NCVER

review of research

generic skills for the new economy

P Kearns

ISBN	0 87397 724 6	print edition
	0 87397 725 4	web edition
TD/TNC	66.70	

Published by NCVER Ltd
ABN 87 007 967 311

252 Kensington Road, Leabrook SA 5068
PO Box 115, Kensington Park SA 5068, Australia
www.ncver.edu.au

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acronyms

AEC	Australian Education Council
ANTA	Australian National Training Authority
ASTD/DOL	American Society for Training and Development and Department of Labor
CBI	Confederation of British Industry
CCC	Cross-curricular Competencies Project
CCP	country contribution process
DISR	Department of Industry, Science and Resources
DOL	Department of Labor (United States)
HDWG	Human Dimension Working Group
ILO	International Labor Organization
KSQ	Key Skills Qualification
MCEETYA	Ministerial Council on Employment, Education, Training and Youth Affairs
MOVEET	Ministers of Vocational Education, Employment and Training
NCVER	National Centre for Vocational Education Research
NSSB	National Skills Standards Board (United States)
NSTF	National Skills Task Force (Britain)
OECD	Organization for Economic Co-operation and Development
SCANS	The Secretary's Commission on Achieving Necessary Skills (United States)
VET	vocational education and training

executive summary

This research review of generic skills has been undertaken for the National Centre for Vocational Education Research (NCVER) at a time of radical change in the workplace, economy, and in society. Fundamental shifts such as the emergence of an information society and the knowledge-based new economy raise a broad spectrum of issues relating to the essential generic skills required by enterprises, individuals and communities for success in this environment.

The review has followed the approach adopted by the British National Skills Task Force (NSTF) in its recent report in defining generic skills in the following terms:

> *Generic skills—those transferable skills, essential for employability which are relevant at different levels for most.*

Like NSTF, I have recognised that a concept of generic skills defined in these terms includes the current key competencies (key skills in Britain) but extends beyond the ambit of these competencies to include a wider set of transferable skills which are generic to most work. Identifying and defining this wider set of generic skills, and considering their relationship to the current key competencies, is a central issue.

The review examines how sets of key competencies/key skills have developed in Britain, the United States and Australia and identifies two broad approaches:

- A United States model involves a broader, more flexible, and more holistic set of generic skills, which include basic skills, personal attributes, values and ethics, learning to learn, as well as workplace competencies of the Mayer type.
- An Anglo/Australian model has resulted in a more narrowly focussed and instrumental set of key skills/key competencies which are broadly similar. In both countries personal attributes and values have been excluded from the identified key competencies.

There is an examination of how these approaches developed in the United States (with the American Society for Training and Development and Department of Labor (ASTD/DOL) and the Secretary's Commission on Achieving Necessary Skills (SCANS) sets of generic skills) and in Australia with the Mayer key competencies.

The review then considers the implications of key contextual shifts for generic skills. The changes discussed are the emergence of the knowledge-based new economy and the impact of new technologies; the consequent pressures for lifelong learning and maintaining employability; changes in the workplace, including the emergence of the high performance workplace; initiatives to foster an enterprise culture and innovation, and revision of the National Goals for Schooling.

The cumulative impact of these changes is seen as pointing to the need for a broader framework for generic skills that is responsive to all these requirements.

These shifts raise a range of conceptual issues which go to the character and role of generic skills and their link to human development over the life cycle. These broader conceptual issues are being examined in a four-year Organization for Economic Co-operation and Development (OECD) program titled DeSeCo. Expert papers from a number of academic disciplines have been commissioned by OECD and are discussed in this review.

The requirement for a broader range of generic skills that go beyond technical skills is reflected in the response of employers to surveys in Australia, Britain and the United States of America. However, the issue then follows as to the identification of these broader generic skills, and there is less consensus on the question of which generic skills are essential.

The findings of the review in respect of the specific questions follow.

what are the **essential generic skills?**

There is no international consensus on the identification of the essential generic skills, but two directions for policy are identified:

- a pragmatic approach, as in Britain, of strengthening the existing base of key competencies through addressing the issues identified in this review
- an alternative view that a broader and more holistic set of key generic skills is required by the conditions of the information-based new economy, the mounting pressures for lifelong learning and maintaining employability in the workforce, and for creating a culture that supports learning, enterprise, innovation and creativity

The analysis of the review inclines to the need to address the second and more complex option in order to integrate a number of discrete initiatives in a more comprehensive and holistic approach to building Australia as a competitive learning society attuned to the pressures of the knowledge-based new economy.

If the first option were followed, a minimum requirement would be to add the learning competence ('willingness and capacity to learn') to the current set of key competencies.

Possible implications of the second option approach are illustrated in boxes in this review.

teaching and **learning implications** of generic skills for VET providers

Fostering generic skills requires active learning strategies in which learners take responsibility for their own learning so that they develop the attitudes, habits and skills of motivated lifelong learners and the acquisition of generic skills becomes a lifelong process. There are many examples of good practice in Australia and overseas of the use of strategies such as action learning, situated learning and project-based learning. The impact of new learning technologies is widening these opportunities, but learning strategies need to keep pace with technological change. This is a challenge for national collaborative action to foster flexible learning where pedagogical aspects need to be strengthened, in line with technological change, to achieve a synergistic relationship between learning and technology.

impact on **business performance**

This is both direct and indirect evidence of the impact of generic skills on business performance. This includes the increased employer demand for generic skills and for higher skill levels generally, market valuations of generic skills in remuneration levels (especially for university graduates) and the role of generic skills in the operations of high-performing firms. There is evidence that as firms cultivate the high performance workplace, the demand for generic skills rises and skill strategies are more closely integrated in other human resource strategies and in strategic business development.

Overall, this review points to the increased significance of generic skills in the context of the knowledge-based new economy, and the associated pressures for lifelong learning and the maintenance of employability, with the consequent need to address the issues identified in this review as a priority concern.

context

This review of Australian and international literature and research on generic skills has been undertaken for the National Centre for Vocational Education Research (NCVER) at a time of unprecedented change in the environment of vocational education and training (VET) when fundamental issues relating to skill strategies in the context of the knowledge-based new economy are being raised across Organization for Economic Co-operation and Development (OECD) countries.

The basic shifts in the socio-economic context of VET inevitably call into question the role of generic skills in an environment characterised by the impact of globalisation, new technologies, radical changes in the workplace and in labour markets, and an exponential pace of change and new competitive pressures. Some of the main implications of these contextual shifts for the role of generic skills are discussed in the following chapter.

This new context of VET is producing mounting imperatives for lifelong learning and for policies that foster a learning culture in the workplace and throughout society. The implications of these imperatives have been examined in two studies involving the author of this review, undertaken for NCVER (Kearns et al. 1999, Kearns & Papadopoulos 2000). A central theme in this review concerns the relationship of generic skills and the capacity of the workforce for lifelong learning, maintaining employability and contributing to the competitive position of enterprises.

Generic skills—those transferable skills, essential for employability which are relevant at different levels for most.

