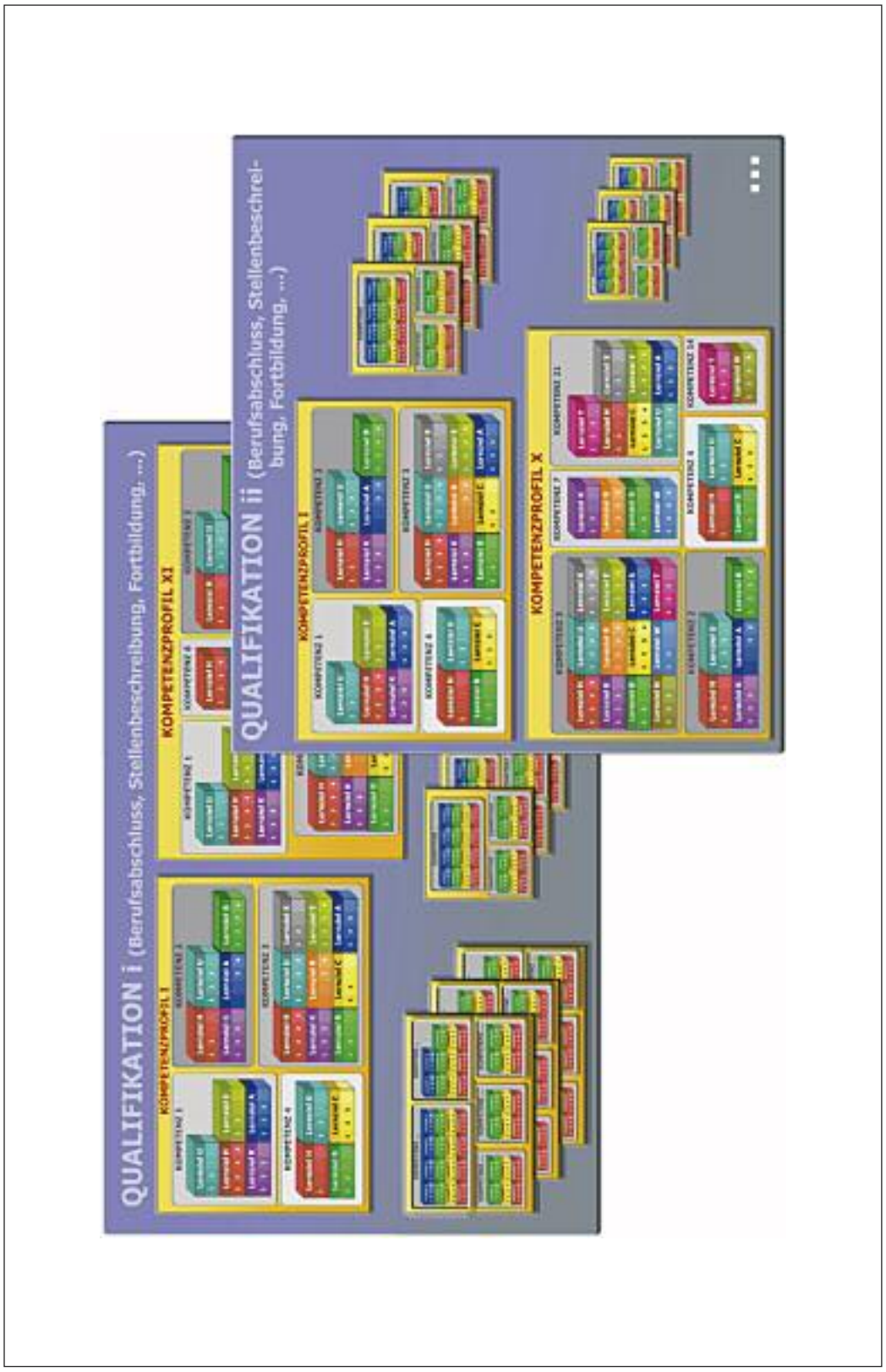
Kompetenz Management System (KMS)

Learning components are combined into competencies…

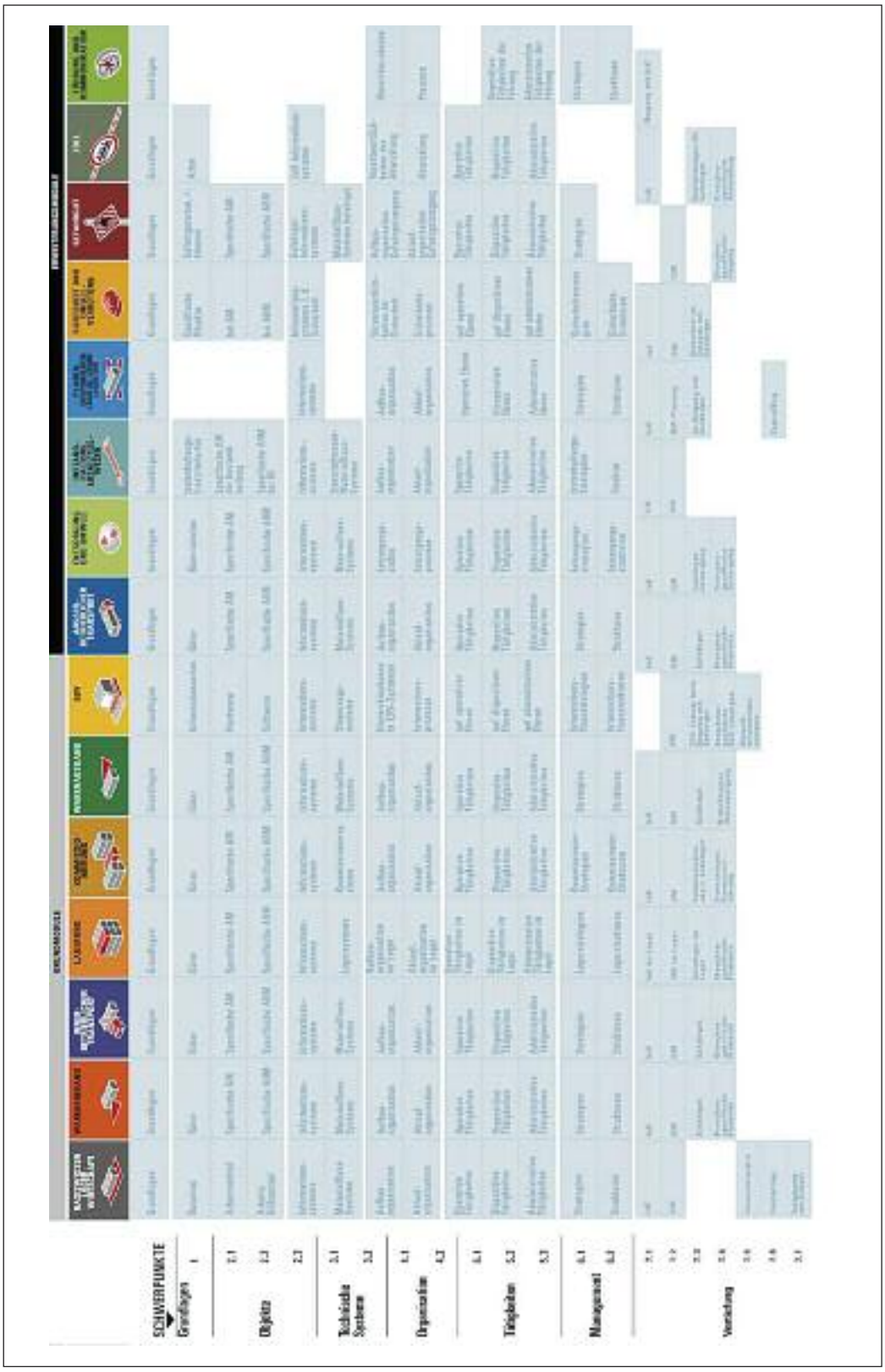


which are added into competency profiles…





which are combined to create qualifications (i.e. certificates of proficiency).

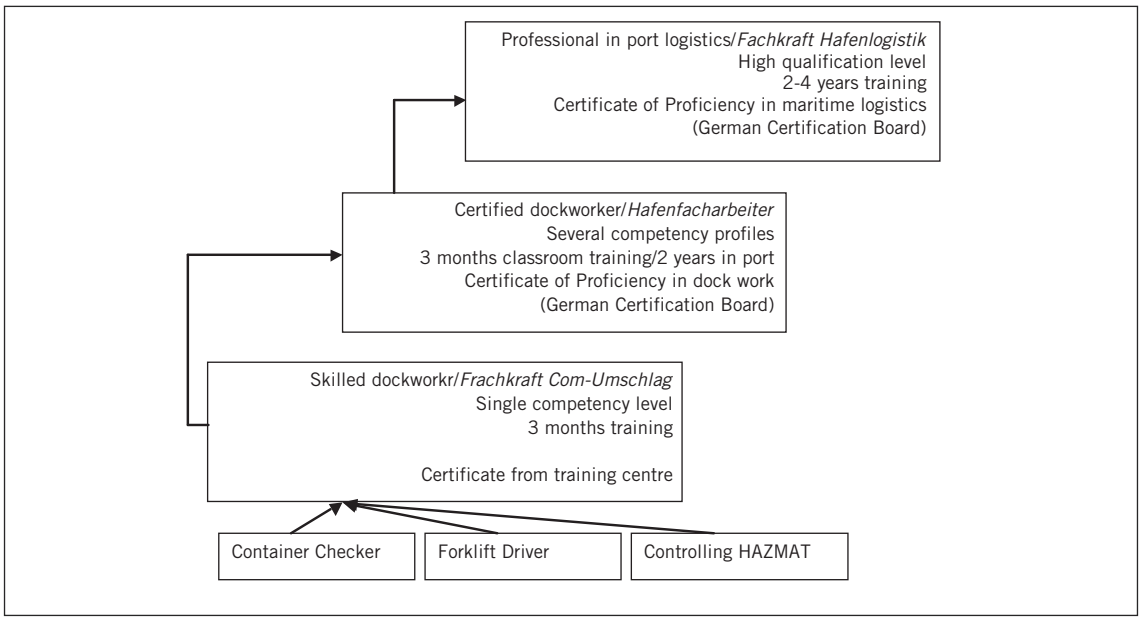


Module matrix, *ma-co*, Germany

The development and combination of learning goals to create an integral qualification involves several stages. First, the learning components depicted in figure 6.3 are combined into competencies according to the KMS, as illustrated in the section of colour photographs (pp. 112 and 113), which are then added into competency profiles.[94] For example, the competency profile for "container inspection" (Annex VII) includes the competencies: "inspect containers – ship", "inspect containers – train", "inspect containers – gate", "container specification" and "container selection". All competency profiles are developed in collaboration with client companies and the social partners[95] to ensure that they are "fit for purpose" for as many port operating companies as possible. Finally, different competency profiles are then combined into qualifications.

The seemingly complex development of learning goals into an integral qualification has several advantages, most notably the flexibility of the system which can be tailored to the training needs of individuals and operators. The KMS includes a database for: learning components and contents; competencies, profiles and qualifications; curricula; all handouts and learning materials; and participants' information. This enables ma-co to provide participants and companies with information on training to date, future training requirements, module content and the like before trainees embark on any additional training or the company makes any financial investment in further training.[96] Every partial qualification is certified, enabling trainees to "build" their qualifications over time. As the qualification obtained is an official vocational qualification it has "currency" in the labour market and provides a high level of transparency with respect to the worker's abilities and skills. The step-by-step process through which a portworker becomes a qualified professional is depicted in figure 6.9. Whereas the certified dockworker has 30 competencies, the professional in port logistics requires 65.

Figure 6.9. Accumulative process of portworker training, Germany

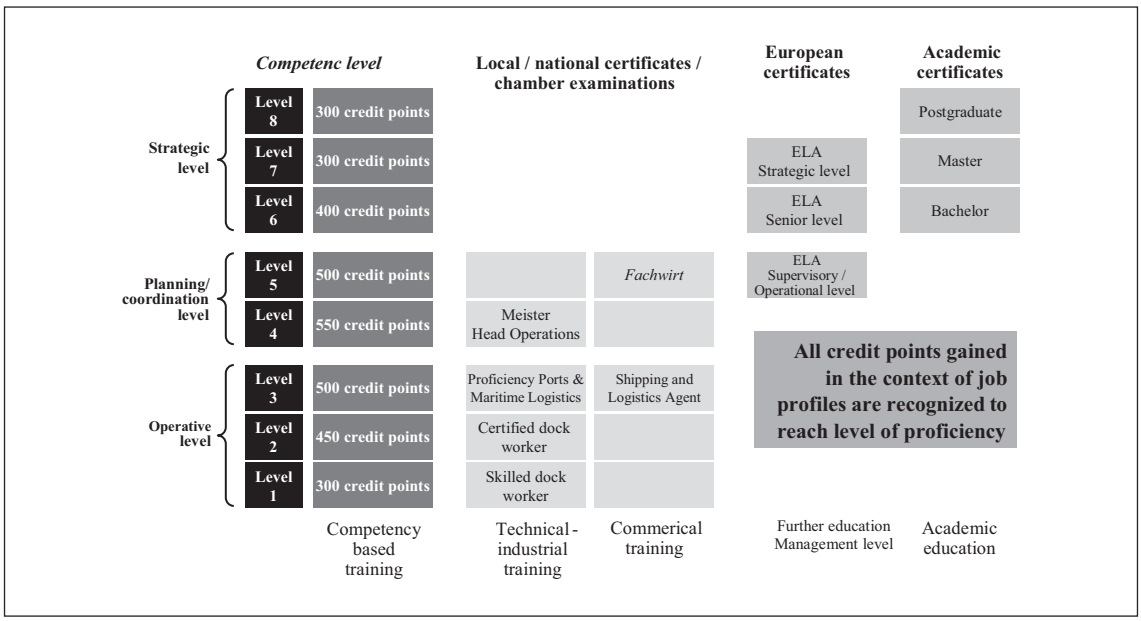


[94] There are eleven different competency profiles in total.

[95] Recall that the social partners sit on the executive board of *ma-co*.

[96] ma-co intends to extend this system so that participants have their own "account" with details of all the skills they have acquired, any training they are currently undertaking, and which skills they need to acquire in the future in order to obtain the best possible qualifications.

Figure 6.10. The certification of competence and credits, German and European frameworks



As the professional in port logistics (*Fachkraft Hafenlogistik*) is a relatively new qualification, fewer than 400 portworkers have thus far acquired this status – the new high-level qualification takes between two and four years and has only been in existence since the mid-2000s. This is part of the process of mapping portworker training onto the national and European qualifications frameworks, as illustrated in figure 6.10, which will ensure greater transparency and mobility in the labour market. Major port operators in particular are keen to promote the new qualification. Since 2008, "professional in port logistics" has been the only entry position for new recruits in the container terminals in both Hamburg and Bremen/ Bremerhaven. During the first year of their employment, basic training comprises six practical modules, five theory modules and one vocation module. During the specialization phase (year two), training is offered in van carrier and container bridge operations. For the new container terminal in Wilhelmshaven, this professional training programme was specifically targeted at long-term unemployed workers, with a target of 10 per cent women in the commercial (operations) sector of the port.

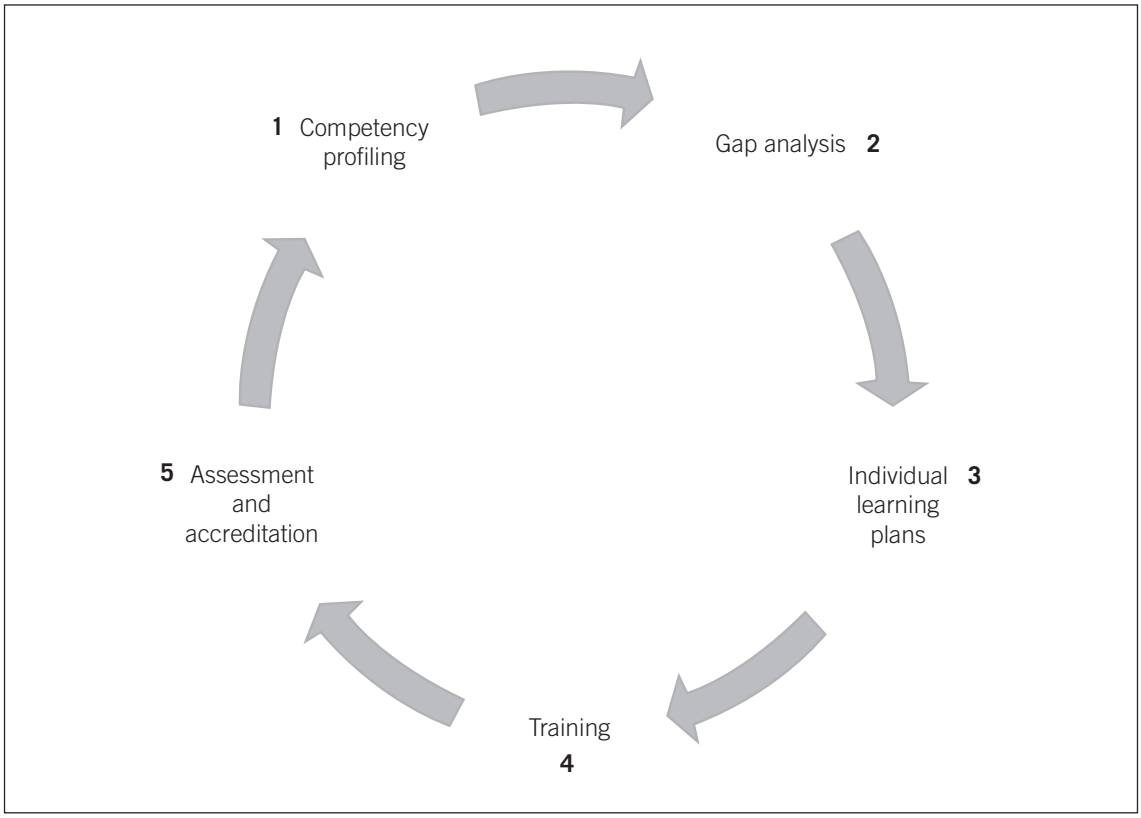
With all the elements of a qualifications framework in place, the next step is to consider the determination of training needs and the delivery of training modules.