Pressures arising from the emerging context of the knowledge-based new economy are manifest in the growing demand of employers for a broader range of key generic skills which is reflected in the responses of employers to surveys in Australia, Britain and the United States.

This shift in demand from employers for skills is commented on by Carnevale and Desrochers (1999), reflecting the United States experience in the following terms:

The demand for specific vocational skills is giving way to a growing need for generic cognitive skills—mathematical and verbal reasoning ability as well as a new set of general behavioural skills.

In Australia, the Allen Group Survey of 350 employers undertaken for the Australian Industry Group found that the knowledge and skills most valued by Australian industry as a foundation for all others are the generic, core skills needed for work—a mix of specific competencies, personal attributes and interpersonal skills (Allen 2000, ANTA 2000, p.110).

Similarly, a survey of employer views on VET undertaken by NCVER as a component in the Australian National Training Authority (ANTA) National Marketing Strategy found that although most employers perceived a greater need for training in job-specific skills, fully two in five employers see generic skills as a higher priority than job-specific skills in the next year (NCVER 2000, p.33).

A report prepared for the recent National Innovation Summit by the Human Dimension Working Group (HDWG) identified creativity, innovation and lateral thinking as essential skills for empowering an entrepreneurial workforce (HDWG 2000).

Similar survey findings have emerged in Britain from studies undertaken for the National Skills Task Force (NSTF 2000a, 2000b).

The findings of these studies in Australia, United States and Britain are discussed in the chapter on 'what are the essential generic skills?' Conceptual aspects of this question are also discussed in the chapter 'some conceptual issues' where reference is made to current OECD work on generic competencies. It will be seen that although this shift in employer demand for skills is widely documented, there is less consensus across these countries on which generic skills are now essential in the new competitive environment. An attempt is made to identify the required essential generic skills.

The current Australian policy for generic skills is focussed on the role of the key competencies identified by the Mayer Committee in 1992, and which have been integrated in the work of schools and VET. The chapter 'the search for key workplace competencies' considers the Mayer Committee approach and similar frameworks developed in the United States and Britain. This review raises a number of conceptual and implementation issues which are discussed in the following chapters.

Part II of the review addresses three specific research questions set by NCVER for this review. These are:

- What are the skills that should be included under the umbrella term of 'generic skills' and what is a useful way of classifying these skills and distinguishing attributes/values from skills?
- What are the teaching and learning implications of generic skills for VET providers? What approaches are currently in use around the world?
- What is the evidence for the impact of generic skills on business performance?

The review provided in relation to these questions should be read in association with the chapters 'the search for key workplace competencies', 'key contextual shifts and their implications' and 'some conceptual issues'.

A review of generic skills is timely in the context of the contextual shifts discussed in the chapter 'key contextual shifts and their implications'. It is relevant that other OECD countries are re-visiting generic skills. The author was able to benefit from the work of the British NSTF, which reported this year after two years of work and a substantial research effort, and the current four-year OECD project DeSeCo, which is attempting to blend a more theoretical approach with the empirical tradition that has guided the identification and definition of key competencies so far. Expert papers commissioned for the DeSeCo project draw on international experience in seeking a sounder conceptual basis for the definition and selection of competencies which might lead to an agreed set of indicators for the measurement of progress in implementing key competencies. (These are papers from United States, German, Swiss and British experts in a range of academic disciplines.)

In undertaking this review I have defined generic skills in similar terms to those adopted by the British NSTF: 'Generic skills—those transferable skills, essential for employability which are relevant at different levels for most' (NSTF 2000b, p.27).

I have also followed NSTF in recognising that generic skills defined in this way include not only the recognised key skills (key competencies in Australia) but also a wider set of transferable skills which are generic to most work (NSTF 2000b, p.24).

NSTF gave examples of reasoning skills, scheduling work and diagnosing work problems, work process management skills, visualising output, working backwards for planning purposes, and sequencing operations to illustrate this wider set of generic skills beyond the key skills (NSTF 2000b, p.24). However, if such a 'two-ring' concept of generic skills is adopted, there is no agreement on the composition

of the outer ring and the relationship of these skills to the inner ring of key skills/key competencies. This question is taken up in the chapters of this review that follow.

A central issue raised by the concept of generic skills is whether this concept includes personal attributes and values as the enabling triggers, as well as skill defined as a capacity to do something.

The British NSTF took the position that there are three types of skill: vocational, generic, and personal attributes (NSTF 2000b, p.24). NSTF recognised that 'personal attributes encapsulate the drive of employers for employees who are flexible, adaptable, and able to cope with change and uncertainty' (NSTF 2000b, p.24) and identified an increased demand for these attributes.

While the contextual shifts discussed in the chapter 'key contextual shifts and their implications' have made personal attributes increasingly significant, the relationship of generic skills and personal attributes remains problematic, and we discuss in this review a range of approaches that have been adopted in OECD countries.

A further issue arises from the growing interest in employability in a world of exponential change in the workplace, economy and society. This has led some organisations to view the generic skills as employability skills. This approach has been taken by the United States National Skills Standards Board (NSSB), which has identified three broad categories of skills and knowledge: academic skills and knowledge; employability skills and knowledge; and occupational skills and knowledge (NSSB 2000, p.1). Employability skills are defined to include workplace competencies such as communication, team skills and problem solving.

The Confederation of British Industry (CBI) has also taken a strong interest in the employability concept which it has defined to include a range of generic skills and personal attributes (CBI 1998). We discuss CBI views in the chapter 'some conceptual shifts'. The interest of OECD, the International Labor Organization (ILO) and the European Union in employability is also discussed in the chapters that follow.

Part I of this review examines the search for key workplace competencies over the past decade in Australia, Britain and the United States, and then considers some implications of key contextual shifts during this period. A number of significant conceptual issues arising from both experience in implementing key competencies and the implications of the contextual shifts are then discussed.

The three specific research questions prescribed for this review are then addressed in part II.

part I: background

the search for key workplace competencies

It is of interest that the late 1980s and early 1990s witnessed attempts to identify, define and draw up sets of key workplace competencies in Britain, Australia and the United States. Development efforts in the three countries were driven by similar concerns with the implications of workplace change and the consequent need to ensure the supply of essential generic skills that employers needed in this environment.

The main outputs from this development effort were:

United States	✦ American Society for Training and Development and Department of Labor (ASTD/DOL) *Workplace basics: The skills employers want*	1988
	✦ SCANS Commission Framework of Workplace Know-how	1992
Australia	✦ Mayer Key Competencies	1992
Britain	✦ Key Skills (core skills)	1990

While the British Manpower Services Commission and other British agencies had been working on core skills throughout the 1980s the ASTD/DOL study of workplace bases was the first major attempt to identify the key generic skills (workplace basis) required by employers in the new competitive environment emerging in the late 1980s.

The ASTD/DOL study is of interest in that it influenced the approach adopted by the subsequent SCANS Commission which in several key respects is significantly different to the approach adopted in Britain and Australia.

Viewed broadly, two alternative approaches to key workplace competencies have emerged across these countries:

- The United States model involves a broader, more flexible and more holistic set of generic skills which include basic skills, personal attributes, values and ethics, learning to learn as well as workplace competencies of the Mayer type

- The Anglo/Australian model was influenced by the approach to competency-based training adopted in both countries, which has resulted in a more narrowly focussed and instrumental set of key skills/key competencies which are broadly similar, but with one significant difference. In both countries personal attributes and values have been largely excluded from the British key skills and Mayer key competencies, and in both countries significant implementation issues have been encountered (see chapter 'teaching and learning implications').

This duality of approach is significant in the context of the implications of the knowledge-based new economy, and the links between the new economy and the required generic skills have been explored more closely in the United States than has been the case in Britain and Australia, most notably in the work of Anthony Carnevale who directed the ASTD/DOL study (Carnevale 1991). With the position of the United States as the prototype of the new economy, this is not surprising (Johnston 2000), but a spectrum of issues arise from the implications of the new economy, and the related pressures for lifelong learning, for the current Australian approach to key competencies that are examined in the next two chapters of this review.

the **United States approach** to generic skills

DOL in the late 1980s became concerned at the impact of new technologies and major changes in the economy on the demand from employers for key skills, in particular 'workplace basics'. This led the department to commission two major studies: a study of changes in the workplace undertaken by the Hudson Institute, and a study of the essential generic skills required by employers undertaken by ASTD.

The ASTD/DOL study of workplace basics was a major empirical study undertaken by a team of ten over 30 months which led to an ASTD/DOL report (1988) and a subsequent expanded book by the principal authors Carnevale, Gainer and Meltzer (1990) and the subsequent book by Carnevale on America and the new economy (1991). The three publications provide a substantial source of information on generic skills. Unlike the Australian and British work on key skills, the Carnevale, Gainer and Meltzer publication attempts to draw on literature from a range of disciplines, including cognitive science, in addition to the empirical/functional justification that underpinned the Mayer and British approaches.

The 16 key skills emerging from the ASTD/DOL study are most conveniently set out in Carnevale's book *America and the new economy* and are given in box 1.

box 1: Carnevale's 16 job skills for the contemporary workforce

Learning to learn

1 Foundation skills: learning how to learn—how to collect, know and comprehend, how to give and receive feedback, and how to learn collaboratively.

Academic basics

2 Reading skills: basic literacy, reading in order to learn, reading in order to do.

3 Writing skills: preparing and organising information, writing, editing, revising.

4 Computational skills: quantification, computation, measurement and estimation, quantitative comprehension, quantitative problem solving.

Communication

5 Speaking skills: nonverbal skills, vocal skills, verbal skills.

6 Listening skills: assigning meaning to aural stimuli.

Adaptability

7 Problem-solving skills: the ability to bridge the gap between what is and what ought to be.

8 Creativity skills: the ability to produce a novel idea, and then turn it into a practical one.

Personal development

9 Self-esteem skills: the ability to maintain a realistic and positive self-image.

10 Motivation and goal-setting skills: the ability to translate work into an instrument for the development of self.

11 Personal and career development skills: the ability to adapt to changing work requirements to ensure employment security and to fulfill personal potential.

Group effectiveness

12 Interpersonal skills: the ability to judge appropriate behaviour, to absorb stress, to share responsibility, to deal with ambiguity.

13 Negotiation skills: the ability to overcome disagreements by compromising and accommodating.

14 Teamwork skills: the ability of groups to pool human resources to pursue common goals.

Influencing skills

15 Organizational effectiveness skills: the ability to work productively in the context of explicit and implicit organizational cultures and subcultures.

16 Leadership skills: the ability to influence others to serve the strategic purposes of an organization or the developmental needs of an individual.

source: derived from Carnevale's *America and the new economy* (1991) and based on the 3-year ASTD/DOL study of workplace basic skills (1988)

Some of the key points in the ASTD/DOL approach include:

- a foundations concept that is introduced focussed on learning how to learn
- creativity skills that are linked to the concept of adaptability
- a broad concept of personal development which includes a range of personal attributes (self-esteem skills, motivation and goal setting skills)
- the inclusion of leadership skills

The ASTD/DOL study influenced the approach adopted by the SCANS Commission which was established in 1991 to identify essential workplace competencies and foundation skills. The SCANS work included a discussion paper issued in 1991 (SCANS 1991) and the final report of April 1992.

The SCANS Commission adopted the foundations concept embedded in the ASTD/DOL report and similarly adopted a broad approach which included personal attributes as well as 'workplace competencies'. This approach is reflected in the two-part structure adopted by SCANS divided between workplace competencies and foundation skills. The SCANS framework of generic skills is set out in box 2.

Key competencies are competencies essential for effective participation in the emerging patterns of work and work organisation.

The broader United States approach which integrates workplace skills with personal attributes, values and basic skills is reflected in the flexible approach to voluntary national skills standards adopted by the United States NSSB. For example, the skill standards for the bioscience industry includes 34 workplace scenarios broken into workplace setting, key competency areas, tasks, skills, knowledge, attributes, and tools and equipment (NSSB 1995). This more holistic and integrated approach may be compared with the Anglo/Australian approach to key generic skills where the focus is on outcomes and performance, and aspects such as personal attributes are played down. This distinction may be seen sharply in the work of the Mayer Committee in developing key competencies.

box 2: the SCANS workplace know-how

The know-how identified by SCANS is made up of five competencies and a three-part foundation of skills and personal qualities that are needed for solid job performance. These are:

Workplace competencies

Effective workers can productively use:

- resources—they know how to allocate time, money, materials, space and staff
- interpersonal skills—they can work in teams, teach others, serve customers, lead, negotiate, and work well with people from culturally diverse backgrounds
- information—they can acquire and evaluate data, organize and maintain files, interpret and communicate, and use computers to process information
- systems—they understand social, organizational, and technological systems; they can monitor and correct performance; and they can design or improve systems
- technology—they can select equipment and tools, apply technology to specific tasks, and maintain and troubleshoot equipment

Foundation skills

Competent workers in the high-performance workplace need:

- basic skills—reading, writing, arithmetic and mathematics, speaking and listening
- thinking skills—the ability to learn, to reason, to think creatively, to make decisions and to solve problems
- personal qualities—individual responsibility, self-esteem and self-management, sociability, and integrity

source: SCANS 1992

the **Mayer key competencies**

The Mayer Committee was set up by the Australian Education Council (AEC) and Ministers of Vocational Education, Employment and Training (MOVEET) in 1991 to follow up on the Finn Committee proposals for key competencies and to develop proposals for decision by ministers (Mayer 1992a, p.2). The committee reported to the AEC/MOVEET meeting in September 1992 with its proposal for a set of seven key competencies which are set out in box 3.