7. The training cycle

7.1. Introduction

Having previously considered the *process* of developing competencies and qualifications for training in the ports sector, in this chapter our attention turns to the *people*. Using the "training cycle" developed by TPT (figure 7.1), all personnel are first assessed against the criteria identified in the competency profiling process (section 6.3) in order to establish training needs. By comparing the profile of individual workers to the competency matrix, it is possible to develop individual learning plans, which in turn give rise to actual training and then finally assessment and accreditation.

Figure 7.1. The training cycle



Source: TPT School of Port Operations, South Africa.

The training cycle depicted in figure 7.1 is focused on current employees (as opposed to new recruits) within a single organization and is designed to ensure that all workers have the necessary competencies to perform their jobs safely, efficiently, and to the required standards of customer service. In other words, it is designed to rectify any shortcomings in the current competency profile of the workforce. Elsewhere, the cycle will be very different. For example, in ports where a multitude of employers jointly finance portworker training, as in Antwerp, initial training for new recruits is directed towards a range of *cargo categories* (rather than specific competencies) to ensure that new recruits can work out of the labour pool where they will be assigned to different employers to work on different vessels/cargoes (sections 2.4 and 4.2 and Annex II). Specialist equipment operators (e.g. STS crane drivers) are subsequently recruited from the labour pool and follow the appropriate training.

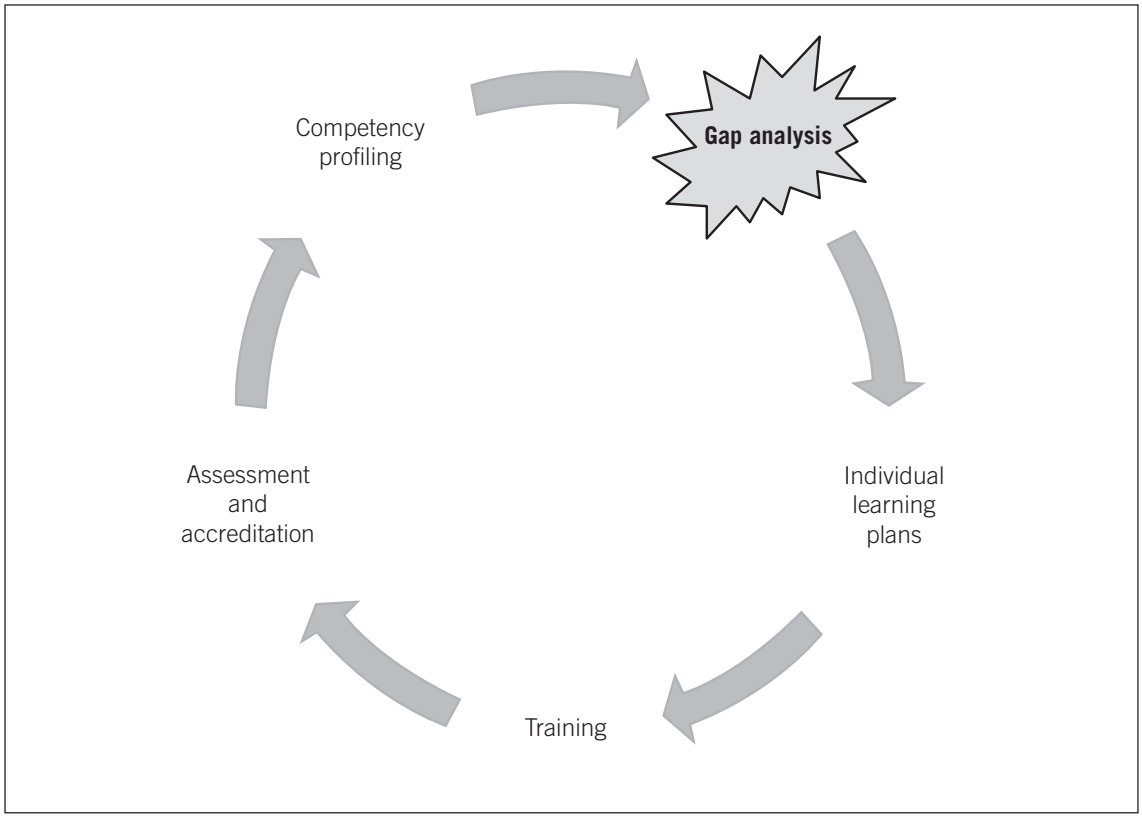
In Germany, in contrast, some workers are hired by the labour pool and must acquire the status of certified dockworker, but other workers are recruited directly by major terminal operators, such as Eurogate, who require their employees to become professional portworkers (professionals in port logistics) (Chapter 6 and Annex II). Where new container terminals have been developed, or existing operations are privatized, GTOs now have intensive training programmes in place to bring new recruits up to operational standards, often in a matter of weeks as opposed to months (see section 4.1). In the port of Singapore, the PSA hires workers directly from the external labour market to train as straddle, STS and RMG crane drivers, while contractors supply labour to transfer container boxes from the ship to the stack, and vice versa. However, PSA ensures that all contract labour is trained to the very high standards expected of its own (direct) workforce. In South Africa, in contrast, the private contractors who "work for the vessel" (e.g. stevedoring operations such as un/lashing) often employ casual workers and training standards can fall below what TPT would expect and certainly desires. The point that "context matters" has been made many times: it is reiterated again because while the training cycle illustrated in figure 7.1 is a *generic* process, the emphasis and approach to training will be very different from one country to the next.

Each step in the training cycle is considered in turn in this chapter, starting with "gap analysis". Recall, however, that the cycle begins with competency profiling, a sequential process involving: process flow analysis → job boundary analysis → systems analysis → task analysis → output analysis (section 6.3). This generates a competency matrix (figure 6.6 in the case of TPT, figure 6.9 in the case of ma-co) that enables the operating company or training organization to compare the competencies of individual job holders with the requirements of the job (specified in terms of knowledge, skills and outputs in the case of TPT, as illustrated in figure 6.7, or learning levels in the case of ma-co, as illustrated in figure 6.10). With the process in place, and the context in mind, we can now focus on the people.

7.2. Gap analysis

Although our focus is on portworkers, the gap analysis highlighted in figure 7.2 should also be used to identify departmental and/or process training needs and any deficiencies in the training system, including any gaps in training materials or other resources discussed in Chapter 5. These gaps might be the result of past neglect or new requirements. For example, while the South African Government was considering the possible privatization of Transnet's port operations, some training activities were effectively "put on hold" until the future of the business had been determined. More recently, when TPT switched from straddle carriers to RTGs on one of its terminals, experts were brought in from Sri Lanka to "train the trainers". This capacity-building exercise subsequently paid off because TPT was able to undertake all its training in-house for a new terminal in Port Elizabeth.

Figure 7.2. Gap analysis



Source: TPT School of Port Operations.

In most ports, a systematic "gap analysis" will identify training deficiencies for operating companies, training organizations and individual portworkers alike. 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. Training materials can always be purchased "off the shelf" and the ILO plays an important role in promoting the uptake of its PDP materials.[97] Whatever the source of the materials, they must always be adapted to local circumstances and operating procedures. In particular, "closing the gap" demands the development of training materials that are sensitive to local cultures of learning and the specific needs of the workforce.

[97] In 2010, for example, the ILO coordinated a South–to–South cooperation project between Brazil and Cape Verde to train the trainers to deliver PDP in the West African archipelago.

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 are not to be told that they are "in-competent", rather that they are "not yet fully competent", more often than not because of new operating procedures, the introduction of new technology, recent health and safety regulations, more exacting service standards demanded by customers, and the like.

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. 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 added to the existing matrix. In ports where there is a strong training culture, such as Singapore (see section 4.3), 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 7.3, gaps can be clearly identified (the shaded cells in the figure). The next stage in the training cycle is to use this information to develop an individual learning plan.

7.3. Individual learning plans

The next stage in the training cycle, highlighted in figure 7.4, uses the data from figure 7.3 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. The NQF in South Africa is 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 and it becomes imperative to 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 several licences 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.

TPT's School of Port Operations offers both beginner and refresher courses for all lifting equipment, as detailed in table 7.1. Shorter refresher courses are available for qualified operators who, for whatever reason, have not driven the particular crane in question for a period of six months from the date of certification. Recertification takes place biennially.

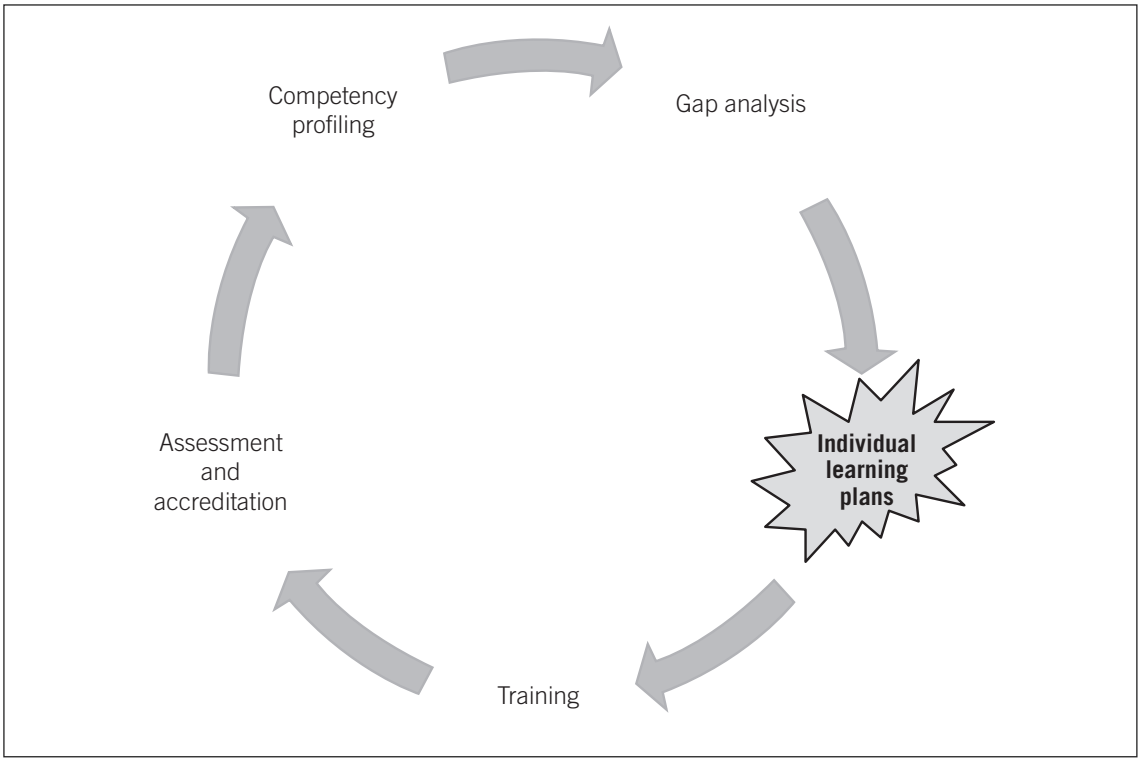
Figure 7.3. Gap analysis: Operators of lifting equipment, South Africa

TRANSNET port terminals	**Workplace competency units** – *Opretaor lifting equipmet (OLE)*																	
	Generic			**Vehicles**				**Operating lifting equipment (OLE)**						**Systems**					
	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	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
	COO-01	COO-02	COO-04	VLE-04	VLE-05	VLE-07	VLE-12	VLE-14	OLE-07	OLE-08	OLE-09	OLE-10	OLE-11	OLE-12	SYT-01	SYT-02	SYT-04	SYT-05	SYT-06
Required competencies	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Compton, M.	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	O	O	O	O
du Randt, P.	X	O	X	X	X	X	X	X	X	-	X	-	X	-	X	O	O	O	O
Eichenlaub, D.	X	O	X	X	X	X	X	X	X	X	X	-	X	X	X	O	O	O	O
Gasskov, V.	X	O	X	X	X	X	X	X	X	X	-	-	X	-	X	O	O	O	O
Leys, F.	X	O	X	X	X	X	X	X	X	X	-	X	X	X	X	O	O	O	O
Meletiou, M.	X	O	X	X	X	-	-	X	X	-	-	-	X	-	X	O	O	O	O
Ntshangase, W.	X	O	X	X	X	X	X	X	X	X	X	X	-	-	X	O	O	O	O
Soh Hoon, T.	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	O	O	O	O
Thomas, B.	X	O	X	X	X	X	X	X	X	X	X	X	-	-	X	O	O	O	O
Turnbull, P.	X	O	X	X	X	X	X	X	X	X	X	X	X	-	X	O	O	O	O
van de Laar, F.	X	O	X	X	X	X	-	X	X	-	-	X	X	-	X	O	O	O	O

Note: X = required competency. O = competency not required. [-] = competency not yet acquired.

Source: TPT School of Port Operations.

Figure 7.4. Individual learning plans



Source: TPT School of Port Operations.

An individual learning plan document is reproduced in figure 7.5. 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.

7.4. Training

The physical and human resources needed for training in the port sector have been considered in Chapter 5, with particular emphasis on the content of training materials and strategies for effective learning. Modern-day training centres have developed holistic, integrated training programmes that are specifically designed to ensure optimum performance in the working environment. For example, *ma-co* has developed a process of task-oriented learning that is very different from the traditional concept of subject-oriented learning. With this approach, theoretical instruction is closely linked to practical exercises, which is common practice under the German system of VET (box 5.1). 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" (see section 5.5). In *ma-co's* experience, 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 the well-known Chinese proverb: "Tell me and I'll forget. Show me and I'll remember. Involve me and I'll understand."

Table 7.1. Training of operators of lifting equipment, South Africa

Lifting equipment	Theory and formative assessment	Simulator and formative practical assessment	Practical training	Formative assessment	Mentoring	Summative assessment
Ship-to-shore container crane (beginners course)	1 week	2 weeks	8 weeks	1 week	12 weeks	1 week
Ship-to-shore container crane (refresher course)*	1 week	1 week	2 weeks	-	4 weeks	1 week
Rubber-tyred gantry crane (beginners course)	1 week	2 weeks	5 weeks	1 week	8 weeks	1 week
Rubber-tyred gantry crane (refreshers course)*	1 week	1 week	2 weeks	-	3 weeks	1 week
Rail-mounted gantry crane (beginners course)	1 week	-	2 weeks	3 days	2 weeks	3 days
Rail-mounted gantry crane (refresher course)**	1 week	-	1 week	1 week	2 weeks	1 week
Container straddle carrier (beginners course)**	1 week	-	5 weeks	1 week	8 weeks	1 week
Container straddle carrier	1 week	-	3 weeks	1 week	8 weeks	1 week
Container high reach stacker (refresher course)**	1 week	-	5 weeks	1 week	2 weeks	1 week
Counter-balance lift truck (3.5 ton)	1 day	-	3 days	-	-	1 day
Counter-balance lift truck (>15 ton)	2 days	-	7 days	3 days	-	1 day
Empty container handler	3 days	-	2 weeks	3 days	2 weeks	3 days
Driver articulated vehicle	1 week	-	2 weeks	3 days	1 week	3 days
Tractor trailer combination	2 days	-	5 days	-	-	3 days

Notes: There is a recommended trainer/trainee ratio of 4:1 for all categories (theory and practical training) as per National Code of Practice.

* Refresher courses are designed for operators who, for some reason, have not driven the particular crane in question for a period of more than 6 months from the date of certification. Recertification (every 2 years) involves 1 day theory revision (with the emphasis on safety aspects of the equipment), 1 day administration and inspection assessment, and 1 day practical assessment (with learner assessment feedback).

** Includes some simulator training.

Source: TPT School of Port Operations.

Figure 7.5. Individual learning plan, TPT School of Port Operations, South Africa

OPERATING DIVISION:								
Employee's surname and initials			Employee SAP Number					
Position title			Port/department			School of Port Operations		
Employee's manager			Date:			From:		
Position purpose			To:					
INDIVIDUAL LEARNING PLAN								
Skills/performance gap (at least 3 gaps)	**Skills/performance outcome expected**	**Suggested development activities**	**Support required**	**Suggested timeframe**	**Opportunity for application of learning/skills**	**Feedback on outcomes achieved**	**End of period sign off review and assessment)**	**Future development activities**
Employee's signature		Manager's signature		Date	To personal file		To HR	To mentor

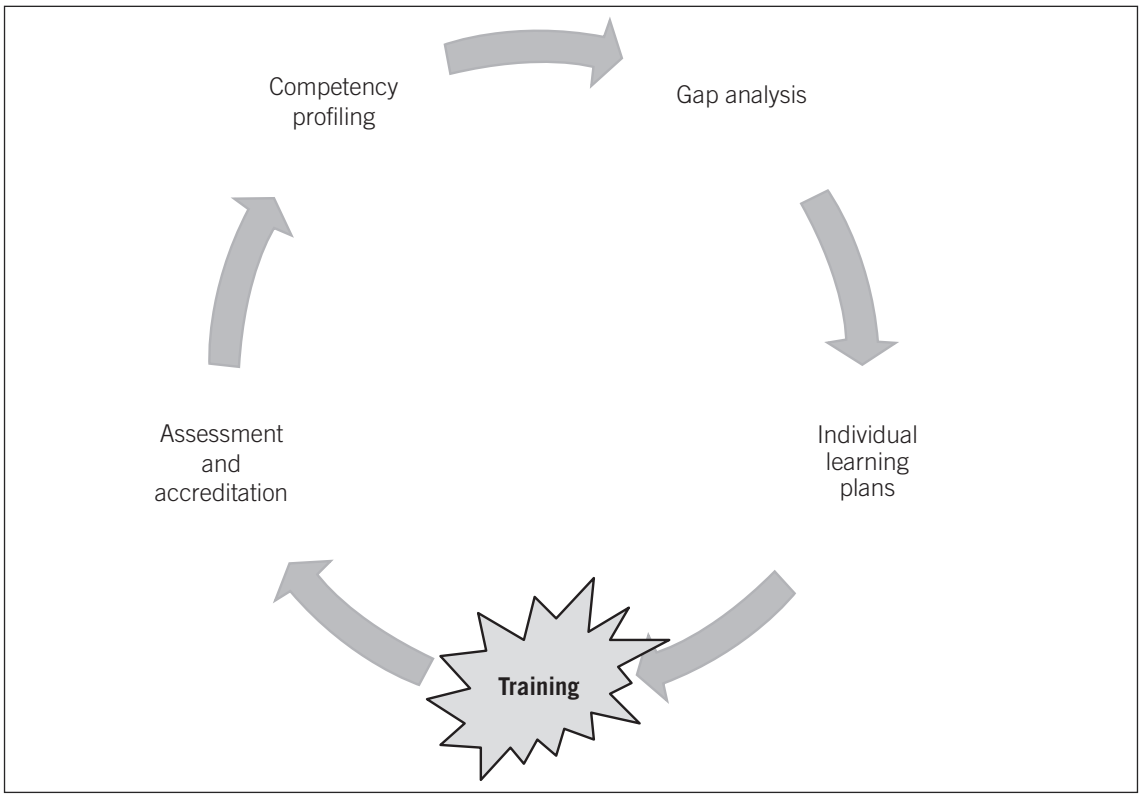
Source: TPT School of Port Operations.

For TPT, the training phase of the cycle, highlighted in figure 7.6, is based on the following principles:

- clear outcomes defined for each training event
- active learning as theory and practical exposure are integrated
- strict alignment with terminal standard procedures
- continuous assessment undertaken to monitor progress
- an integrated summative (final) assessment undertaken where performance criteria are used

For a workplace training unit such as "Conducting general duties in the container environment" (see figure 6.7), *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);[98] and process *outputs* (what must be delivered) are monitored and developed through mentoring. These different elements are reported in table 7.1 for operators of lifting equipment, with integrative (summative) assessment completing the process. Figure 7.7 depicts TPT's training for operators of lifting equipment, cargo coordinators and planners, using the ILO's PDP training materials.

Figure 7.6. Training



Source: TPT School of Port Operations.

[98] Theory must be reinforced during skills training to help trainees contextualize and understand their learning experiences.

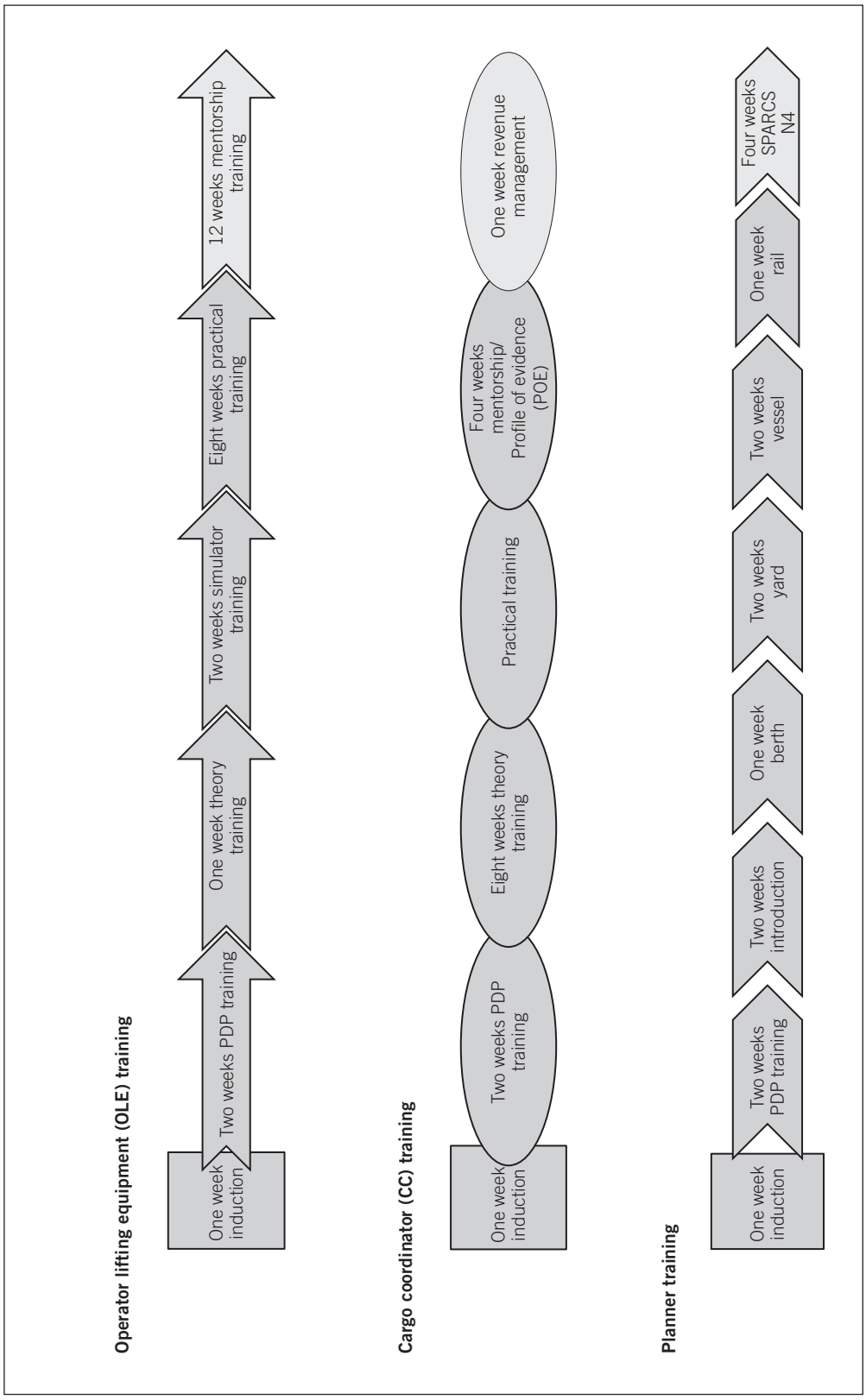


Figure 7.7. Functional training: Operators of lifting equipment, cargo coordinators and planners

Note: Navis SPARCS N4 is a terminal operating system.
Source: TPT School of Port Operations.

It should be evident from table 7.1 and figure 7.7 that portworker training represents a considerable investment of time and money. OLE training lasts 26 weeks, CC training lasts 16 weeks, and planners are trained over a 15-week period. To compete in the global economy, modern-day ports must spend millions of dollars on equipment and facilities. To achieve the most profitable return on their investment in physical resources, they must also invest time and money in their human resources.

Prior to the introduction of the KMS in Germany, portworkers had to spend two years in advanced training to receive a Chamber Certificate. This involved training in the evenings, typically after a full day's shift in the port. Long days and no "partial" (i.e. ongoing) accreditation of the additional training led to a very high drop-out rate (almost 40 per cent). Under the KMS, every partial qualification is certified and modules do not require ponderous bureaucratic recertification as they are permanently certified through collaboration with the Germanischer Lloyd shipping classification company. Assessment and accreditation is the final stage of the training cycle, highlighted in figure 7.8.

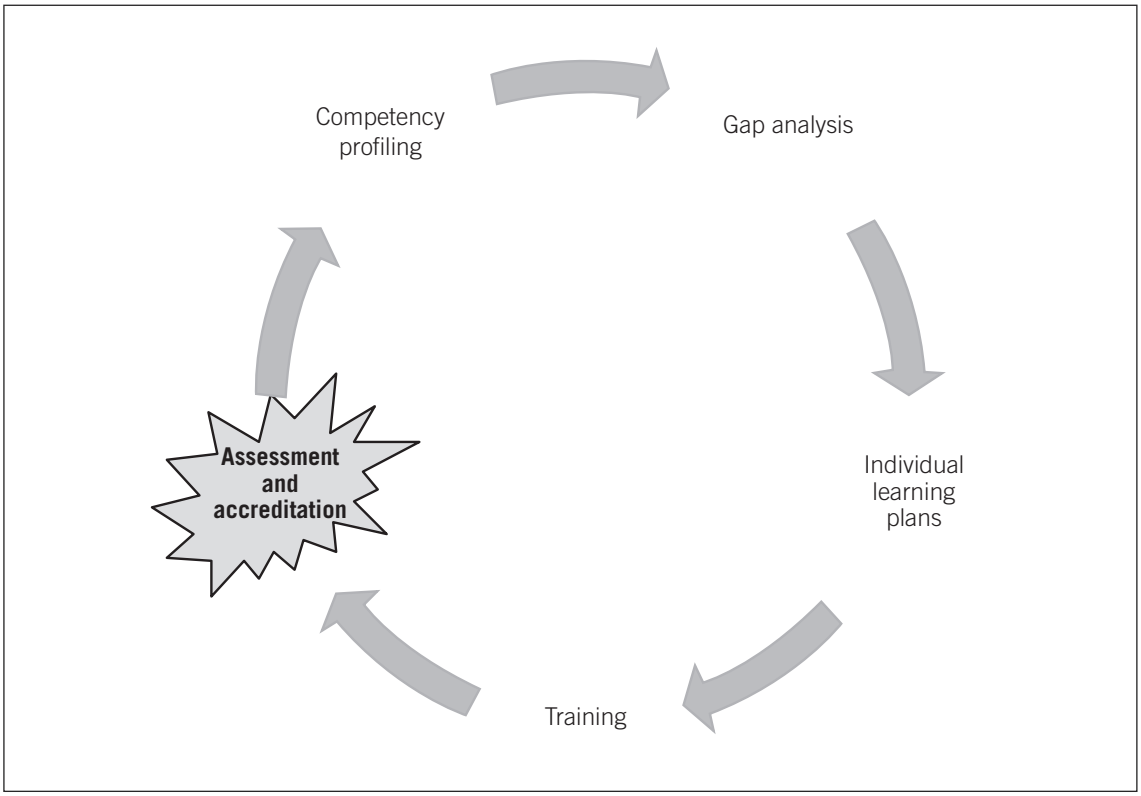
7.5. Assessment and accreditation

Continuous assessment is good training practice, providing feedback for both trainers and trainees. By means of this process, trainers can adjust the content and delivery of training material to suit the learning needs and ability of the trainees (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). As previously noted (table 7.1. and figure 7.7), TPT's training programmes 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
- appropriate
- integrated
- valid
- open/transparent
- sufficient

It is also important to ascertain whether existing assessment criteria are fair to women. In some ports, for example, assessment involves "strength tests" (e.g. for lashing/unlashing operations) which some women complain is not a reliable or necessary test of an employee's ability to perform the job, i.e. not an appropriate test of the employee's competency (Turnbull et al., 2009). With changes to the composition of the workforce, the fairness and appropriateness of assessment criteria is likely to come under increasing scrutiny.

Figure 7.8. Assessment and accreditation



Source: TPT School of Port Operations.

Another important consideration is whether to undertake any pre-training assessment. Maersk Training Centre (MTC), for example, has developed a computer programme (AssessSIM) that can be used to identify suitable candidates for crane driving jobs, saving time and money on subsequent training by "weeding out" unsuitable candidates. In one experiment, the company took a nurse (ultra-cautious, a little nervous, but safe), a chef (precise, if not perfect, but a little slow), a caretaker (fast and efficient) and a ten-year-old schoolboy ("played" the AssessSIM like a Playstation, totally reckless). The verdicts, respectively, were: stick to bedpans, stick to saucepans, start tomorrow, come back in 2020![99]

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" that require 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 will 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. Table 7.2 outlines the "applied competence framework" developed for the South African NQF.

[99] For more information on AssessSIM, contact: jvb013@mtc-maersk.com.

Table 7.2. Applied competence framework, South Africa

Practical competence	Foundational competence	Reflexive competence
The demonstrated ability to perform a set of tasks in an authentic context. A range of actions or possibilities is considered and decisions are made about which actions to follow.	The demonstrated understanding of what the learner is doing and why. This underpins the practical competence and therefore the actions taken.	The demonstrated ability to integrate performance with understanding, to show that the learner is able to adapt to changed circumstances appropriately and responsibly and to explain the reason behind an action.

For each unit standard, assessment criteria are developed for practical, foundational and reflexive competencies, as well as "critical cross-field competencies" as detailed in section 6.2.[100] For example, for the unit "Receiving and dispatching freight and handling freight returns" (National Certificate Level 3, Freight Handling), one expected outcome is to "identify non-conforming freight on arrival and departure". The criteria used to assess this outcome, based on required fundamental, practical and reflexive components (table 7.2), as well as critical cross-field outcomes, are as follows:

Criterion 1
Generate and consider options and possibilities for: (i) safe handling, correct ID and allocation of freight for timely delivery; and (ii) accurate and timely receipt of freight internally dispatched/moved in accordance with authorized documentation.

Criterion 2
Identify most appropriate course of action for: (i) receipt of hazardous goods in accordance with statutory requirements; (ii) storage requirements for specific freight; and (iii) damaged and soiled freight in accordance with company policy and procedure.

Criterion 3
Explain how you have taken into account selection of storage patterns for specific freight.

Criterion 4
Demonstrate facilitating of un/loading of freight from mode of transport.

Criterion 5
Demonstrate completion of all documentation associated with receipt and dispatch in accordance with company policy.

Criterion 6
Examine freight returned, received and dispatched and take corrective action with damaged freight.

Criterion 7
Evaluate your performance and identify strengths and weaknesses and areas for improvement for standard operating procedures.

Criterion 8
Provide ideas for improving dispatch system and time.

[100] Under other national frameworks these competencies are designated "employability skills".

For qualifications to achieve "currency" in the labour market, assessment and especially accreditation must normally be performed in accordance with national guidelines. Under the Code of Practice for lifting equipment in South Africa, for example, the theoretical examination for forklift drivers must consist of a minimum of 40 questions aimed at assessing the learner's achievement of the outcomes of the applicable unit standard.[101] Illiterate or semi-literate learners may be assessed by means of a verbal test in the presence of a witness.[102] The practical test is organized to assess the operator's competence and proficiency in achieving both the unit standard and assessment criteria standards.[103] Any unique (company-specific) competencies required of the operator are also included in the practical test. The practical test is organized to assess the operator's competence and proficiency in achieving both the unit standard and assessment criteria standards. Only registered assessors are allowed to perform practical assessments. 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).

An example of the practical assessment for forklift drivers in Germany is provided in Annex VIII. Standards are very exacting, with tight time limits for each operation and substantial penalty points for non-conformance. The dual approach of the German system – theoretical and practical training – is evident in the practical exam, which includes questions on the lifting capacity diagram for the forklift. Failure to answer this question correctly results in the failure of this part of the practical assessment.

To complete the training cycle, portworkers must be issued with a recognized qualification (e.g. certificate of competence), which typically includes the following information:

- name and logo of the accredited provider or authorized body
- address of accredited provider
- accreditation 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
- any restrictions of operation
- registration number of facilitator and assessor
- UoC number and credit value
- date of issue and expiry date (if applicable)
- authorizing signature

[101] The format of the theoretical questions is optional, but it is recommended that a combination of Yes/No and multiple-choice questions be used. The requirement for written explanatory type answers is not recommended.

[102] The theory test sheet used in such cases is endorsed as a verbal test.

[103] Learners must demonstrate competence on the critical knowledge (theory) assessment before being allowed to participate in the skills (practical) assessment.

Certification data can then be added to the portworker's ID card, which is essential for safety and security in ports. This allows immediate verification of the worker's competency to perform different activities and operate particular types of equipment.

* * *

It is important to ensure that the training cycle is just that – a *cycle*. While the process discussed in this chapter has focused on bringing the existing workforce up to the level of required competency, training should be an ongoing investment that all parties contribute towards. To reiterate, education and training is a right for all people. It is only through the enforcement of appropriate standards and the delivery of effective training that ports can become safe, rewarding and productive places to work.

ANNEXES

Annex I

National occupational standards for port operations, United Kingdom

A. 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 ship's 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

B. Stevedoring pathway (Level 2)

Candidates 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 dry bulk cargo
1.4.1 Operate equipment for moving 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

C. Unit 1.1.4: Load and unload cargo transport units

What this unit is about

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.