The Mayer Committee, like the Finn Committee, adopted an empirical/functional approach to its task and does not appear to have paid much attention to theoretical insights from the relevant academic disciplines (Mayer 1992b, p.1). It was aware, however, of the work of the SCANS Commission in the United States and key skills in Britain and took account of those developments (Mayer 1992b, pp.10–11). A comparative table which compared the proposals in the three countries (plus New Zealand) was included in the report (see table 1).

box 3: Mayer report—key competencies for effective participation in the emerging patterns of work and work organisation

Collecting, analysing and organising information

The capacity to locate information, sift and sort information in order to select what is required and present it in a useful way, and evaluate both the information itself and the sources and methods used to obtain it.

Communicating ideas and information

The capacity to communicate effectively with others using the range of spoken, written, graphic and other non-verbal means of expression.

Planning and organising activities

The capacity to plan and organise one's own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance.

Working with others and in teams

The capacity to interact effectively with other people both on a one-to-one basis and in groups, including understanding and responding to the needs of a client and working effectively as a member of a team to achieve a shared goal.

Using mathematical ideas and techniques

The capacity to use mathematical ideas, such as number and space, and techniques, such as estimation and approximation, for practical purposes.

Solving problems

The capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and the desired solution are clearly evident and in situations where the problem and the desired solution are less evident and in situations requiring critical thinking and a creative approach to achieve an outcome.

Using technology

The capacity to apply technology, combining the physical and sensory skills needed to operate equipment with the understanding of scientific and technological principles needed to explore and adapt systems.

The basic approach of the Mayer Committee was through consultations on a discussion paper issued in early 1992, with a second discussion paper later in 1992 providing for a second round of consultations (Mayer 1992a). A preliminary industry validation study was also undertaken to investigate the incorporation of the proposed key competencies in industry competency standards (Mayer 1992b, p.1).

The Mayer Committee approach to its task was guided by the work on national competency standards developed by the National Training Board. This influenced the concept of key competencies formulated and the approach of the committee to such issues as personal attributes, values and attitudes, and cultural understanding.

table 1: comparison of key skills in Australia, Britain, United States and New Zealand

Key competencies	UK (NCVQ) core skills	US (SCANS) workplace know-how	NZ essential skills
✦Collecting, analysing and organising information	✦Communication	✦Information ✦Foundation skills: basic skills	✦Information skills
✦Communicating ideas and information	✦Communication ✦Personal skills: improving own learning and performance	✦Information ✦Foundation skills: basic skills	✦Communication skills
✦Planning and organising activities	✦Personal skills: improving own learning and performance	✦Resources ✦Foundation skills: personal qualities	✦Self-management skills ✦Work and study skills
✦Working with others and in teams	✦Personal skills: working with others	✦Interpersonal skills	✦Social skills ✦Work and study skills
✦Using mathematical ideas and techniques	✦Numeracy: application of number	✦Foundation skills: basic skills	✦Numeracy skills
✦Solving problems	✦Problem solving	✦Foundation skills: thinking skills	✦Problem-solving and decision-making skills
✦Using technology	✦Information technology ✦Modern foreign language	✦Technology ✦Systems	✦Information skills ✦Communication skills

note: where the UK core skills, US workplace know-how and NZ essential skills are comparable with more than one key competency they have been repeated
source: Mayer 1992b, p.11

Influenced by this philosophy, the Mayer Committee adopted the following definition of key competencies.

> *Key competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. Key competencies are generic in that they apply to work generally rather than being specific to work in particular occupations or industries. This characteristic means that the key competencies are not only essential for effective participation in work but are also essential for effective participation in further education and in adult life more generally.* (Mayer 1992b, p.5)

While the Mayer Committee regarded its approach to competence as a broad one, its neglect of the human factor and the cognitive processes and motivation that influence the acquisition of these competencies has led to a spectrum of issues in the implementation of the key competencies and their integration into the work of schools and VET institutions. Comparable issues, which are discussed in the chapter 'teaching and learning implications', have arisen in both Australia and Britain where a similar approach has been adopted to national competency standards. The United States approach has had much more concern for personal attributes, values, and theories of human development.

In reviewing the Mayer Committee approach and outcomes, the following key issues emerge:

- its approach to values and attitudes
- its view on personal attributes overall
- cultural understanding as a key competency
- the question of foundation skills
- omission of the learning competence

values and attitudes

The Mayer Committee took the position that the principles and characteristics it adopted precluded the inclusion of values and attitudes, although it was urged to do so by many industry and parent groups (Mayer 1992b, p.9). However, the committee recognised that values and attitudes would be reflected in the development and application of key competencies in work settings.

This approach contrasts with the position adopted in the United States ASTD/DOL and SCANS reports, which both included values and attitudinal competencies. The subsequent further impact of the knowledge-based new economy since Mayer raises a spectrum of issues relating to values and attitudes which are discussed in the following chapter.

personal attributes

Similar issues relate to the Mayer Committee neglect of other personal attributes, again unlike the ASTD/DOL and SCANS proposals. In a sense this is like designing a car without an engine to drive it. The failure to link the Mayer key competencies to a theory of human development has led to variable outcomes in implementation as reported by a number of researchers (Hager, Moy & Gonczi 1997, Hager 1998, Ryan 1997, Down 1997). While some teachers and trainers have applied the key

competencies in a developmental way, this has not been universal, and other applications have regarded the key competencies as separate, discrete competencies.

cultural understanding

The Finn Committee recommendation for cultural understanding as a key competency (Finn 1991, p.6) was rejected by the Mayer Committee on the grounds that this was a body of knowledge and not a competency (Mayer 1992b, p.8). This decision was controversial at the time and controversy has continued. The contemporary concern with building a learning culture in the workplace means that the culture of the workplace in a multicultural society has again become a centre of concern so that compelling grounds exist to revisit this issue.

foundation skills

Again, unlike the ASTD/DOL and SCANS structure, the Mayer Committee did not include foundation skills such as the basic skills. The emergence of concern with lifelong learning since Mayer has brought foundation skills back to centre stage, and this is reflected in the work of OECD on lifelong learning where the foundation concept has become central (OECD 1996, Kearns & Papadopoulos 2000).

The British NSTF in its recent report identified basic skills as one of the top priorities for inclusion in a national skills agenda (NSTF 2000a, p.7). This resurgence of concern with basic skills since Mayer across OECD countries has been stimulated by evidence from international surveys such as the OECD International Adult Literacy Survey of the low levels of literacy and numeracy in much of the adult workforce in countries such as Britain, United States and Australia (OECD 1998, pp.22–8). In the context of contextual pressures for up-skilling of the workforce, the low level of basic skills in much of the workforce is a major impediment to such up-skilling.

the learning competence

A further key omission in Mayer is in respect of the learning competence. While the explosion of interest in lifelong learning since 1992 has brought to the fore 'learning to learn' as a key generic skill, this competence had been identified in the ASTD/DOL report of 1988 and was directly linked by Carnevale in his subsequent work to the conditions of the new economy (1991) and by OECD (1996). How the learning competence ('willingness and ability to learn') might be fitted into a revised set of generic skills is a central issue.

implications of key contextual shifts

The overview of issues arising from the Mayer report points to the crucial significance of key contextual shifts in the socio-economic environment of education and training which have become more evident since 1992, including the emergence of the knowledge-based new economy, and consequent pressures for lifelong learning. These shifts are discussed in the next chapter, followed by the chapter on conceptual issues.

key contextual shifts and their implications

The significance of key contextual shifts in the environment of VET has become clearer over the past eight years than it was in 1992 when the Mayer Committee reported. While the Mayer Committee was sensitive to a number of major shifts in the economy and in the workplace, the implications of these shifts has been clarified in a number of respects and provide a firmer basis for revisiting the work of the Mayer Committee.

The most significant of the contextual pressures that bear on the role of generic skills are:

- the requirements of the knowledge-based new economy and the continuing impact of globalisation and new information technologies
- the exponential pace of change
- the consequent pressures for lifelong learning
- the need for individuals to maintain employability in this environment
- changes in the workplace including major re-structuring and the emergence of the concept of the high performance workplace
- recognition of a requirement to foster enterprise skills and an innovation culture in Australia building Australian industry that is competitive in globalised world markets
- the revision of the National Goals for Schooling

The cumulative impact of these contextual shifts raises fundamental questions about the current approach to skill formation in Australia.

The cumulative impact of these contextual shifts raises fundamental questions about the current approach to skill formation in Australia and the role of generic skills in the current strategies. This review attempts to draw out the major implications of these developments for the role of generic skills.

implications of the **knowledge-based** new economy

While the new economy has been defined in various ways (Carnevale 1991, Johnston 2000, OECD 2000a, Allen 2000, pp.7–8, Secretary of State for Trade and Industry 1998), there is broad agreement that knowledge processes and products are central to success in the competitive environment of the new economy.

Carnevale in 1991 pointed to the key role of 'flexible and information-based technologies' among the new competitive realities of this environment. Such technologies provide a basis for the generation, management and utilisation of knowledge as never before, and for the emergence of knowledge-based industries such as biotechnology.

These developments have brought a new focus on the accumulation of knowledge and human capital as never before, with a strong interest in the relationship between human capital and new technology (OECD 2000a, p.18). This, in turn, has spun off an interest, which OECD has pursued, in the relationship between social capital and the accumulation of human capital (OECD 1999d).

The British Government's White Paper *Our competitive future: Building the knowledge-driven economy* (Secretary of State for Trade and Industry 1998) draws attention to knowledge, skill and creativity as the three requirements for success in the knowledge economy:

> *In the global market place, knowledge, skills and creativity are needed above all to give the UK a competitive edge. These are the distinctive assets of a knowledge-driven economy.*
>
> (Secretary of State for Trade and Industry 1998, p.2)

The White Paper further stresses the need to build 'an entrepreneurial spirit' and a culture of enterprise—objectives the Karpin Report in Australia also endorsed.

A further significant dimension in the context of the new economy has been that rising skill levels has been a factor driving growth for a long time, and that this trend continued throughout the 1990s (OECD 2000a, p.7). A recent study by the Alllen Consulting Group of 350 Australian companies also showed the demand for higher skill levels in the workforce (Allen 2000).

The British NSTF, which reported in 2000 after an enquiry lasting three years, commissioned over 20 research papers and reports that it used in preparing its research report (NSTF 2000b) and final report (NSTF 2000a). NSTF also concluded that there was a demand for higher skill levels (NSTF 2000b, pp.35, 41–3) and that

this trend had also included increased demand from employers for generic skills as the nature of employment had changed (NSTF 2000a, p.23).

The implications of the knowledge-based new economy cascade down to the level of individual firms and the workforce within firms. In addition to the growing interest in knowledge management within firms, and the consequent interest in the relationship between knowledge management and human resource development within firms (Halal 1998), this interest has cascaded down to the level of individual 'knowledge workers' (Winslow & Bramer 1994, Davenport & Prusak 1998).

This interest in the generation, management and use of knowledge has brought with it a search for high performance work systems that combine technology and human resources in optimum ways. This search has had the effect of extending the boundaries of both knowledge and learning in a number of ways, including recognition of the significance of tacit knowledge in the performance of Japanese firms (Nonaka & Takeuchi 1995) and, hence, the role of tacit learning in such high performance environments. The Allen study also showed the trend towards high performance work systems in the firms studied (Allen 2000).

The emergence of various forms of high performance work systems in a knowledge-based environment inevitably has major implications for human resource and skill development. In this environment, 'intellect, intelligence, ideas are the substance of production. The issue of management now involves systematizing, supporting, and motivating these ephemeral forces' (Winslow & Bramer 1994, p.viii). Such a concept of knowledge work requires a broader concept of skill, and its relation to the generation, management and use of knowledge, than has been the case in Australia up to now. It calls into question the personal attributes of workers that enable them to be effective in this environment and the relation of the necessary personal attributes (and values) to the development of generic skills.

The implications of the knowledge-based new economy cascade down to the level of individual firms and the workforce within firms.

A further implication of the growth of knowledge work has been the emergence of an interest in the role of values in the generation and use of knowledge:

> *Values and beliefs are integral to knowledge determining in large part what the observer sees, absorbs and concludes from his observations.*
>
> (Davenport & Prusak 1998)

> *Knowledge, unlike information, is about beliefs and commitment.*
>
> (Nonaka & Takeuchi 1995)

This means that firms, in developing systems to generate knowledge from information, require knowledge workers who are sensitive to values and able to surface mental models and perceive in new ways so as to be innovative and creative. This necessary kaleidoscopic competence for knowledge workers is very relevant to the creativity of firms and their workforce and the capacity of firms to be innovative and enterprising. This influence means it is now necessary to re-consider the role of values and personal attributes in the key competencies and to find ways to build strategies to enhance the capacity of the workforce to handle values in a range of contexts (including in teams, high performance systems, and in personal development) so as to be perceptive, flexible and able to contribute to creative solutions.

The enhanced significance of values in the knowledge-based economy also draws attention to the influence of culture in fostering or impeding the necessary attributes discussed above. The influence of culture on innovation was recognised by the HDWG in a paper prepared for the February 2000 National Innovation Summit jointly sponsored by the Department of Industry, Science and Resources (DISR) and the Business Council of Australia.

- *Innovation is often fuelled by passion/feeling, culture and values.*
- *Innovation capacities can be inhibited or fostered by the wider culture (values, attitudes, environment).* (DISR 2000)

The complex relationship of culture to skill and learning development (and social and human capital accumulation) was explored by Kearns and Papadopoulos in a study of policy in five OECD countries (Kearns & Papadopoulos 2000).

This study pointed to the pervasive influence of culture on the policies and strategies adopted and on outcomes. This argues for values and strategies to build a learning culture being brought into policy for skill formation with an expanded set of key competencies (which include enterprise skills, creativity and the learning to learn competence) an instrument for this purpose.