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

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

Health and safety

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

Whilst 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		

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: PSS, 2005.

Annex II

Past and present dock labour schemes in Europe, North America and Australasia

Country	Control of labour supply	Availability and mobility of labour	Maintenance/Guaranteed income
Belgium	"Dock work", as legally defined, is restricted to dockworkers in the "port zone", under thet join control of employers and the unions.	All dockers are "casuals", but many work on a regular basis for the same employer. Extensive raining to ensure flexibility.	Not less than 65% of basic salary (usually 70-80%) paid from state benefits (75%) and employer contributions (25%) financed via a levy on gross wages.
France[1]	'Dock work' was legally definedand restricted to registered dockers. De jure control of labour supply by the BCMO, de facto control by the union.	All dockers were casuals with preference given to "*professionnel*"over over "*occasionnel*". Labour was allocated through the BCMO (state labour office) in each port. Some ports used a rota, others a "free call" system of hiring.	Professional dockers were guaranteed 300 half-day shifts (4 hours) per annum, financed by a levy on the employers' wage bill.
Germany	Dockers have no special legal or other status, but are covered by similar terms and conditions as other portworkers. Joint supervisory boards at the local level.	Most dockers (84%) are permanently employed, while the rest are employed by the port labour pool (GHB) on similar pay and conditions. The pool is financed by the employers, with the allocation of workers on a numerical (rota) basis. Extensive training to ensure flexibility.	Guaranteed monthly income, based on guaranteed payment for the first shift of any day, financed by employers and port users.
Italy[2]	Dock work is restricted to workers on the registers of the port companies. These companies are associations of workers (cooperatives), which are set up, merged or liquidated by the port authority.	Labour is provided by the worker cooperatives who either provide labour to port undertakings or carry out un /loading operations directly.	Dockers receive a daily guarantee of up to 80% of their pay, which is financed via a levy added to port charges.
Netherlands[3]	All dockers are registered and permanently employed. Legislation provides a national framework for the industry, with extensive joint regulatory bodies at the port level.	Dockers are either employed directly by port operators or by the labour pool (SHB), which is used to accommodate fluctuations in demand. Extensive training to ensure flexibility.	Full pay at all times, financed by state benefits (55%) and employer contributions (45%).

Country	Control of labour supply	Availability and mobility of labour	Maintenance/Guaranteed income
Portugal	Dock work is restricted to port workers who hold a "*carteira professional*" and are registered with either the port work coordinating centre, a port-based joint management organization, or the port authority.	Dockers are either employed directly by port companies or a labour pool (the size of which is determined by the Minister).	Pool workers have a guaranteed salary of 75% of the basic monthly salary financed by the employers and, in the case of any shortfall of funds, the State.
Spain[4]	Dockers are registered with the Pork Workers' Organization (PWO) an autonomous state agency working under the Ministry of Labour.	Private companies can employ dockers on either a permanent or casual basis. Dockers are allocated on a rota basis by the PWO.	Casual dockers receive a guaranteed wage.
United Kingdom[5]	The NDLS provided a legal definition of dock work and dockers (and employers) were registered with the NDLB. The National and Local Boards were jointly controlled by the employers and the unions.	Prior to 1967, dockers were casuals. Most were allocated by the Port Labour Office, but London retained a "free" call. After 1967 all registered dockers were permanently employed by operating companies.	Attendance payments and a guaranteed weekly wage (set nationally) applied until 1980 (replaced by port or company guarantees). Payments were financed by a levy on the employers' wage bill.
United States – West Coast	Only union (ILWU) members can perform dock work. Class A (fully registered) workers are given preference over Class B (registered casuals).	Labour is allocated through the union hiring hall on the basis of "low man out" hiring (the worker with the lowest accumulated number of hours has first choice of work), except in the ports of San Francisco and Los Angeles where "steady" means are employed by most operators.	Pay Guarantee Plan under the 1960 Mechanization and Modernization Agreement provided 35 hours pay per week, financed via an assessment on hours (paid by the operational employers) and tonnage (paid by the shipping companies).
United States – New York	Dockers are registered with the Waterfront Commission, and only registered dockers can perform dock work.	Most dockers are employed as "list" (regular) workers with a particular company. The rest are allocated from a hiring hall, which is regulated by the Waterfront Commission. Allocation is based on seniority.	A Guaranteed Annual Income (GA1) scheme introduced in 1964 provided up to 1,900 hours per annum guaranteed pay (at the straight time rate), financed via a levy on cargo.
Australia[6]	Dock work is restricted to members of the Waterside Workers' Federation (WWF), a pre-entry closed shop. Employment is jointly regulated by the union and the employers.	All dockers are permanent employees of the companies with provisions for inter-company transfers in the event of surpluses/shortages.	Idle time payments are financed by a levy on all employers.

Country	Control of labour supply	Availability and mobility of labour	Maintenance/Guaranteed income
New Zealand[7]	Dock work was defined by statute and was under the control of the Waterfront Industry Commission (WIC). The size of the register was determined by joint agreement between employers and the union.	Labour was allocated by the WIC on a casual basis, with "low man out" hiring to equalize hours. Dockers on container terminals could be allocated for up to 5 months.	Idle time payments were paid from a National Administration Fund, financed by a levy on the employers' wage bill and a supplementary charge on container traffic. Guaranteed weekly wage equal to 40 hours (time rate).

Notes:

[1] The 1947 Act which established the French dock labour scheme was abolished in 1992, allowing employers to enter direct contracted arrangements (permanent employment) with dockworkers. Some dockworkers retained their casual status.

[2] Following a ruling in the European Court on competition and monopoly in Italian ports, dockworkers are increasingly employed by the operating companies, rather than worker cooperatives.

[3] In the wake of the global financial crisis, SHB was declared bankrupt in January 2009.

[4] The Spanish dock labour scheme was reformed in the mid-1980s.

[5] The NDLS was abolished in 1989 and these regulations no longer apply. Employers now use direct employment and casual labour.

[6] This was the situation prior to the implementation of extensive reforms between 1989 and 1992. Wharfies are now covered by enterprise-based agreements.

[7] These arrangements were terminated in 1989 in favour of direct employment by the operative companies.

Source: Author.

Annex III

Users of the ILO's Portworker Development Programme (PDP)

AFRICA

- Arab Maritime Academy (Port Training Institute), Alexandria, Egypt
- Department of Maritime Transport, Ministry of Transport and Communication, Eritrea
- Express Maritime Services Ltd., Tema, Ghana
- Regional Maritime Academy, Accra, Ghana
- Mauritius Port Authority, Mauritius
- International Maritime School Ltd., Nigeria
- Nigerian Ports Authority, Nigeria
- United Nations Conference on Trade and Development (UNCTAD), Project in Berbera, Somaliland
- PORTNET Academy and PORTNET (Port Operations Division) South Africa
- Pretoria University, South Africa
- Public Ports Authority, Port Sudan, Sudan
- SeaPorts Corporation Training Centre, Sudan

ASIA AND THE PACIFIC

- AMC Search Ltd., Australia
- Chittagong Port Authority, Bangladesh
- Hong Kong International Terminals, Hong Kong, China
- Hong Kong Logistics Association, Hong Kong, China
- The Hong Kong Polytechnic, Hong Kong, China
- Modern Terminals Limited, Hong Kong, China
- Shanghai Maritime University, China
- Indian Institute of Port Management, India

- Mudra Port & SEZ Ltd., India
- P&O Ports Pvt. Ltd., India
- Jakarta International Container Terminal, Tanjung Priok, Indonesia
- Chung-Ang University, Republic of Korea
- Korea Port Training Institute, Republic of Korea
- Ministry of Maritime Affairs and Fisheries, Republic of Korea
- Johore Port Training and Development Centre, Johore, Malaysia
- Klang Container Terminal, Northport, Kelang, Malaysia
- Malaysian Association of Productivity, Malaysia
- Port of Tanjung Pelepas, Malaysia
- Papua New Guinea Harbours Board, Port Moresby, Papua New Guinea
- Oriental Port and Allied Sea Corporation, Cebu City, Philippines
- Philippines Port Authority, Manila, Philippines
- PSA Corporation Limited, Singapore
- STET Maritime Education, Singapore
- Colombo Nautical and Engineering College, Colombo, Sri Lanka
- Sri Lanka Ports Authority, Colombo, Sri Lanka
- Thai Laemchabang Terminal Company Limited, Thailand
- APORTIL - GTZ/MTSD, Timor Leste
- ARSER S.A., Turkey
- Insan Kayanklari Egitim A.S, Turkey
- Dubai Port Authority, United Arab Emirates
- Port of Port Villa, Vanuatu

EUROPE

- United Stevedoring Co. Ltd., Cyprus
- Thessaloniki Port Authority, Thessaloniki, Greece
- Ministry of Competitiveness and Communications, Malta
- HZ Safety B.V., Netherlands
- Shipping and Transport College, Rotterdam, Netherlands
- TEMPO, Port of Rotterdam Consulting, Rotterdam. Netherlands
- Wubeling and Partners, port safety consultants, Rotterdam, Netherlands
- Port of Novorossiysk Timber terminal, Novorossiysk, Russian Federation
- Luka Koper, Port of Koper, Slovenia

- Fundacion Puertos De Las Palmas, Spain
- FUNESPOR, Spain
- World Maritime University, Malmo, Sweden
- Bestshore Business Solutions, United Kingdom

AMERICAS

- Association TRAINMAR in South America (ATAS) training centres in Argentina, Chile, Peru and Uruguay
- Directorate of Ports and Coasts, Government of Brazil, Brazil
- Consilium Services Inc., Canada
- COCATRAM training centres in Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama
- Altamira Terminal Portuaria, S.A. de C.V. Mexico
- Ensenada and Vera Cruz Container Terminal (ICAVE), Vera Cruz, Mexico
- IENPAC, Mexico City, Mexico
- Manzanillo International Terminal - Panama S.A., Panama
- Panama Ports Corporation (Balboa and Cristobal terminals)
- Universidad Maritima Internacional de Panama, Panama
- Cia, Minera Antamina S.A., Peru
- PLIPDECO, Trinidad and Tobago
- Carriers Container Council Inc, United States
- Global Maritime & Transportation School, United States
- Pacific Maritime Association, United States
- U.S. Merchant Marine Academy, United States

Annex IV

Portworker Development Programme, Unit C.4.1: Safe working on container terminals

Unit introduction

1. Unit aims

This unit is designed:

1. To explain why container terminals are dangerous working environments.
2. To discuss the importance and development of company safety policies and a company safety culture.
3. To describe the general principles of safe working on a container terminal.
4. To explain the practical procedures for safe access to and safe working on a container terminal.
5. To discuss the need for and nature of emergency procedures and systems.

2. Unit objectives

After completing this unit, the learner will be able to:

1. Demonstrate that ports and terminals are dangerous places to work in, and identify the main causes and consequences of accidents at work.
2. Outline the terminal's safety organization, and list the duties and responsibilities of the safety officer, safety representatives, safety committee, management and portworkers with respect to safety.
3. Explain why the terminal needs to establish a safety policy, safety rules and safe systems of work, state who is responsible for establishing them, and describe the form in which they are published.
4. List and briefly explain the steps involved in a risk assessment exercise, and indicate its value in establishing and maintaining safe systems of work.
5. State and explain the six main principles of segregation designed to provide a safe working environment on the terminal.
6. List and explain the ten general safety rules that must be observed by all terminal employees.

7. Explain the procedures governing safe access to the quay and vessel by ships' crews and visitors, by supply vehicles and by port employees in the course of their work.
8. Describe the procedures for giving routine safe access for authorised pedestrians to 'restricted' areas of the terminal.
9. Describe the procedures for safe working at the terminal gate and at container interchanges, and explain the reasons for those procedures.
10. Describe the safety precautions necessary to protect engineering and other staff as they travel to and from a terminal operational area and work within it.
11. State the safety practices and procedures to be followed by operators of terminal vehicles and container-carrying equipment.
12. Describe the safe means of access to high work locations on the terminal, and explain the safety precautions for working at height.
13. State the safety procedures to be followed when using hand tools and when lifting and carrying loads.
14. Describe the personal protective equipment provided for those working on a container terminal, and explain why and how it is used.
15. Describe the requirements for providing and maintaining a safe working environment on the terminal.
16. Describe what is meant by "good housekeeping", explain why it is important, and state who is responsible for carrying it out.
17. Explain the need for and development of a terminal emergency plan, and describe the procedures and precautions taken to prepare for and deal with emergencies.
18. Describe the steps involved in an accident investigation, and state how the report resulting from one is used.

1. Define, recognize the best definition of, or distinguish between true and false statements concerning, the technical terms used in the unit, as listed in sections 3 and 4 below.

3. Unit prerequisites

It is assumed that trainees will, before starting this unit, have completed successfully the following unit or will have demonstrated (for example by successfully completing the test for that unit) their understanding of the topics covered by it:

Container terminal operations (C.1.1)

In addition, the following technical terms are used in this unit on the assumption that they will be understood from prior general knowledge, training and experience, and are not directly defined in the unit. It is your responsibility to ensure that trainees understand the terms when they are used:

berth (-ed)
board of directors
break-bulk general cargo
cargo-handling (operations)
chassis
chief executive
container (terminal)
container freight station (CFS)
container yard
corner fitting
corrosive
crane rails
dunnage
emergency service
fire extinguisher
fire hydrant
flammable
fork pocket
gangway
gate (-house)
hatch (cover)
head-block
hierarchy
infrastructure
klaxon
lift-truck
line manager
log book
management information system (MIS)
mast (of lift-truck)
out-of-gauge cargo
over-height cargo
overweight cargo
over-width cargo
preventive maintenance
quay (-side)
quayside gantry crane
quay transfer (operation)
railhead
rail-mounted gantry crane
receipt/delivery (operation)
reception (office)
rubber-tyre gantry crane (RTG)
ship operation
spreader (frame)
stevedoring
straddle carrier
supervisor
tally clerk
toxic (fumes, chemicals)
tractor-trailer (system)
transfer equipment
twist-lock (fitting)
un-containerized cargo
vapour

4. Technical terms defined in the unit

The technical terms listed below are defined in the unit; they are printed in **bold type** when they first occur in the Lesson Plan. It is your responsibility, as instructor, to ensure that they are fully understood by the trainees as they are introduced and used, as achievement of that understanding (as demonstrated by the ability to define or recognize the best definition of the terms, or to distinguish between true and false statements about them) is one of the objectives of the unit (Objective 19):

authorized person
bump hat
buoyancy aid
competent authority
competent person
confined space
dangerous (IMDG) goods
ear protection
emergency control centre
emergency plan
examination area
eye protection
first-aider
first-aid room/centre
fumigate (-tion)
good housekeeping
grid
guard hoop
handhold
high-visibility ("hi-vis") clothing
incident (emergency) controller
inertia reel system
interchange
International Maritime Dangerous Goods (IMDG) Code
lifebelt
lifebuoy
life jacket
lifting attachment
light meter
limited safety stop
load limiter
load plate
lux
main (emergency) controller
medical centre
movable platform
non-operational area
operational area
operations/terminal control centre
out-of-gauge area
permit for work
personal protective equipment
platform/cage attachment
protective clothing
quay ladder
refrigerated container ("reefer") area
responsible person
restricted (operational) area
risk assessment
risk control measure (RCM)
roadway
safe system of work
safety audit
safety belt/harness
safety boots
safety committee
safety culture
safety handbook/manual
safety helmet
safety officer
safety policy
safety representative
safety stop
safe working load (SWL)
safe working load indicator
seat belt
segregation
ship's safety notice
Simon's Hoist/Tower
"spade"
stanchion
start-up check
test certificate
thorough examination
toe-board
walkway
weekly inspection

5. Preparation for the unit

1. Unit C.4.1 is a classroom-based Unit, designed around a series of illustrations, instructor-led discussions and exercises, though it should include one or more visits to operational and other areas, to clarify the classroom descriptions of terminal safety provisions, procedures and practices. All such visits (including those for Exercise 4) must be with the full permission and cooperation of the operations and engineering departments, and be accompanied by appropriate managers and safety officers. Full safety clothing must be worn by all trainees if they are allowed in the terminal working areas on foot.

2. You must study the Lesson Plan (below) in depth well before attempting to deliver the unit to a class, and ensure that you fully understand all the topics covered by it. If any aspect of the unit is not fully understood, it is your responsibility to seek advice and explanation from the appropriate subject specialist(s) in the port; attendance of the specialist(s) at initial training sessions might be helpful. Attendance and active participation by the terminal safety officer (or the senior manager responsible for terminal safety) would be extremely helpful.

3. The unit package includes nearly all the materials needed for the session but, if time and resources allow, it would be useful to obtain photographs (e.g. colour slides) of the container terminal's restricted areas, walkways, safety and direction signs, etc., as well as wall charts and, if available, a model of the terminal, to supplement the material provided and to give added local interest and value to the unit. Make sure that every trainee brings the pocket-sized plan previously issued to him/her. You should also prepare illustrations to supplement or replace those summarizing the safety organization and the responsibilities of safety personnel. In particular, you should prepare one for step 3.1 outlining the terminal's safety policy.

4. You should have available a full printed version of the terminal's Safety Handbook or Manual (and its Emergency Plan, if that is a separate publication) and copies of the short-form employee version for each trainee. Make sure that every trainee takes a copy of that booklet when s/he leaves. It is your responsibility to read the Handbook carefully and to be thoroughly familiar with the port/terminal safety rules and procedures; although the unit reflects the best practice of leading ports and follows the ILO's Convention No. 152 and Recommendation No. 160 (as amplified and explained in its Code of Practice, *Safety and health in ports* — a copy of which you should also have), you may need to modify the detailed wording of individual 'activity steps' in the unit to make them completely compatible with national legislation and local rules and regulations.