Overall, an examination of literature on the knowledge-based economy highlights the way in which knowledge, skill, creativity and enterprise are widely seen as the four pillars for competitive success in this environment. This suggests the need to re-appraise skill strategies for the new economy to examine how linkages can be forged between skill strategies and the generation, management and use of knowledge, creativity and enterprise. There are also grounds for believing that an expanded set of generic skills (which include enterprise skills, creativity and learning to learn) could have a significant role in forging these linkages.

imperatives for **lifelong** learning

A further key shift in the environment of VET since Mayer has been the surge of international interest in lifelong learning since the mid 1990s. This is reflected in the work of international agencies such as OECD and Unesco (OECD 1996, Unesco 1996), the Cologne Charter on lifelong learning adopted by the Group of Eight, and in policies instituted by some governments, most notably Britain, to develop as learning societies (Secretary of State for Education and Employment 1998, 1999).

The driving forces in this development are mainly economic (although with significant social implications) and relate to the new competitive environment of the new economy and the exponential pace of change. In this environment, it is no longer feasible to survive with a 'front-end' model of education and skill formation, but rather learning and skilling must, of necessity, be a lifelong process (OECD 1996, p.15).

This imperative raises the critical issue of what is involved in a capability for lifelong learning and how such a capability can be fostered for all. Kearns et al., in a study of the implications of lifelong learning for VET in Australia, attempted to answer this question with a model involving three rings (Kearns et al. 1999, pp.37–44):

- *inner* the basic attributes that affect wellbeing and a desire for learning: confidence, self-esteem, motivation, curiosity, ability to change etc.
- *middle* the foundations for this capacity: literacy, learning to learn skills, understanding others etc.
- *outer* the key competencies: problem solving, using technology, numeracy skills etc.

This approach suggests the need for consideration of the personal attributes that influence a motivation for learning as well as the enabling foundations and generic skills that sharpen this capability.

OECD has also adopted a foundations approach in its work on lifelong learning capability (OECD 1996, pp.99–122) which in some respects goes back to the foundations concept of the United States SCANS Commission (SCANS 1992).

Kearns and Papadopoulos have undertaken a recent comparative study of the policies adopted by five OECD countries (Britain, United States, Sweden, Germany, Netherlands) to build a learning culture which includes a chapter on foundations (Kearns & Papadopoulos 2000). This study showed that all countries were attempting

to strengthen foundations at the school level, through a range of school reform policies, while also building capability and provision to up-grade the basic skills of the existing workforce lacking essential foundations (Kearns & Papadopoulos 2000, pp.42–9). The policies to up-grade basic skills in the adult workforce were the most developed in the two countries with the most deficiency in basic skills in the adult workforce (Britain and United States), although Sweden is also addressing this issue through its current five-year Adult Education Initiative (Kearns & Papadopoulos 2000).

Research in this area is at an early stage, and it is evident that much more research is required to establish the foundation components of a capability for lifelong learning and the relationship of generic skills such as the Mayer key competencies to these requirements.

the **quest** for **employability**

A related concern that has developed during the 1990s, driven by the same forces as the interest in lifelong learning, is how individuals can maintain their employability throughout their working lives in a world of exponential change where skills rapidly become obsolete.

The European Union has taken up this issue as one of the four planks in its employment policy, while industry associations such as the CBI have contributed to the debate in this area (CBI 1998).

Some commentators have seen the significance of the employability issue as signalling, from the point of view of the individual, a shift from a training perspective to a focus on maintaining employability. Such a shift brings into focus the key personal attributes and generic skills, such as a learning capability, that are relevant to maintaining employability. As yet, this issue has not attracted as much attention in Australia, as is the case in Europe.

CBI in a 1998 discussion paper on employability defined employability as:

> *The possession by an individual of the qualities and competencies required to meet the changing needs of employers and customers and thereby help to realise his or her aspirations and potential in work.* (CBI 1998, p.6)

This mix of personal attributes and competencies parallels the mix of personal attributes and competencies involved in a capability for lifelong learning. There are grounds for believing that there is considerable overlap between the two concepts,

with a capability for lifelong learning a key requisite for maintaining employability on a whole-of-life basis.

CBI identifies a list of attributes of employability which include a lifelong learning capability, a rise in individual skills, individual adaptability, confidence and self-esteem, career-planning skills and other attributes.

There is a strong case to consider whether the attributes of the employability concept, or some at least, should be included in an expanded set of key generic skills.

CBI subsequently gave a more precise statement on the components of employability based on the analysis of its employability discussion paper. These qualities and competencies are set out below.

box 4: qualities and competencies which make up employability

- values and attitudes compatible with work—including a desire to learn, to apply that learning, to adapt and to take advantage of change
- basic skills (literacy and numeracy)
- key skills (communication, application of number, information technology, improving one's own learning and performance, working with others, problem solving) sufficient for the needs of the work
- other generic skills that are becoming increasingly 'key'—such as modern language and customer service skills
- up-to-date and relevant knowledge and understanding
- up-to-date job-specific skills
- the ability to manage one's own career

source: based on *In search of employability*, CBI 1998

Overall, it is evident that the implications of employability need to be taken into account in any review of the essential generic skills required by all.

changes in work and **emergence** of the **high performance workplace**

Among the most significant of the implications of the economic shifts associated with globalisation and the impact of new technologies has been the emergence of the high performance workplace. While definitions of this concept vary, the characteristics identified by the Allen Group in its study of 350 companies appear to be widely viewed as a basis for maintaining a competitive position in the globalised

new economy (Allen 2000). Such an approach involves a more strategic use of recruitment and training policy by firms with strategies in this area closely linked to workplace change, innovation, research, the use of technology, new products, customer service and other core company strategies (Allen 2000, p.92). The strategic use of training in this way provides a link to knowledge generation and management and the capability of enterprises for innovation and workplace change. As more firms have appointed chief knowledge officers and chief learning officers, there is increased interest in how to connect these two systems in an integrated way (ASTD 2000). The Allen study and studies in Britain also show that high performance strategies also lead to increased demand for key generic skills to support changes in work methods, such as with the adoption of team-based organisation (Allen 2000, pp.vii–x, NSTF 2000a, p.23, NSTF 2000b, p.47). This trend has gone along with an overall increase in demand for higher levels of skill (NSTF 2000b, pp.41–3).

Studies undertaken for the British NSTF showed that the increased demand for generic skills and for higher skill levels was associated with changes in the organisation of work and in jobs, the impact of new technologies and competitive pressures resulting from globalisation (NSTF 2000b, pp.36–46). These shifts have gone along with shifts from manual to non-manual jobs, the changing composition of intermediate-level jobs, falling employment in manufacturing, primary industry and utilities, and the growth of knowledge-based industries (NSTF 2000b, pp.36–40).

The key reality emerging from those changes in the workplace and in jobs relates to the increased demand from employers for generic skills, for new mixes of skill and for higher skill levels. We consider the implications of these shifts in the following chapter.

demand for enterprise and innovation **skills**

A further set of requirements arising from the impact of globalisation and the knowledge-based new economy relates to the increased demand for enterprise skills and the capability to initiate and carry through innovation. The pressures resulting from globalisation and the competitive realities of the knowledge economy make this a key area for identifying the generic skills that stimulate and support innovation and enterprise.

The growing interest in this area is reflected in the Karpin Report of 1995 on leadership and management skills (Karpin 1995) and in the Australian National Innovation Summit convened in February 2000 (DISR 2000). The Karpin Report's conclusion that Australia does not have an enterprise culture and that such a culture

should be actively promoted led to the Commonwealth's Enterprise Education in Schools program as an element of the School-to-Work Program.

Evaluation of this program by Keys Young in 1999 showed that enterprise and enterprise education is an elusive concept open to a number of interpretations: a broad educational interpretation and a narrow commercial interpretation (Keys Young 1999, p.2).

OECD in 1989 defined enterprise skills in this way:

> *These encompass those personal dispositions, abilities, and competencies related to creativity, initiative, problem solving, flexibility, adaptability, the taking and discharging of responsibility, and training … how to learn and unlearn.*

The Ministerial Council on Employment, Education, Training and Youth Affairs (MCEETYA) defined enterprise education in a somewhat similar way:

> *Enterprise education is directed towards achieving a learning culture which will result in greater numbers of students equipped and enthused to identify, create, initiate, and successfully manage personal, business, work, and community opportunities.* (Keys Young 1999, p.12)

These broad definitions of enterprise skills and enterprise education are oriented towards a learning capability and culture and the personal attributes that underpin such a culture. The links that the OECD definition makes with creativity and adaptability is also significant and suggests that enterprise skills are best seen as a cluster of skills and attributes deriving from a learning capability and progressing to enhanced creativity and adaptability. Such a concept, which would involve considerable change in the work of schools and VET institutions, appears a necessary underpinning of attempts to build a culture in Australia to stimulate and support innovation and enterprise in the context of the knowledge-based new economy. There are strong grounds in the context of the knowledge-based new economy to include enterprise and creativity skills in an expanded set of generic skills.

revision of the **national goals** for schooling

A further significant development since 1992 has been the revision of the National Goals for Schooling which led to the Adelaide Declaration of April 1999 which set out the new goals (MCEETYA 2000). The Mayer Committee in its work took account of the broader purposes of schooling as reflected in the National Goals built into the Hobart Declaration of 1989 (Mayer 1992b, p.6), and it is necessary to consider

whether the revised National Goals for Schooling contain implications for generic skills development.

The Adelaide Declaration has more regard to lifelong learning and the role of VET in schools than the previous Hobart Declaration and includes the goal that students on leaving school should:

> *1.5 have employment related skills and an understanding of the work environment, career options and pathways as a foundation for, and positive attitudes towards, vocational education and training, further education, employment and lifelong learning.* (MCEETYA 2000, p.3)

The National Goals also recognise the need for students to achieve literacy and numeracy and to 'participate in programs and activities which foster and develop enterprise skills, including those skills which allow them maximum flexibility and adaptability in the future' (MCEETYA 2000, p.4).

The recognition of enterprise and adaptability skills in the National Goals for Schooling adds to the case that these goals, along with learning to learn skills, should be included in a revised set of generic skills to provide for progression in the lifelong development and enhancement of these skills.

general **comment**

The overview of key changes in the environment of VET and schools since 1992 points to a number of major issues that need to be addressed in possibly adapting the current set of key competencies to the new context of the 21st century. These include the requirement to link learning, skill, enterprise and knowledge strategies through a set of generic skills which underpins performance across these domains, to adapt the generic skills to other changes in the workplace, including the emergence of the high performance workplace, and to identify a set of key generic skills which are developmental in the sense of providing a basis for lifelong learning and re-skilling.

The section that follows seeks to identify the conceptual and practical implications that flow from these requirements.

some conceptual issues

The contextual shifts and developments discussed in the previous chapter have brought to the fore a number of conceptual issues relating to the key competencies, and generic skills more broadly. These issues include the position of personal attributes and values in a context where these are mounting imperatives for lifelong learning and for personal responsibility to maintain employability on a whole-of-life basis. This, in turn, has stimulated interest in a theoretical understanding of the development of generic skills and competence.

These influences have led to a search for broader frameworks to link the key generic skills with workplace performance in the context of the knowledge-based new economy and, at an individual level, lifelong personal development and maintenance of employability.

These contextual influences have also led OECD to embark on an ambitious four-year development program directed at the theoretical and conceptual foundations for the definition and selection of competencies. This program, which is known as DeSeCo, is being co-ordinated by the Swiss Federal Statistical Office and is being conducted over four years from February 1998 to March 2002 when the final report will be released (OECD 2000b). The DeSeCo program draws on the expertise of scholars in a range of disciplines across OECD countries in an approach which involves an interactive approach between conceptual and empirical work (OECD 2000b, p.4). DeSeCo is discussed below.

… it also needs to be recognised that the ad hoc character of the current set of key competencies … has led to implementation issues in both Australia and Britain.

The current OECD DeSeCo program builds on the foundation of recent OECD work on lifelong learning, human capital and knowledge management in the learning society, with the intention to take this work to a further stage in identifying essential competences required in this context (OECD 1999a, b, c, e).

While the search for broader frameworks has been evident since the mid 1990s, it also needs to be recognised, as Hager (1998) does, that the key competencies have a developmental element, and that some of the impetus to carry

the generic skill agenda forward in a changing context comes from innovative applications of the key competencies in the workplace and in education institutions.

However, it also needs to be recognised that the ad hoc character of the current set of key competencies, as a mix of separate and discrete competencies, has led to implementation issues in both Australia and Britain in schools and VET, as implementors have grappled with the problem of how to integrate the key competencies in the work of schools and VET, and in workplace training and learning. These issues are discussed in the chapter 'the impact of generic skills on business performance'.

Hager, in a 1998 report prepared for the New South Wales Department of Training and Education Co-ordination, asserts that research has identified four major characteristics of the key competencies (Hager 1998). These are that they:

- cluster in actual learning and work situations
- are highly sensitive to contextual factors
- can be thought of as processes as well as an outcome
- are developmental

These conclusions reflect the findings of an evaluation study of some 25 key competency pilot projects conducted in New South Wales between 1995 and 1997, with Hager, Moy and Gonczi commissioned to analyse project documents and report on the findings (Hager, Moy & Gonczi 1997). The Hager, Moy and Gonczi report confirmed a conclusion formed by Jasinski that 'key competencies mean different things to different people and there is variation in their understanding' (Jasinski 1996, p.2). This ambiguity and chameleon quality is a central issue in implementation.

The Hager view that the key competencies are developmental and highly sensitive to contextual factors appears as a strength of the key competencies when considered in a lifelong learning context, so that they may in this sense be regarded as a foundation for lifelong learning.

It also supports the view that the key competencies should be regarded as a developmental agenda rather than as a fixed set of competencies. This throws up the question as to how development of the agenda should proceed beyond the Mayer key competencies

The New South Wales pilot projects were also significant in leading to the conclusion that the key competencies are 'overlapping and inter-related, rather than

discrete processes with three clearly identifiable performance levels' (Hager, Moy & Gonczi 1997, p.10). This conclusion points to the significance of personal attributes in individuals in the application and development of the key competencies and supports the view that more account needs to be taken of personal attributes and values than the Mayer Committee did.