5. The unit gives general figures for port accident rates, but there will be greater impact if you can insert data relating to accidents and injuries in the trainees' terminal at appropriate points in the text. Similarly, discussions after the case study exercises will have greater value (shock value!) if you can describe similar incidents that have happened in the terminal or nearby ones. If port/terminal policy permits, show the class accident photographs borrowed from the safety officer.

6. If possible, obtain a light meter from the terminal, and learn how it is used to measure lighting levels so that you can demonstrate its use to the class.

7 For Section 13 of the unit, you will need to collect demonstration samples of the personal protective equipment and clothing issued to portworkers.

8 Obtain for demonstration one of the terminal's first-aid boxes, and find out the locations of all the boxes, the stretchers and other emergency equipment. Mark the locations on a copy of the terminal plan (preferably in the form of an OHP).

9. To conclude and amplify Section 16, dealing with emergency procedures and precautions, it is recommended that trainees visit the terminal's emergency control centre or desk, to meet and question senior emergency staff. It will also be helpful to invite members of the terminal's medical/nursing/first-aid facility to attend the session, to explain their functions, and to arrange a demonstration from the terminal's fire service or the local fire service of the different types of fire extinguisher.

10. The objectives for the unit are spread over four OHPs – OHPs 0a, 0b, 0c and 0d. It is suggested that you show the relevant OHP, with the particular objective revealed, immediately after completion of each section of the unit (at the point indicated), to reinforce the learning tasks and to clarify what the trainees are expected to be able to achieve at that point.

11. The training room should be fully prepared before the session, with appropriate seating, overhead projector and screen.

12. Instructions for the class exercises are provided as Worksheets 1 to 6. Prepare sufficient copies of the trainee pages of the Worksheets for each trainee to have a set (though the exercises will be carried out in small groups). Note that Worksheets 4 and 6 also include pages (not to be copied) giving detailed guidance to you on how those exercises should be organised and run. Notes to assist you in the exercise de-briefing discussions are provided at the end of the unit.

13. Sufficient copies of the Test Paper and Evaluation Form should be prepared in advance for every trainee to have one of each. The Test Paper should be presented immediately after the end of the final session and marked immediately if possible; the trainees could be asked to complete their Evaluation Forms while the Test is marked. The session should then end with a brief Feedback discussion on the Test, giving the correct answers (and the reasons for them) and clarifying any items that appear to have caused general problems. The answers to the Test questions are given at the end of the unit.

14. You must make sure that you have read thoroughly and fully understood Unit A.0.1; it should preferably have been re-read recently, as a source of general advice on organizing and running a training session.

15. To help you to plan the session(s) for this unit, the topics covered are listed below, with the numbers of sections and "activity steps" relating to them:

1.1 - 1.9	The dangers of container terminal working
2.1 - 2.9	Terminal safety organization and responsibilities
3.1 - 3.6	Safety policy, safety rules and regulations, safety handbook, risk assessment
4.1 - 4.9	Principles of segregation – safety by design
5.1 - 5.4	General safety rules
6.1 - 6.8	Safe access to the quayside and berthed vessel
7.1 - 7.10	Safe pedestrian access to "restricted" areas
8.1 - 8.7	Safe access for container-carrying vehicle
9.1 - 9.8	Safe access for operational and engineering reasons
10.1 - 10.13	Safe driving practices and procedures, equipment testing, fitness for use
11.1 - 11.10	Safe access to high work locations
12.1 - 12.4	Safe use of hand tools and lifting
13.1 - 13.13	Personal protective equipment and its use
14.1 - 14.14	Providing and maintaining a safe working environment
15.1 - 15.7	Principles of good housekeeping
16.1 - 16.20	Emergency plans, precautions and procedures, accident investigation

Annex V

Vocational education and training (VET) systems in Australia and Singapore

The Australian VET System

Industry leadership of VET in Australia is "a deliberate and distinctive characteristic of the national system" (ANTA, 2003a; see also Hampson, 2004). One indication of how employers now dominate the training agenda is that from 2005 onwards all training must include "employability skills" (i.e. non-technical skills that are required by employers for effective employment). As the Australian National Training Authority (ANTA) has acknowledged, "Increasingly employers look for workers who bring more of themselves to work and invest more of themselves in work. They seek workers who have an array of aptitudes, capabilities and dispositions that move beyond the vocational knowledge and attributes as traditionally understood" (ANTA, 2003b, p. v). The Australian Chamber of Commerce and Industry (ACCI) and the Business Council of Australia (BCA) have identified eight core employability skills:

Communication skills – which contribute to productive and harmonious relations between employees and customers

Teamwork skills – which contribute to productive working relationships and outcomes

Problem-solving skills – which contribute to productive outcomes

Initiative and enterprise skills – which contribute to innovative outcomes

Planning and organizing skills – which contribute to long-term and short-term strategic planning

Self-management skills – which contribute to employee satisfaction and growth

Learning skills – which contribute to ongoing improvement and expansion in employee and company operations and outcomes

Technology skills – which contribute to effective execution of tasks

These skills are embedded in the competency-based training packages that are developed by Australia's eleven Industry Skills Councils (ISCs). These training packages describe the skills and knowledge needed to perform effectively in the workplace without prescribing how people should be trained. Put differently, the emphasis is on what the learner can do, not how or where they learned to do it. In principle, every training package should:

- provide a consistent and reliable set of components for training, recognizing and assessing peoples skills;
- enable nationally recognized qualifications to be awarded through direct assessment of workplace competencies;

- encourage the development and delivery of flexible training which suits individual and industry requirements; and
- encourage learning and assessment in a work-related environment which leads to verifiable workplace outcomes.

Under the Australian Qualifications Framework (AQF) (www.aqf.edu.au) there are eight qualification levels, ranging from Certificates to Vocational Graduate Diplomas. (The situation is complicated by the fact that state qualifications sometimes differ from national (federal) qualifications.) As the Australian system assumes that competence is readily measurable through the performance and appraisal of observable behaviour, the eight different levels are defined in terms of "learning outcomes". The specified outcomes for the first four Certificate levels, which take the worker up to supervisory status, are as follows:

Certificate I

Characteristics of learning outcomes
Breadth, depth and complexity of knowledge and skills would prepare a person to perform a defined range of activities, most of which may be routine and predictable. Applications may include a variety of employment-related skills including preparatory access and participation skills, broad-based induction skills and/or specific workplace skills. They may also include participation in a team or work group.

Distinguishing features of learning outcomes
The competencies should enable an individual with this qualification to:

- demonstrate knowledge by recall in a narrow range of areas;
- demonstrate basic practical skills, such as the use of relevant tools;
- perform a sequence of routine tasks given clear direction;
- receive and pass on messages/information.

Certificate II

Characteristics of learning outcomes
Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of operations to be applied. Performance of a prescribed range of functions involving known routines and procedures and some accountability for the quality of outcomes is required. Applications may include some complex or non-routine activities involving individual responsibility or autonomy and/or collaboration with others as part of a group or team.

Distinguishing features of learning outcomes
The competencies should enable an individual with this qualification to:

- demonstrate basic operational knowledge in a moderate range of areas;
- apply a defined range of skills;
- apply known solutions to a limited range of predictable problems;

- perform a range of tasks where choice between a limited range of options is required;
- assess and record information from varied sources;
- take limited responsibility for own outputs in work and learning.

Certificate III

Characteristics of learning outcomes
Breadth, depth and complexity of knowledge and competencies would cover selecting, adapting and transferring skills and knowledge to new environments and providing technical advice and some leadership in resolution of specified problems. This would be applied across a range of roles in a variety of contexts with some complexity in the extent and choice of options available. Performance of a defined range of skilled operations, usually within a range of broader related activities involving known routines, methods and procedures, where some discretion and judgement is required in the section of equipment, services or contingency measures and within known time constraints. Applications may involve some responsibility for others. Participation in teams including group or team co-ordination may be involved.

Distinguishing features of learning outcomes
The competencies should enable an individual with this qualification to:

- demonstrate some relevant theoretical knowledge;
- apply a range of well-developed skills;
- apply known solutions to a variety of predictable problems;
- perform processes that require a range of well-developed skills where some discretion and judgement are required;
- interpret available information, using discretion and judgement;
- take responsibility for own outputs in work and learning;
- take limited responsibility for the output of others.

Certificate IV

Characteristics of learning outcomes
Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts, most of which are complex and non-routine. Leadership and guidance are involved when organizing activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature. Performance of a broad range of skilled applications is expected, including the requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills. Applications involve responsibility for, and limited organization of, others.

Distinguishing features of learning outcomes
The competencies should enable an individual with this qualification to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts;

- apply solutions to a defined range of unpredictable problems;
- identify and apply skill and knowledge areas to a wide variety of contexts, with depth in some areas;
- identify, analyse and evaluate information from a variety of sources;
- take responsibility for own outputs in relation to specified quality standards;
- take limited responsibility for the quantity and quality of the output of others.

For each qualification level, trainees must successfully complete a specified number of competency units. Training packages are fully modularized and allow considerable flexibility for both trainers and trainees.

Actual training is delivered through a competitive training market with contestable public funding, where registered training organizations (RTOs) compete for trainees and funding. RTOs are also responsible for the assessment of qualifications or specific units of competency within their scope of registration. However, a Senate Inquiry in 2000 noted that market-based arrangements with inadequate supervision had led to some RTOs issuing faulty qualifications and there have been concerns raised about a "race-to-the-bottom" in terms of the quality of assessment (Australian Government, 2000). Employers have certainly reported inconsistency of assessment practices between RTOs and it is well-known that some RTOs keep two sets of records – the first "official" set uses the dichotomous competent/not yet competent approach, while the second "unofficial" set grades units of competency for competitive recruitment (with trainees graded according to various traits desired by employers such as versatility, diligence, pro-activity, maturity, ability to accept constructive feedback, confidence, and even whether the individual is "well mannered"). The OECD recently noted the weakness of assessment in Australia (Hoeckel et al., 2008).

Another shortcoming of the Australian system of VET is the limited role of trade unions as social actors and the relatively weak voice of workers (compared to employers) within different occupations. The Australian Industry Skills Councils (ISCs) are registered companies with employers and trade unions represented as shareholders, although formal union representation on the boards of the different Councils ranges from just one out of six on Service Skills Australia to three out of five on Transport & Logistics. While ISCs are required to "consult" with trade unions, employers and other groups, there is no formal system of codetermination as found in many European countries. As a result, most unions in Australia focus on enterprise-level negotiations as a way of securing training benefits for their members. In 2005–06, less than one in five federally negotiated collective agreements contained any provisions for training leave, compared to one in four agreements in 2003–04 (DEWR, 2007, p. 61). Insufficient time is one of the principal reasons why Australian workers say they are not able to participate in training, even though they want to (Pocock et al., 2009, pp. 70–71).

Although employers have secured greater control over the formal education and training system in Australia, they still complain about skill shortages and recruitment and retention problems (Buchanan, 2006). Employer training expenditure has in fact stagnated, while individuals are spending more time and money on education and training than ever before, according to the Australian Bureau of Statistics (2003) (see also Dumbrell, 2004; Watson et al., 2003). Despite their investment, workers complain about the lack of "decent jobs" (Buchanan, 2006). In many respects, this is the result of a rather narrow approach to "competence" in Australia's system of VET, which limits the access of trainees to forms of knowledge that facilitate autonomous reasoning, both at work and beyond (Buchanan et al., 2009). The notion of workers simply "being competent" in their current job is often perceived by employers (both present and future) as the "lowest common denominator" rather than the industry standard. But if the minimum becomes defined as the basic standard, then the minimum becomes the maximum that

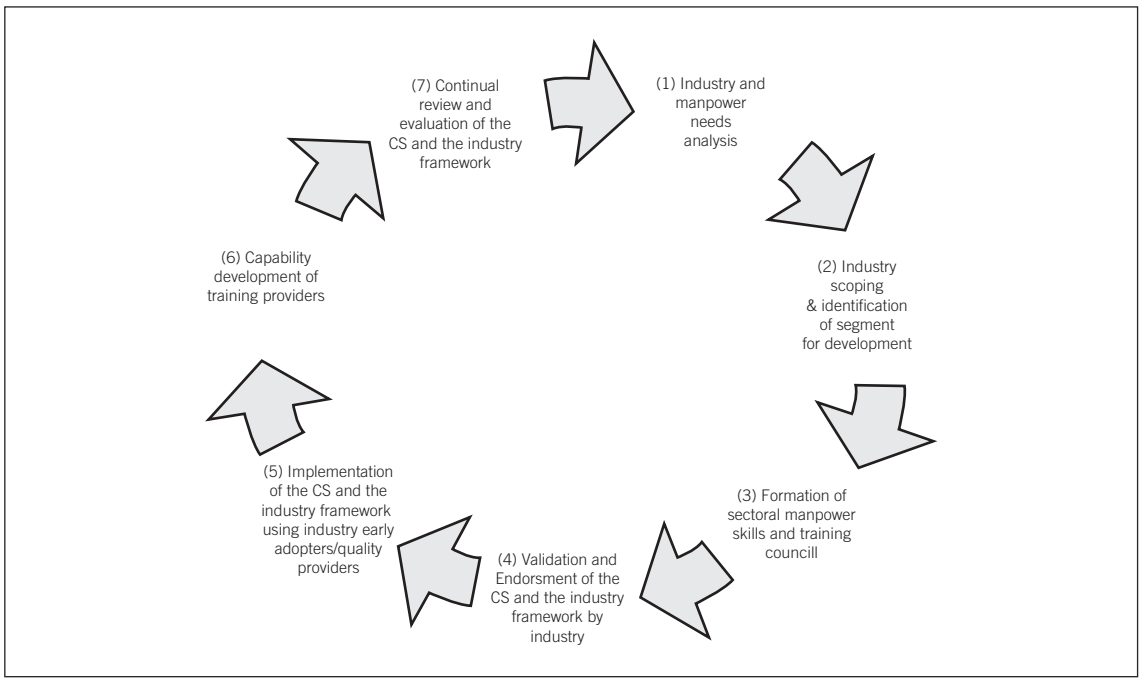
the government is prepared to fund, especially in a context where the purpose and mission of VET has been narrowed to "producing skills needed for work".

Highly contextualized knowledge gained through narrow competency-based training that is focused primarily on procedural tasks – with limited exposure to the broader system of meaning within which these procedural tasks are ultimately embedded – can deny workers access to education that will allow them to handle abstract knowledge and truly develop analytical capacity and other transferable skills. The knowledge we all need to participate fully in society cannot be reduced to "generic skills for work" or simply "employability skills". When it comes to being competent, "the whole is definitely more than the sum of the parts – or in particular, units of competence" (ibid.). The two major challenges for the Australian system of VET are therefore: (i) how to ensure that the market and institutions work better together, and (ii) how to identify modern notions of vocation in a world where the nature of work is in perpetual transition.

Singapore's VET system

A key factor in Singapore's transformation to become one of the world's most modern economies has been heavy investment in education and training. With no natural resources to fall back on, Singapore is almost entirely dependent on its human capital. Singapore no longer provides cheap labour for multinational companies but aspires to be the "knowledge hub" of South-East Asia.

VET in Singapore, which is government-led, has been restructured on three occasions since its inception in the 1960s. In 2003 the Workforce Development Agency (WDA) (www.wda.gov.sg) was created to build on the previous developments of the National Skills Recognition System (NSRS). The WDA is a statutory board under the Ministry of Manpower, with oversight for the Workforce Skills Qualifications (WSQ) system. The WSQ is not only more comprehensive than its predecessor but comprises a full competency map covering all occupations in an industry section with clear cer-

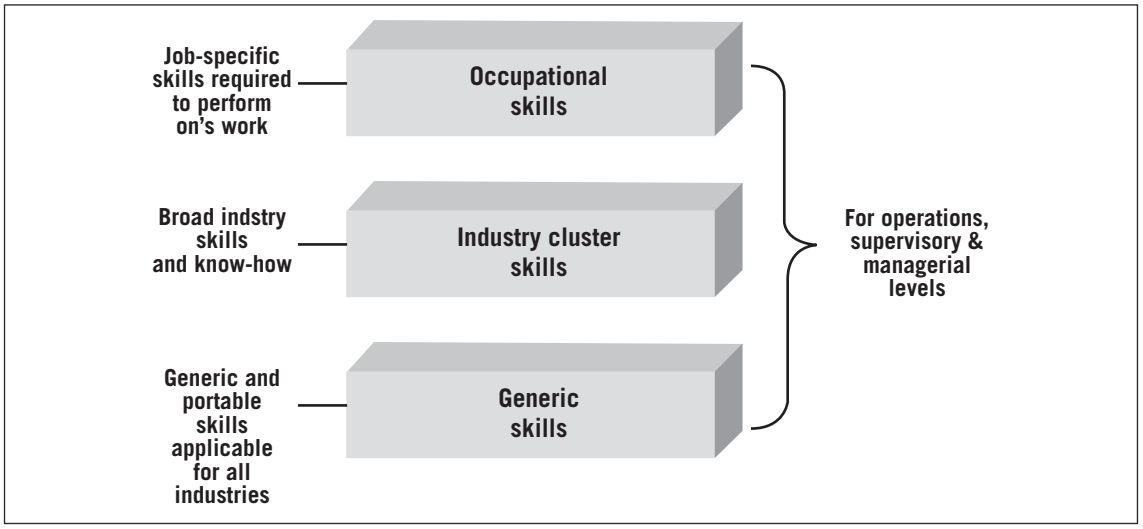


tification points, career development and training pathways, and nationally recognized qualifications. By 2009 there were 24 WSQ frameworks, each developed by an Industry Skills and Training Council (ISTC) represented by key industry partners (i.e. employers, industry associations, training organizations and unions). Within the WSQ framework, the ISTCs drive the development of skills standards (competency standards, CS), assessment strategies and training curriculum for the industry. This process is depicted below.

The WSQ system links competency standards and generic employability skills with job-relevant training for occupations and industries. The WSQ-Employability Skills (WSQ-ES) identifies ten essential skills for all workers that are portable across industries, namely:

- literacy
- numeracy
- basic information communication technology (ICT) skills
- communication and relationship management
- initiative and enterprise
- learning and personal development
- personal effectiveness
- problem solving and decision making
- workplace ICT applications
- workplace safety and health

These generic skills are combined with industry skills and occupational skills to produce "three-tier skill sets", as depicted below:



An industry "competency map" for each sector is created through the combination of these skills, which provide the basis for training towards occupationally-linked Continuing Education and Training (CET) qualifications. Industry-based training centres work alongside the Institute of Technical

Education which offers apprenticeships (2–3 years) as well as Certificates in technical, business and office skills.

Under the new competency-based training system, assessment is performance-based but does not imply new standards of performance, rather a tangible articulation of current standards. As such, it recognizes prior learning (work experience) as one of two assessment pathways:

Train and assess – facilitated learning with workplace assessment.

Assessment only – challenge tests (participants are tested on their specific skills and assessed against the pre-determined performance criteria set by the industry) and recognition of prior learning (workers must provide evidence of their competencies in the form of documentation, third party reports, video recording of their performance, testimonials, resume, training evaluations and training records).

Training is flexible and explicitly designed to cater for both work-based and off-site training, with learning focused on specific units[2] to fill competency gaps or a more comprehensive programme to build up to full qualifications (a "unit of competency" is a statement of a key function or role in a particular job or occupation.). Each training module leads to the award of a Statement of Attainment (SOA), which can be combined subsequently with other SOAs in accordance with industry standards to achieve the WSQ qualification. These qualifications progress from Certificates to Higher Certificates, Advanced Certificates, Diplomas, Specialist Diplomas, Graduate Certificates and Graduate Diplomas. The first four levels, up to and including supervisory responsibilities, are as follows:

Level 1 – Certificate

- Ability to perform a range of work activities, most of which are routine and in a stable and predictable context
- The knowledge acquired is mainly factual and procedural requiring basic comprehension skills
- Work activities comprise basic tasks mainly undertaken by persons in entry level or operational occupations with some accountability within clearly specified boundaries
- Activities are carried out with clear instructions under close supervision requiring minimal judgement

Minimum credit value = 10cv (equivalent to 100 hours of recommended training and assessment hours)

Level 2 – Higher Certificate

- Ability to perform a range of work activities, some of which are non-routine and complex, in a variety of contexts
- The knowledge acquired is mainly factual or procedural with some understanding of relationships and associations
- Work activities comprise tasks employing higher skills sets mainly undertaken by front-line supervisors some accountability within specified boundaries
- Activities are carried out under frequent supervision requiring some judgement or reasoning

Minimum credit value = 10cv (equivalent to 100 hours of recommended training and assessment hours)

Level 3 – Advanced Certificate

- Ability to apply and contextualize skills and knowledge in a range of work activities and in a variety of contexts, most of which are complex and non-routine
- The knowledge acquired is procedural with elements of abstraction and theory
- Work activities comprise tasks involving the guidance of others and some planning and allocation of resources
- Activities are carried out under general supervision requiring a significant degree of judgement

Minimum credit value = 15cv (equivalent to 150 hours of recommended training and assessment hours)

Level 4 – Diploma/Professional Diploma

- Ability to apply and contextualize skills and knowledge in a broad range of high-level technical or professional work activities and in a wide variety of contexts
- The knowledge acquired involves a sound understanding of theoretical concepts
- Work activities comprise tasks involving a substantial degree of individual accountability and autonomy for self and responsibility over others within broad boundaries
- Activities are carried out under minimal supervision requiring a significant degree of judgement and decision-making

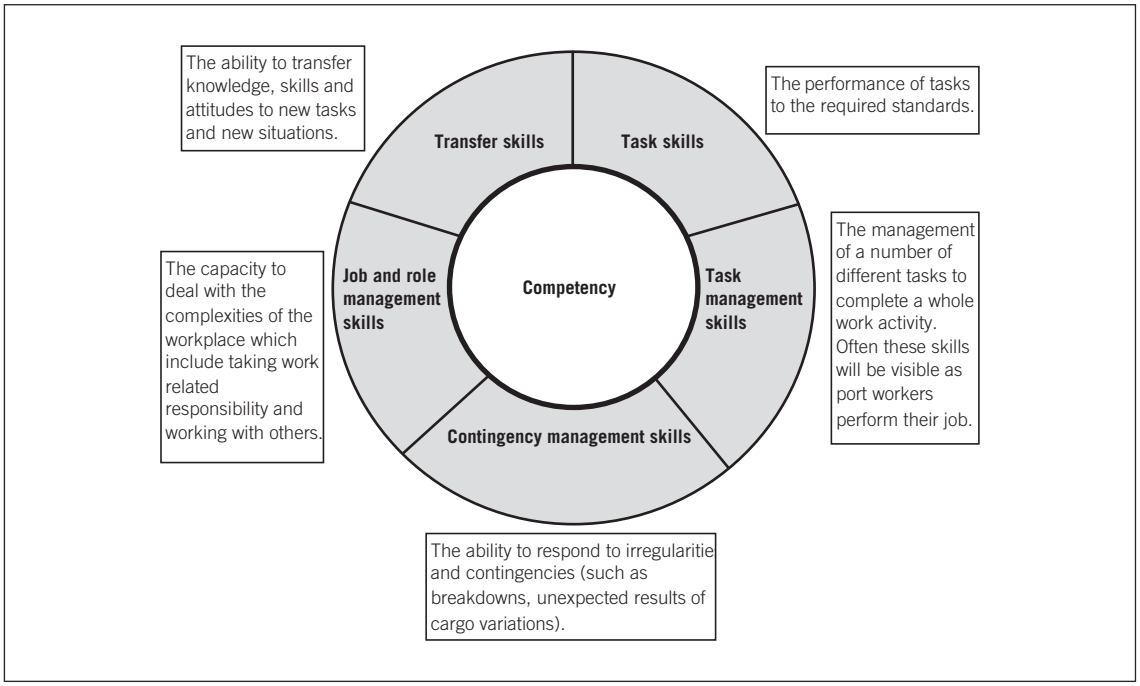
Minimum credit value = 20cv (equivalent to 200 hours of recommended training and assessment hours)

Under the Singaporean system, competency refers to "the ability to perform a specific work task or function with the right knowledge, skills and attitudes" (Singapore WDA, 2007, p. 18) The concept of competency incorporates "the ability to transfer skills and knowledge to new situations and environments" as well as "the performance tasks expected in the workplace" (ibid.) The system is rooted in the "functionalist–behaviourist" model of competencies (i.e. focused on different aspects of the job and meeting job demands, see table 1.1) with competency standards (CS) providing "guidance on how people can work better as they express the best practices in the industry" (ibid. p. 19). Training and assessment of KSAs, for example, "focuses on the ability to perform rather than the obtainment of academic knowledge" (ibid. p. 29). This conception of competency is characterized by five interrelated dimensions, as depicted below:

As statements of the skills, knowledge and attitudes expected of people in various positions and roles in the workplace, CS must be translated into a curriculum before training and assessment can take place. A CS comprises the following components:

WSQ framework – this identifies the industry for which the CS was originally developed.

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 CS.



Competency unit code – this serves as short-hand and a quick way to identify the various characteristics of the competencies in the standard.

Competency unit title – this describes a particular work role, duty or function, which forms the smallest group of skills, knowledge and abilities set able to be recognized separately for certification. It refers to a grouping of tasks which make up the job functions.

Competency descriptor – provides an overview of what the CS covers, indicating the KSAs 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 and refers to the three operational levels of the workforce (i.e. operations, supervisory and managerial).

Credit value – assigned by WDA and based on the WSQ credit system.

Performance criteria – these state the performance criteria in behavioural terms, specifying the expected performance outcome, the evaluative criterion, 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.

Evidence sources – this provides information on the type and quality of evidence required to demonstrate competence, including product or service evidence, process evidence and knowledge evidence.

The WDA appoints Approved Training Organizations (ATOs) and Continuing Education and Training (CET) centres to deliver the nationally recognized WSQ training (there are more than 60 ATOs and around 50 CET centres). In addition, many companies have adopted WSQ for their own in-house training. State regulation of the major training providers is a key component of the national quality assurance system, which includes processes for pre- and post-delivery accreditation as part of a continuous improvement review.

While Singapore's VET system makes provision for the representation and involvement of the social partners, it must be remembered that the role of trade unions is more heavily circumscribed than in Europe or other developed economies (see Barr, 2000; Deyo, 1989; Leggett, 2008, 2009). Thus, although apprenticeship schemes in Singapore are modelled after Germany's "dual training system", with on- and off-the-job training and education, the system does not provide a similar role or influence for trade unions. In short, the training agenda in Singapore is set by the State and business interests prevail in the design and delivery of competency-based training.

Annex VI

PDP training programme for chief instructors

The following is an example of a possible structure for the PDP training programme leading to certification of chief instructors.

Day 1: Theme: The Portworker Development Programme
- Lesson Plan 1: Introduction to the course
- Lesson Plan 2: The aims of PDP
- Lesson Plan 3: The Portworker Development Programme
- Lesson Plan 4: The PDP training materials

Day 2: Theme: Training needs analysis
- Lesson Plan 5: Training needs analysis
- Lesson Plan 6: The training model
- Lesson Plan 7: Selection of training strategies

Day 3: Theme: Instructors' presentational skills
- Lesson Plan 8: Lectures and lessons
- Lesson Plan 9: Lesson delivery using the PDP materials
- Lesson Plan 10: Training resources and audio-visual aids
- Lesson Plan 11: Planning for the micro-teaching workshop

Day 4: Theme: Micro-teaching workshop
- Lesson Plan 12: Demonstration of PDP lesson delivery
- Lesson Plan 13: Critiquing skills
- Lesson Plan 14: Preparation for the micro-teaching workshop

Day 5: Theme: Planning, organizing and managing a PDP course
- Lesson Plan 15: Designing the content
- Lesson Plan 16: Planning and organizing the course
- Lesson Plan 17: Preparing the classroom
- Lesson Plan 18: Managing the course

Day 6: Theme: Organizing and running class exercises
- Lesson Plan 19: Types of small-group exercises
- Lesson Plan 20: Organizing and running class exercises
- Lesson Plan 21: Questioning techniques
- Lesson Plan 22: Micro-teaching discussion skills

Day 7: Theme: Practical exercises and site visits
Lesson Plan 23: Organizing site visits

Day 8: Theme: Assessment and evaluation procedures
Lesson Plan 24: Assessment of trainee knowledge
Lesson Plan 25: Running the tests
Lesson Plan 26: Forms of assessment
Lesson Plan 27: Course evaluation

Day 9: Theme: Designing training schemes
Lesson Plan 28: Training needs
Lesson Plan 29: Course assembly

Day 10: Theme: Conclusion to the course
Lesson Plan 30: Preparing training schemes
Lesson Plan 31: Future workplan
Lesson Plan 32: Care of the PDP materials

Annex VII

Container inspection training programme, Germany

Abbreviation	FHL LF 05		
Description	At various interface points, the participants inspect containers for their cargo and loading suitability. They use their knowledge of container types, dimensions and load bearing capacities to select appropriate containers for the respective customer. They inspect containers for certification, identity, external and internal integrity, document the result in a foreign language as well and evaluate the container's suitability. They use cross-port and company-specific computer systems. In case of detected defects, they will take appropriate measures and document the results.		
Competences	– Ship inspection		360 min.
	– Container specification		1 035 min.
	– Container inspection		1 110 min.
	– Container selection		945 min.
	– Gate inspection		360 min.
	– Train inspection		360 min.
Lessons	0,0 h	**Total time:**	4 170 min.
Handout	Participant handout		0,0 h

Description of single competences:

Competence	*Ship inspection*
Description	The participants use cross-port and company-specific computer systems. In case of detected defects, they will take appropriate measures and document the results.
Abbreviation	GL
Learning goals	– Economic significance of inspections – Container inspection – Documentation during inspection / ship
Requirement	–
Credit points	0

Theoretical part	360 min. (allowed time)
Practical part	720 min. (allowed time)
Competence time	1 080 min.

Learning goal	**Economic significance of inspections**
Content	– Costs and time expenditure due to faulty shipping – Waste of resources due to unnecessary additional transports – Economic damage (e.g. environmental burden) – Responsibilities at the terminals – Cargo protection – Insurance costs
Reference	Participants' own research
Method	Instruction, group activity
Level	Understanding *Time* 30 min.

Learning goal	**Container inspection**
Content	– Differences between empty and full containers – Damage code, code types, monitor code – Damages – Cargo security – Labels/placards – Excess width, height, length – Container locked? – Seals present? – New placards attached according to cargo? – Clip-on unit (correct temperature set)?
Reference	Textbook: Baumann, *Logistische Prozesse,* 13th ed., pp. 307–312
Method	Practical exercise
Level	Application
Time	30 min.

Learning goal	**Documentation during inspection / ship**
Content	– Documentation during ship processing – Loading and unloading papers – Computer operation
Reference	Concept: Bridge supervision
Method	Instruction, practical exercise
Level	Application
Time	300 min.

Competence	*Container specification*
Description	The participants can specify container types, their dimensions and load-bearing capacity, assisted by their acquired knowledge.
Abbreviation	GL
Learning goals	– Standards, types, components: Container types – Standards, types, components: Container labels – Basic container structure – Container labelling – Container dimensions and load-bearing capacity
Requirement	–
Credit points	0
Theoretical part	1 035 min. (allowed time)
Practical part	720 min. (allowed time)
Competence time	1 755 min.

Learning goal	**Standards, types, components: Container types**
Content	Container types and their cargo options – Regular piece goods container DC (dry cargo) – Regular piece goods container OH (open hard top) – Closed container DC (dry cargo, ventilated) – Closed container VB (ventilated box, partially ventilated) – Thermal container RF (Reefer container), IS (isolated box) – Container without fixed roof OT (open top) – Platform PL – Platform FR (Flat Rack), FC (Flat Collapsible) – Tank container TK – Bulk cargo container BK (Bulk Container)
Reference	Teaching aid: FZH collection Concept: G7 Learning area 6 Textbook: Baumann, *Logistische Prozesse*, 13th ed., pp. 220 ff.
Method	Instruction, practical exercise
Level	Understanding
Time	90 min.

Learning goal	**Standards, types, components: Container labels**
Content	– Owner and manufacturer label – International Convention for Safe Containers (CSC) – Approved Continuous Examination Programme (ACEP) – Customs seal certificate – Timber Component Treatment (TCT)
Reference	Teaching aid: FZH collection Concept: G7 Learning area 6 Textbook: Baumann, *Logistische Prozesse*, 13th ed., pp. 220 ff.
Method	Instruction, practical exercise
Level	Understanding
Time	90 min.

Learning goal	**Basic container structure**
Content	– Main construction materials – Basic structure/components
Reference	Concept: FZH Concept: "Container inspection", p. 1
Method	Instruction
Level	Understanding *Time* 15 min.

Learning goal	**Container labelling**
Content	– Container number with inspection number (Alpha prefix, identification key, owner key) – ISO code, old and new – Max. gross weight – Tare – Max. payload
Reference	Concept: "Container inspection", p. 13
Method	Instruction, group activity
Level	Understanding
Time	30 min.

Learning goal	**Container dimensions and load-bearing capacity**
Content	– Dimensions of various container types – Permissible loads according to ISO
Reference	Concept : "Container inspection", pp. 5 ff.
Method	Group activity, practical exercise
Level	Application
Time	90 min.

Competence	*Container Inspection*
Description	The participants inspect the container in terms of certification, identity, external and internal condition, document the results in a foreign language as well, and evaluate its suitability.
Abbreviation	GL
Learning goals	– External inspection – Internal inspection – Dictionary for person inspecting – Significance of seals – Documents and certificates for container – Monitoring code table – Container inspection regulations – Container damages
Requirement	–
Credit points	0
Theoretical part	1 110 min. (allowed time)
Practical part	3 600 min. (allowed time)
Competence time	4 710 min.

Learning goal	**External inspection**
Content	- Inspect beams, posts, welding seams and fittings - Check walls and ceilings for holes - Doors should be passable - Locking devices should be functioning - Inspect CSC safety certification label - Remove old stickers
Reference	Textbook: Baumann, *Logistische Prozesse*, 13th ed., pp. 307–312 Workbook: Baumann, *Logistische Prozesse*, 2nd ed., pp. 96–98 CTU-Packrichtlinien, pp. 8–11
Method	Group activity, practical exercise
Level	Application
Time	180 min.

Learning goal	**Internal inspection**
Content	– Inspect floor, walls, and ceilings for deformation – Inspect fastening elements – Lighting test – Inspect for moisture – Odor inspection and cleaning – Remove nails and other foreign particles
Reference	Textbook: Baumann, *Logistische Prozesse*, 13th ed., pp. 307–312 Workbook: Baumann, *Logistische Prozesse*, 2nd ed., p. 96–98 CTU-Packrichtlinien, pp. 12–14
Method	Group activity, practical exercise
Level	Application
Time	180 min

Learning goal	**Dictionary for person inspecting**
Content	– relevant vocabulary for person inspecting
Reference	Concept : "Container inspection", pp. 66 ff.
Method	Instruction, written exercise
Level	Application
Time	45 min.

Learning goal	**Significance of seals**
Content	– Inspection of seals – Types of seals
Reference	Concept: "Container inspection", p. 38
Method	Practical exercise
Level	Understanding
Time	30 min.

Learning goal	**Documents and certification for container**
Content	– Shipping note, port data set – Dangerous goods documentation – Other documentation – Bill of lading – Equipment Interchange Receipt (EIR/Interchange)
Reference	Textbook: Hartman, *Spezielle BWL des Groß- und Außenhandels*, 12th ed., p. 46
Method	Written exercise
Level	Understanding
Time	90 min.

Learning goal	**Monitoring code table**
Content	Tables are company-specific and separated by component, deformation, code
Reference	Concept: "Container inspection", p. 39
Method	Instruction
Level	Understanding
Time	90 min.

Learning goal	**Container inspection regulations**
Content	The participants follow the currently valid regulations: – IICL – Shipping company-related regulations – Container ledger
Reference	Participants' own research
Method	Instruction, written exercise
Level	Understanding
Time	15 min.

Learning goal	**Container damages**
Content	– Causes of damage (long-term damage, inappropriate treatment) – Types of damage – Transport stress – Typical damage to fixed and mobile components
Reference	Participants' own research
Method	Instruction, practical exercise
Level	Understanding
Time	45 min.

Competence	*Container selection*
Description	The participants use their knowledge of container types, dimensions and load-bearing capabilities to select containers that meet the customer and cargo requirements.
Abbreviation	GL
Learning goals	– Cargo-specific usability – Loading-specific usability – Documentation
Requirement	–
Credit points	0
Theoretical part	945 min. (allowed time)
Practical part	1 800 min. (allowed time)
Competence time	2 745 min.

Learning goal	**Cargo-specific usability**
Content	Consultation with clients, customers and other persons involved Possible types of cargo are: – General cargo – Bulk goods – Liquid cargo – Fruit – Reefer cargo
Reference	Textbook: Baumann, *Logistische Prozesse*
Method	Instruction, written exercise
Level	Understanding
Time	180 min.

Learning goal	**Loading-specific usability**
Content	Consideration of the specific loading requirements for the various cargo and container types
Reference	Textbook: Baumann, *Logistische Prozesse* and Concept: "Container handling"/FZH
Method	Instruction, written exercise
Level	Understanding
Time	180 min.

Learning goal	**Documentation**
Content	– Purpose of the documentation (consequences of incorrect inspection, liability, responsibility) – Interface inspection – Types of damage – Electronic documentation (company-specific and industry-wide) – Applicable hardware/software – Technical terms in English
Method	Instruction, group activity
Level	Application
Time	270 min.

Competence	*Gate inspection*
Description	The participants use cross-port and company-specific computer systems. In case of detected defects, they will take appropriate measures and document the results.
Abbreviation	GL
Learning goals	– Container inspection – Documentation during inspection / gate – Economic significance of inspections
Requirement	–
Credit points	0
Theoretical part	360 min. (allowed time)
Practical part	1 800 min. (allowed time)
Competence time	2 160 min.

Learning goal	**Container inspection**
Content	– Differences between empty and full containers – Damage code, code types, monitor code – Damages – Cargo security – Labels/placards – Excess width, height, length – Container locked? – Seals present? – New placards attached according to cargo type? – Clip-on unit (correct temperature set)?
Reference	Textbook: Baumann, *Logistische Prozesse*, 13th ed., pp. 307–312
Method	Practical exercise
Level	Application
Time	300 min.

Learning goal	**Documentation during inspection / gate**
Content	– Documentation during truck processing – Walkie-talkie terminal – Computer operation – Interchange Receipt (ICR)
Reference	Concept: “Gate inspection”
Method	Instruction, practical exercise
Level	Application
Time	300 min.

Learning goal	**Economic significance of inspections**
Content	– Costs and time expenditure due to faulty shipping – Waste of resources due to unnecessary additional transports – Economic damage (e.g. environmental burden) – Responsibilities at the terminals – Cargo protection – Insurance costs
Reference	Participants' own research
Method	Instruction, group activity
Level	Understanding
Time	30 min.

Competence	*Train Inspection*
Description	The participants use cross-port and company-specific computer systems. In case of detected defects, they will take appropriate measures and document the results.
Abbreviation	GL
Learning goals	– Basics of train transport – Container inspection – Train containers – Documentation of container inspection – Use of walkie-talkies during inspection/train
Requirement	–
Credit points	0
Theoretical part	1 080 min (allowed time)
Practical part	720 min (allowed time)
Competence time	1 800 min

Learning goal	**Basics of train transport**
Content	– Wagon categories and types – Specially equipped wagons for trains – Wagon markings, wagon number – Audit – Route grid – Labelling
Reference	Textbook: Baumann, *Logistische Prozesse* Concept FZH, "Container Inspection / Train" CTA
Method	Instruction
Level	Knowledge
Time	15 min.

Learning goal	**Container inspection**
Content	– Differences between empty and full containers – Damage code, code types, monitor code – Damages – Cargo security – Labels/placards – Excess width, height, length – Container locked? – Seals present? – New placards attached according to cargo type? – Clip-on unit (correct temperature set)?
Reference	Textbook: Baumann, *Logistische Prozesse*, pp. 307–312
Method	Practical exercise
Level	Application
Time	300 min.

Learning goal	**Train containers**
Content	Container types and areas of application
Reference	Textbook: Baumann, *Logistische Prozesse*
Method	Instruction
Level	Knowledge
Time	15 min.

Learning goal	**Documentation of container inspection**
Content	EIR (Equipment Interchange Receipt) These are transfer certificates for containers, trailers, chassis and similar transport units and equipment components. Upon visual inspection, the EIR lists all defects and/or indicates them via checkmarks in the drawings of the pre-printed form that might show a CTU, for example. If the inspection determines, for example, that a container exhibits previously undocumented damages, the prior party who was in control of the container must pay the restoration or repair costs. A thorough inspection and truthful documentation must therefore be in the best interest of all parties involved.
Reference	Participant's own research Strauch, Winfried: "Sicherung der Ware im Container", in *Containerhandbuch*, Vol. I, p. 342
Method	Instruction, practical exercise
Level	Application
Time	90 min.

Learning goal	**Use of walkie-talkies during inspection/train**
Content	Operation of walkie-talkies (display, keys and components) and the dialogue during train container processing – Train track map – Inspection
Reference	Concept “Container inspection / train”
Method	Instruction, practical exercise
Level	Application
Time	90 min.

Annex VIII

Forklift assessment, Germany

This annex shows the assessment details for the practical examinations in forklift (Station 1.1) as well as the overall assessment sheet below.

Date : _____ 20 _____

Surname : _____ First name : _____ Date of birth: _____

Station	Mark	Factor	Points
1. Transfer technique			
1.1 Forklift			
a. Start-up and shutdown of reach stacker		x 0.1	
b. Stacking containers		x 0.1	
c. Loading a crate on to a swap-body		x 0.1	
d. Taking a loaded flat down off a truck		x 0.1	
Stacker total			
1.2 Rigging			
a. Crate		x 0.15	
b. Several coated pipes		x 0.15	
c. Double-T girder		x 0.15	
d. Heavy cargo		x 0.15	
Rigging total			
Total number of points for transfer technique			
2. Transfer and stacking			
2.1 Inspecting and loading of container, and securing of load		x 0.2	
		x 0.4	
2.2 Selection and inspection of a wagon and preparation of cargo		x 0.15	
		x 0.25	
Total number of points for transfer and stacking			
3. Hazardous goods			
3.1 Hazardous goods in container (packing certificate)		x 0.3	
3.2 Receipt of hazardous goods		x 0.4	
3.3 Preparation of hazardous goods		x 0.3	
Total number of points for hazardous goods			

Board of examiners

Practical exam – Station 1.1: Forklift

a. Stacker and reach stacker start-up and shutdown

Maximum number of points: 100
Number of points to be deducted:

Start-up:			
No visual inspection of:			
	Forks / prongs	1	
	Tilt cylinder / mast	5	
	Wheel bolts, snap ring, condition of tyres	5	
	Fork anchor pin not checked	50	
Lifting frame not extended, not tilted forwards and backwards		10	
Did not check to see if there were any foreign bodies between the wheels		20	
Footbrake and handbrake / pressure gauge not checked – 20 points each		40	
Parking brake not checked in stationary position		20	
Warning device not checked: horn / all-round light – 20 points each		40	
Lighting system (where present) not checked		5	
Concrete question on the name plate		10	
Question on using the lifting capacity diagram not answered or wrong answer given		100	
Shutdown:			
	Failure to put the handbrake on	10	
	Fork prongs not on the ground	10	
	Ignition key not removed	10	
	Main switch not switched off	10	
	Total number of points deducted		
	Number of points obtained		

b. Shifting / stacking a container

Time allowed: 7 minutes
Maximum number of points: 100
Number of points to be deducted:

Time exceeded:	up to 1.0 minute	35	
	up to 1.5 minutes	50	
	up to 2.0 minutes	75	
	over 2.0 minutes	100	
Forks raised too far from the stack		10	
During the procedure, container placed at more than a hand's breadth from the back of the fork		20	
Need for a positioning guide disregarded		100	
Inserting the forks underneath the rear fork pockets (metal plates)		100	
Fork not inserted/withdrawn freely into/from the pockets – in either case:		20	
Failure to look round before reversing		40	
Container not moved close to the ground (adapted to the terrain)		10	
Container moved with mast tilted forward		20	
Container raised clearly too far from the stack (more than 6 metres)		10	
Mast with container tilted clearly forward from the perpendicular before reaching the stack		20	
Failure to check whether the container doors are closed		50	
More than 3 shunts when dropping the load		10	
More than 4 shunts when dropping the load		20	
More than 5 shunts when dropping the load		30	
	Total number of points deducted		
	Number of points obtained		

c. Loading a crate with off-centre centre of gravity on a swap-body in the longitudinal centre and up against the headboard

Time allowed: 5 minutes
Maximum number of points: 100
Number of points to be deducted:

Time exceeded:	up to 1 minute	20	
	up to 2 minutes	35	
	up to 3 minutes	45	
	up to 4 minutes	55	
	up to 5 minutes	65	
	over 5 minutes	100	
During the procedure, load placed at more than a hand's breadth from the back of the fork		20	
Centre of gravity of the load not placed in the middle of the fork prongs		20	
Forks set clearly too close together		20	
Failure to look round before reversing		40	
Failure to travel with the load close to the ground in accordance with the terrain		10	
Moving the load with the mast clearly tilted forward		20	
Touching the sideboard with the forks		50	
Clearly touching the opened front sideboard with the mast / wheel		50	
Load clearly not placed against the headboard		20	
Load clearly off-centre on the longitudinal axis of the swap-body		20	
Crossbar/vertical strut **clearly touched** with the mast or load		100	
	Total number of points deducted		
	Number of points obtained		

d. Taking a loaded flat down off a truck

Time allowed: 3 minutes
Maximum number of points: 100
Number of points to be deducted:

Time exceeded:	up to 1 minute	20	
	up to 2 minutes	50	
	up to 3 minutes	75	
	over 3 minutes	100	
Failure to check the truck's twist-locks		100	
Touching the truck with the mast / wheel		50	
Flat picked up in the empty fork pockets (wrong choice of pocket)		100	
Failure to look round before reversing		40	
During the procedure, flat placed at more than a hand's breadth from the back of the fork		20	
Failure to travel with the flat close to the ground in accordance with the terrain		10	
Moving the flat with the mast clearly tilted forward		20	
Fork not inserted/withdrawn freely into/from the pockets – in either case:		20	
	Total number of points deducted		
	Number of points obtained		

Glossary

Accreditation	A process by which an agency or organization evaluates or recognizes a training or academic programme or an institution as meeting certain predetermined standards or requirements.
Adult learning	The process by which adults learn and build on their skills and knowledge.
Assessment	A process of collecting evidence and making judgements as to whether an individual has achieved a certain level of competency.
Assessment criteria	Provide the context and conditions under which the assessment will be conducted, what evidence the assessor must collect and the grading criteria to be used.
Assessment guidelines	Provide an overview of the assessment system, assessor qualifications and training, designing assessment resources, and technical principles of assessment.
Assessment methodologies	Assess the degree of learning or extent of knowledge, skills or attitudes acquired by an applicant to demonstrate prior learning in relation to a set of predetermined competencies.
Assessment system	A process that supports and maintains the integrity, relevance and efficiency of assessment for an organization or enterprise.
Assessment tool	An instrument or resource used in association with a given assessment method. It may include a questionnaire, test paper, interview questions, structured report template and record sheet.
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.
Competence	Knowledge, skills and attitudes that a person needs and uses in an occupation that is both observable and measurable and that forms the basis for competency-based criteria.
Competency-based assessment	A process of gathering evidence and judging whether a learner is able to achieve a standard of competency identified by a particular industry as essential for satisfactory performance.
Competency standards	Skills, knowledge and attitudes needed to perform a job task and describe the acceptable levels of performance.
Credit	A unit of measure assigned to courses or course-equivalent learning.
Credit transfer / exemption	The automatic granting of a competence result in a competency/module based on a student's satisfactory result in a unit/module. Credit (advanced standing) can only be given when the equivalence between the two units/modules is clearly stated in curriculum documentation.
Curriculum guidelines	Guidelines to the design of competency-based training programmes.
Employability skills	Foundation skills and qualities that are transferable and critical for workers to become more employable and effective in the workplace.

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.
Evidence source	A dimension of a competency standard. Activities from which the types of evidence required to prove competent performance may be obtained. The evidence includes product evidence, process evidence and knowledge evidence.
Facilitator guides	A guide which maps out a suggested training strategy for the delivery of a unit/module, which is part of a course of study. It is cross-referenced to the learner guide, and provides the trainer with examples of delivery methods that may be used for delivering the training.
Industry competency map	A map which 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. These maps can be used to illustrate career.
Learning	The process of acquiring knowledge, attitudes, abilities or skills from study or experience.
Learning needs	Knowledge, skills or attributes identified that need to be acquired by an individual in order to close current or future competency gaps or to meet organizational or unit level goals or objectives.
Learning outcome	The skills and knowledge a learner should be able to demonstrate as a result of having undertaken training and/or assessment. It must be measurable, clear and observable.
Level descriptor	A description of levels of learning through a hierarchy of knowledge and skills.
Lifelong learning	All learning activities undertaken throughout life for the development of competencies and qualifications.
Moderation	A process of comparing the assessment judgements in relation to the same competency by different assessors in a variety of contexts to achieve consistency and continuous improvement while ensuring that the assessment is valid, fair and reliable.
Mutual recognition	The acceptance by one institution of a qualification given to a learner by a different institution. It exempts a learner from repeating competencies that he/she has already attained.
Pathway	A sequence of learning or experience to be followed for obtaining 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 descriptors	A statement that describes the characteristics of learning demand that the learner will encounter at each level.
Qualification	Formal certification issued by a relevant approved body, in recognition that a person has achieved learning outcomes identified by the industry.

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 and context	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 and services, types of customers.
Recognition of prior learning	The acknowledgement of a person's skills and knowledge acquired through previous training, work or life experience, which may be used to grant status or credit in a subject or module.
Trainer	A person engaged in the delivery of training or facilitating individual or group.
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.
Unit of competency	A statement of a key function or role in a particular job or occupation.
Validation	A process for confirming the correctness or soundness of information or findings.
Vocational education and training (VET)	Education and training beyond compulsory education, but excluding degree-level programmes, which provides individuals with occupational or work-related knowledge and skills.

Bibliography

Accario, M. 2008. "The role of ports in the development of Mediterranean islands: The case of Sardinia", *International Journal of Transport Economics*, Vol. 25, No. 3, pp. 295–323.

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

AQF Advisory Board. 2007. *Australian Qualification Framework: Implementation handbook* , 4th ed. (Canberra).

—; Raffe, D.; Young, M. 2009a. *Researching NQFs: Some conceptual issues*. Employment Working Paper No. 44 (Geneva, ILO).

—; —; Strathdee, R.; Wheelahan, L.; Young, M. 2009b. *Learning from the first qualifications frameworks*, Employment Working Paper No. 45 (Geneva, ILO).

ASEAN Ports Association (APA). 2004. *Best practice manual on port safety, health, environment and security*, Report prepared by the Permanent Secretariat of the ASEAN Ports Association. Available at: http://www.asean-ports.com/APA%20Best%20Practice%20CD/Logistics/Logistics%20Mgmt.doc.

Australia, Government of. 2000. *Aspiring to excellence: Report of the Inquiry into the Quality of Vocational Education and Training in Australia*, Senate Employment, Workplace Relations, Small Business and Education References Committee, Commonwealth of Australia.

Australian Bureau of Statistics. 2003. *Employer training expenditure and practices*, Cat. No.6362.0.

Australian National Training Authority (ANTA). 2003a. *Shaping our future: A discussion starter for the next national strategy for vocational education and training 2004–2010* (Brisbane).

— 2003b. *Report to the Australian National Training Authority on its High Level Review of Training Packages* (Canberra: Australian National Training Authority).

Barr, M .D. 2000. "Trade unions in an elitist society: The Singapore story", *Australian Journal of Politics & History*, Vol. 46, No. 4, pp. 480–496.

Bartel, A. P. 1994. "Productivity gains from the implementation of employee training programs", *Industrial Relations*, Vol. 33, No. 4, pp. 411–25.

Barton, H.; Turnbull, P. 2002. "Labour regulation and competitive performance in the port transport industry: The changing fortunes of three major European seaports", *European Journal of Industrial Relations*, Vol. 8, No. 2, pp. 133–56.

Belmans, M. 2009. *Well-being in the Port of Antwerp* (Antwerp: CEPA).

Bjornavold, J.; Coles, M. 2010. *Added value of national qualifications frameworks in implementing the EQF* (Luxembourg, Publications Office of the European Union).

Bloom, B. 1956. *Taxonomy of educational objectives* (Boston, MA, Pearson).

Booth, C. 1889. *Life and labour of the people of London*, Vol. 4 (London: Macmillan).

Bosch, G.; Charest, J. 2008. "Vocational training and the labour market in liberal and coordinated economies", *Industrial Relations Journal*, Vol. 39, No. 5, pp. 428-447.

Brown, R. B. 1994. "Reframing the competency debate: Management knowledge and meta-competence in graduate education", *Management Learning*, Vol. 25, No. 2, pp. 289–299.

Brown, T. 2006. "From union inspired to industry led: How Australian Labour's training reform experiment turned sour", *Journal of Industrial Relations*, Vol. 48, No. 4, pp. 491–505.

Buchanan, J. 2006. *From "skill shortages" to decent work: The role of better skills ecosystems*, Policy Research Paper prepared for the NSW Board of Vocational Education and Training, Australia, Australian Centre for Industrial Relations Research and Teaching (Sydney, University of Sydney).

— ; Yu, S., Marginson, S. and Wheelahan, L. 2009. *Education, work and economic renewal*, Workplace Research Centre (Sydney, University of Sydney).

Burgoyne, J. 1988. *Competency based approaches to management development* (Lancaster, Centre for the Study of Management Learning).

Campbell, J. 1999. *Corner Kingdom* (Belfast: Lagan Press).

Collett, K. 2008. *Briefing note: Qualifications framework* (London, City & Guilds Centre for Skills Development).

Connolly, D. J. 1972. "Social repercussions of new cargo handling methods in the port of London", *International Labour Review*, Vol. 105, No. 6 (June), pp. 543–568.

Couper, A. D. 1986. *New cargo handling techniques: Implications for port employment and skills* (Geneva, ILO).

Dally, H. K. 1981. "Review of British container terminals", *Bulletin No.16* (London, National Ports Council).

Dash, J. 1969. *Good morning brothers!* (London, Lawrence & Wishart).

Databuild. 2010. *Port employment and accident rates, 2009/10* (London, Department for Transport).

De Boer, B. N. 1990. *Education and training: The challenge of the container era*, Paper presented at the Conference on Ports, People and Technology, Port of Rotterdam, 14–16 November 1990 (Geneva, ILO).

Deissinger, T. 1997. "The German dual system – A model for Europe?" *Education and Training*, Vol. 39, No. 8, pp. 297–302.

—; Hellwig, S. 2006. "Apprenticeships in Germany: Modernising the dual system", *Education and Training*, Vol. 47, No. 4/5, pp. 312–324.

Department of Employment and Workplace Relations (DEWR). 2007. *Agreement making in Australia under the Workplace Relations Act 2004 to 2006* (Canberra).

Devlin, Lord. 1965. *Final Report of the Committee of Inquiry under the Rt. Hon. Lord Devlin into Certain Matters Concerning the Port Transport Industry*, Cmnd. 2734 (London: HMSO).

Deyo, F. C. 1989. *Beneath the miracle: Labor subordination in the new Asian industrialism* (Berkeley, University of California Press).

Dumbrell, T. 2004. *Resourcing vocational education and training in Australia* (Adelaide: National Centre for Vocational Education Research).

Engle, A. D.; Mendenhall, M. E.; Powers, R .L..; Stedham, Y. 2001. "Conceptualizing the global competency cube: A transnational model of human resource", *Journal of European Industrial Training*, Vol. 25, No. 7, pp. 346–353.

Ertl, H. 2002. "The concept of modularisation in vocational education and training: The debate in Germany and its implications", *Oxford Review of Education*, Vol. 28, No. 1, pp. 53–73.

European Communities. 2008. *The European Qualifications Framework for Lifelong Learning (EQF)* (Brussels).

European Sea Ports Organisation (ESPO). 2004. *Factual Report on the European Port Sector* (Brussels).

European Transport Workers' Federation (ETF). 2005 *The gender dimension in the transport industry in Europe: ETF Action Plan for Gender Equality 2005–2009* (Brussels).

Evans, A. A. 1969. *Technical and social changes in the world's ports* (Geneva, ILO).

Finegold, D. 1999. "Creating self-sustaining high-skill ecosystems", *Oxford Review of Economic Policy*, Vol. 15, No. 1, pp. 60–81.

Finlay, W. 1988. *Work on the waterfront* (Philadelphia, Temple University Press).

Gonczi, A. 1994. *Developing a competent workforce* (Adelaide: National Centre for Vocational Education Research).

Hampson, I. 2004. "Training reform in a weakened state: Australia 1987–2000", in C. Warhurst, I. Grugulis and E. Keep (eds): *The skills that matter* (Basingstoke: Palgrave-Macmillan), pp. 72–90.

Heidemann, W. 2002. "Current developments within social dialogue in selected European countries", *Lifelong Learning* (Dusseldorf, Hans Böckler Stiftung).

Heinz, W. 2003. "From work trajectories to negotiated careers: The contingent work life course", in J. T. Mortimer and M. Shanahan (eds): *Handbook of the life course* (New York, Kluwer Academic), pp. 185–204.

Hill, S. 1976. *The dockers: Class and tradition in London* (London, Heinemann).

Hoeckel, K.; Field, S.; Justesen, T.; Kim, M. 2008. *Learning for jobs: OECD review of vocational education and training – Australia* (Paris, OECD).

Hollinrake, A.; Antcliff, V.; Saundry, R. 2008. "Explaining activity and exploring experience: Findings from a survey of union learning representatives", *Industrial Relations Journal*, Vol. 39, No. 5, pp. 392–410.

ILO. 1951. Inland Transport Committee, Fourth Session (1951): Resolution (No. 50) concerning the training of dockworkers, *Official Bulletin*, Vol. XXXIV, No. 2, pp. 98-99.

— 1996. *Social and labour problems caused by structural adjustments in the port industry*, report, and *Note on the proceedings*, Tripartite Meeting on Social and Labour Problems Caused by Structural Adjustments in the Port Industry, Geneva, TMPI/1996/10.

— 1998. *World Employment Report 1998–99: Employability in the global economy – How training matters* (Geneva).

— 2000a. *Decent work and poverty reduction in the global economy*, Paper submitted to the Second Session of the Preparatory Committee for the Special Session of the General Assembly on the Implementation of the Outcome of the World Summit for Social Development and Further Initiatives (Geneva).

— 2000b. Resolution and conclusions concerning human resources training and development, International Labour Conference, 88th Session, June 2000, Geneva.

— 2002a. *Learning and training for work in the knowledge society* (Geneva).

— 2002b. *Dock work –Social repercussions of new methods of cargo handling*: *General survey of the reports concerning the Dock Work Convention (No. 137) and Recommendation (No. 145), 1973*, Report III (Part IB), International Labour Conference, 90th Session, Geneva, 2002.

— 2006a. *Social dialogue in the process of structural adjustment and private sector participation in ports: A practical guidance manual* (Geneva).

— 2006b. *Tripartite Declaration of Principles Concerning Multinational Enterprises and Social Policy* (Geneva).

— 2006c. *Guidelines for development of regional model competency standards (RMCS)*, SKILLS-AP, (Geneva).

— 2007. *Future orientation of the Sectoral Activities Programme and proposals for activities in 2008–09*, GB.298/STM/1 (Geneva).

— 2008. Resolution and conclusions concerning skills for improved productivity, employment growth and development, International Labour Conference, 97th Session, June 2008, Geneva.

— 2009. *The sectoral dimension of the ILO's work*, GB.304/ST/2/1 (Geneva).

Jensen, V. H. 1964. *Hiring of dockworkers and employment practices in the ports of New York, Liverpool, London, Rotterdam and Marseilles* (Cambridge, Mass: Harvard University Press).

Keep, E. 2007. "The multiple paradoxes of state power in the English education and training system", in L. Clarke and C. Winch (eds.): *Vocational education in international context: Philosophical and historical simensions* (London, Routledge).

—; Mayhew, K.; Payne, J. 2006. "From skills revolution to productivity miracle: Not as easy as it sounds?", *Oxford Review of Economic Policy*, Vol. 22, No. 4, pp. 539–559.

Knasel, E.; Meed, J. 1994. *Becoming competent: Effective learning for occupational competence* (Sheffield, Employment Department).

Koh, C. 2003. "Me and my trailer", Transport International Magazine, Issue 11 (April). Available at: http://www.itfglobal.org/transport-international/ti11workinglife.cfm.

Lansbury, R. D.; Pickersgill, R. 2002. "The impact of industrial relations systems on training: Evidence from selected industrialised economies", *Australian Bulletin of Labour*, Vol. 28, No. 4, pp. 284–99.

Leggett, C. 2008. "Trade unions in Singapore: Corporatist paternalism", in J. Benson (ed.): *Trade unions in Asia* (London, Routledge) pp. 102–120.

— 2009. "Singapore", in C. Phelan (ed.): *Trade unionism since 1945: Towards a global history* (Oxford, Peter Lang), pp. 187–219.

Liverpool University. 1954. *The dock worker: An analysis of conditions of employment in the Port of Manchester* (Liverpool, Liverpool University Press).

Mansfield, B. 2004. "Competence in transition", *Journal of European Industrial Training*, Vol. 28, No. 2/3/4, pp. 296–309.

Martin Associates. 2007. *The local and regional economic impacts of the US deepwater port system 2006*, Report for the American Association of Port Authorities (Lancaster, PA).

Mills, H. 1980. "The men along the shore", *California Living* (7 Sept.).

Morewedge, H. 1970. *The economics of casual labor: A study of the longshore industry* (Berne: Herbert Lang).

Morrison, J. 1984. *Stories of the waterfront* (Ringwood, Penguin).

Musso, E.; Benacchio, M.; Ferrari, C. 2000. "Ports and employment in port cities", *International Journal of Maritime Economics*, Vol. 2, No. 4, pp. 283–311.

National Dock Labour Board (NDLB) (United Kingdom). 1961. *Annual Report & Accounts* (London).

Nelson, T. S.; Narens, L. 1990. "Metamemory: A theoretical framework and new findings", *Psychology of Learning and Motivation*, No. 26, pp. 125–175.

Nijhof, E. 2000. "Undeserving casuals: The Rotterdam dockers and their unions, 1880–1965", in S. Davies et al. (eds): *Dock workers: International explorations in comparative labour history, 1790–1970* (Aldershot, Ashgate).

Notteboom, T. 2010. *Dock labour and port-related employment in the European seaports system*, Report prepared for the European Sea Ports Organisation (ESPO), Institute of Transport and Maritime Management Antwerp (ITMMA) (Antwerp, University of Antwerp).

Nuthall, G. 1999. "Learning how to learn: The evolution of students' minds through the social processes and culture of the classroom", *International Journal of Educational Research*, Vol. 31, No. 3, pp. 139–256.

Nyhan, B. 1991. *Developing people's ability to learn: A European perspective on self-learning competency and technological change* (Brussels, EUROTECHNET, Technical Assistance Office, CEC).

Oliver, D. 2010. *The role of social partners in vocational education and training: A comparison between Australia and Germany*, paper presented at the Association of Industrial Relations Academics in Australia and New Zealand (AIRAANZ) Annual Conference, Sydney.

Oram, R. B. 1970. *The dockers' tragedy* (London, Hutchinson).

Oxford Economics. 2009. *The economic contribution of ports to the UK economy*, study on the economic impact of ports for British Ports Association (BPA) and United Kingdom Major Ports Group Limited (UKMPG). Available at: http://www.oxfordeconomics.com/FREE/PDFS/PORTSAPR09.PDF.

Pocock, B.; Skinner, N.; Ichii, R. 2009. *Work, life and workplace flexibility: The Australian Work and Life Index 2009* (Adelaide: Centre for Work + Life).

Port Skills and Safety (PSS). 2000. *National occupational standards for marine pilots* (London).

— 2004. *National occupational standards for harbour masters* (London).

— 2005. *Port operations: National occupational standards for port operations* (London). Available at: http://www.portskillsandsafety.co.uk/skills/standards_and_qualifications/national_and_scottish_vocational_qualifications/level_2_general.

Proctor, R. W.; Dutta, A. 1995. *Skill acquisition and human performance* (London, Sage).

Sandberg, J. 2000. "Competence: The basis for a smart workforce", in R. Gerber and C. Lankshear (eds): *Training for a smart workforce* (London, Routledge).

Saundry, R.; Turnbull, P. 1999. "Contractual (in)security, labour regulation and competitive performance in the port transport industry: A contextualised comparison of Britain and Spain", *British Journal of Industrial Relations*, Vol. 37, No. 2, pp. 273–296.

Sexton, Sir James. 1936. *Agitator: The life of the docks MP* (London, Faber and Faber).

Singapore, Ministry of Manpower. 2009. *Labour market highlights* (Singapore).

Singapore Workforce Development Agency. 2007. *Singapore Workforce Skills Qualification System: An introduction* (Singapore, WDA).

South Africa, Department of Transport. 2001. *Draft White Paper on National Commercial Ports Policy*, December (Pretoria).

Standing, G. 1997. "Globalization, labour flexibility and insecurity: The era of market regulation", *European Journal of Industrial Relations*, Vol. 3, No. 1, pp. 7–37.

— 1999. *Global labour flexibility: Seeking distributive justice* (New York, St. Martin's Press; London: Macmillan).

Stuart, M.; Wallis, E. 2007. "Partnership approaches to learning: A seven-country study", *European Journal of Industrial Relations*, Vol. 13, No. 3, pp. 301–321.

Thelen, K.; Busemeyer, M. R. 2008. *From collectivism towards segmentalism: Institutional change in German vocational training*, DP 08/13 (Cologne, Max-Planck Institute for the Study of Societies).

Transnet Port Terminals (TPT). 2010. *Learner guide: Competency profiling process*, Module 1: *The identification of job specific competencies*, SPO- LG-CPP -001 (Durban, School of Port Operations).

Tuck, R. 2007. *An introductory guide to national qualifications frameworks: Conceptual and practical issues for policy makers* (Geneva, ILO).

Turnbull, P. 2006. *Social dialogue in the process of structural adjustments and private sector participation in ports: A practical guidance manual* (Geneva, ILO). Available at: http://www.ilo.org/public/english/dialogue/sector/papers/maritime/ports-socdialguidelines.pdf.

— 2009. *Training and qualification systems in the EU ports sector* (Brussels, European Transport Workers' Federation). Available at: http://www.itfglobal.org/files/extranet/-75/17739/Final%20report%20EN.pdf. Also available in French, German, Italian and Spanish.

— 2011. "Port labour", in W. Talley (ed.): *Maritime economics: A Blackwell companion* (Oxford, Blackwell), pp. 517–548.

—; Sapsford, D. 2001. "Hitting the bricks: An international comparative study of conflict on the waterfront", *Industrial Relations*, Vol. 40, No.2, pp. 231–257.

—; Wass, V. 1995. *Reform and structural adjustment in the world's ports: The future for labour and the unions* (London, ITF). This report is also available in German, Spanish and Swedish.

—; —. 2007. "Defending dock workers: Globalization and industrial relations in the world's ports", *Industrial Relations*, Vol. 46, No. 3, pp. 582–612.

—; Fairbrother, P., Heery, E., Martínez Lucio, M.; Stroud, D. 2009. *Women in ports: Report for the ITF/ETF*, Centre for Global Labour Research (CGLR) (Cardiff, Cardiff University).

United Nations Conference on Trade and Development (UNCTAD). 1995. *Comparative analysis of deregulation, commercialization and privatization of ports*, UNCTAD/SDD/PORT/3 (Geneva).

Watson, I.; Buchanan, J.,;Campbell, I.; Briggs, C. 2003. *Fragmented futures: New challenges in working life* (Sydney: Federation Press).

Wellman, D. 1995. *The Union makes us strong: Radical unionism on the San Francisco waterfront* (Cambridge: Cambridge University Press).

Winterton, J. 2006. "Social dialogue and vocational training in Europe: Are we witnessing the emergence of a European model?" *Journal of European Industrial Training*, Vol. 30, No. 1, pp. 65–76.

—; Delamare-Le Deist, F.; Stringfellow, E. 2005. "Typology of knowledge, skills and competencies: Clarification of the concept and prototype", CEDEFOP Project No. RP/B/BS/Credit Transfer/ 005/004 (Thessaloniki).

World Bank. 2007. *World Bank port reform tool kit* (Washington, DC).