The conclusion of Hager, Moy and Gonczi that the key competencies should be viewed as 'both process (involving enabling or underlining knowledge) necessary for higher order learning and workplace performance and as outcomes' is also significant, in particular in the context of ensuring foundations and capability for lifelong learning. However, the question also arises as to whether there are significant gaps in the current set of key competencies in performing this role. There are grounds for believing that significant gaps exist.

the **search** for **broader frameworks**

The work of Hager and his associates, and the current work of OECD in its DeSeCo program, illustrates the search for broader frameworks to relate generic workplace competencies to so that there is more coherence and progression in the lifelong development of key generic skills and attributes. As noted in the chapter 'the search for key competencies', the United States approach to generic skills has, over the past decade and more, involved the linking of key workplace competencies to broader foundations frameworks for lifelong learning as in the SCANS framework, or in the broader set of generic skills and personal attributes built into the ASTD/DOL framework. The United States approach has also not involved the separation of generic workplace competencies and personal attributes and values which is a feature of the Anglo/Australian competency-based approach.

Hager, in a 1998 report for the New South Wales Department of Training and Education Co-ordination, commented on the two views of key competencies that had been identified in evaluation of key competency pilot projects: an atomistic and integrated view (Hager 1998, pp.7–8). He argued that attention should be focussed on their holistic, integrated, contextual character so that the acquisition of proficiency in the key competencies was seen as a developmental process extending over a substantial part of the lifespan. He linked the process to the development of judgement in individuals and drew on a range of educational philosophy in building this case. This approach, which links the acquisition of generic competencies to phases of human development, is built around Hager's view of the need to enrich competency approaches in general.

McDonald (2000, p.1), in an unpublished paper produced for ANTA, noted that there is currently no agreement on the best term to describe:

- skills which apply to work generally rather than to particular occupations or industries
- a capacity to solve problems and exercise judgement
- characteristics such as creativity, flair and imagination

McDonald uses the term 'enabling skills' to describe this broad spectrum of skills and attributes and argues that it is now time for a new approach to enabling skills which would be a flexible set of skills rather than a fixed set and which would enable effective participation in work and life (McDonald 2000, p.5). His paper proposes a suite of general vocational qualifications as a way of fostering key enabling skills.

Robinson, in a recent monograph on *New directions in Australia's skill formation*, points to the search for broader frameworks to link the key competencies to in responding to the contextual shifts discussed in this report (Robinson 2000). While he recognises the centrality of lifelong learning and the need to take account of broader interpersonal and human relations skills, analytical and interpretative skills, and enterprise skills, he does not attempt to weave these requirements into a new framework for generic skills.

… key competencies exist and play a significant role in our ability to manage our lives.

While Hager, McDonald and Robinson illustrate a research for broader frameworks—relevant to the new context of education and training—to relate the key competencies to, theoretical and conceptual issues have not been a prime focus in Australian research on generic shifts. Rather, the focus has been more on practical issues involved in implementing the Mayer key competencies and integrating these in the work of schools, VET institutions and workplace learning. There has been a relative neglect of a wider set of generic skills and personal attributes, beyond the key competencies, that may have assumed increased significance in the context of the technology-driven new economy. However, these issues have now been taken up in the ambitious four-year OECD DeSeCo program.

the **OCED DeSeCo program**, 1998–2002

OECD in 1998 inaugurated a four-year program titled *Definition and selection of competencies: Theoretical and conceptual foundations (DeSeCo).*

The program aims to:

- *advance the theoretical underpinning of the selection and definition of skills and competencies*
- *encourage an iterative process between conceptual and empirical work*
- *test the hypothesis that key competencies exist and play a significant role in our ability to manage our lives* (OECD 2000b, pp.3–4)

In attempting to work towards a common, overarching theoretical framework for the identification and definition of skills and competencies, OECD is seeking to redress the relative neglect of theoretical insights which has been a feature of the development of key skills/key competencies in countries such as Britain and Australia, although less in the United States, where the approach has been largely an empirical/functional one. The methodology for DeSeCo reflects this objective, with theoretical and conceptual papers from a range of disciplines a feature of the initial phases of the project.

The DeSeCo project involves an ambitious initial set of ten research questions. These are set out in appendix 2. They include questions such as:

- *What is meant by the notions of competence, key competencies, skills etc?*
- *What ideas about the nature of human beings and society should serve as a starting point for the identification of key competencies?*
- *Do competencies operate independently, or should they be viewed as an interdependent set or constellation of competencies? In either case, how do the identified key competencies relate to each other?*
- *What are the theoretical foundations, rationale and selection processes behind the sets of key competencies?* (OECD 2000b, p.5)

The DeSeCo approach is based on the recognition of multiple conceptual approaches to the subject of competencies so that differing fundamental considerations and perspectives will emerge (OECD 2000b, p.9). For this reason papers were commissioned in a range of disciplines: psychology (Weinert 1999, Haste 1999), economics (Levy & Murnane 1999), sociology (Perrenoud 1999), philosophy (Canto-Sperber & Dupuy 1999) and anthropology (Goody 1999).

The methodology for the project then involved these commissioned expert papers being circulated between authors for comment and to other experts such as Jacques Delors, George Psacharopoulos, and Robert Kegan. The comments of the wide range of experts brought into this process were then set out in an OECD DeSeCo document (OECD 1999g).

It is unsurprising that the comments of academic experts from a spectrum of disciplines show a diverse range of opinions on the nature of generic skills and competencies and on the identification of essential key competencies required by work and social life. The views of the economists Levy and Murnane are closest to the Anglo/Australian approach to key skills/key competencies, with a set of essential skills that include basic literacy and numeracy, communication, team skills and information technology skills (Levy & Murnane 1999). However, Levy and Murnane also include aspects of emotional intelligence.

The comments in the commissioned papers from the disciplines of psychology, philosophy, sociology and anthropology display a wide range of views that demonstrate that there is no international consensus on the identification and definition of essential generic skills.

A feature of the OECD approach to DeSeCo is that it encompasses life skills as well as work skills, so that a central question is the extent to which identified essential skills are relevant to both the workplace and life in society. This dimension inevitably brings in issues relating to values and social vision, with the identification of skills and competencies dependent on the balance of social and workplace vision.

concepts of competence

A paper of particular interest is the paper by Franz Weinert from the Max Planck Institute for Psychological Research in Munich on *Concepts of competence*. Weinert was commissioned to provide an analysis of the epistemological and paradigmatical foundations of concepts of competence and a conceptualisation and categorisation of competencies and skills to sum up this early phase of DeSeCo activity (OECD 2000b, pp.6–7).

His paper ranges over and defines various types of concepts of competence and competencies. These include general cognitive competencies—action competence, key competencies and metacompetencies (Weinert 1999). His treatment of metacompetencies is useful and relevant to the current interest in learning to learn as an essential general competence (Weinert 1999, pp.12–14). Weinert draws on metacognition research on the development of metacognitive competencies in childhood and adolescence and provides a useful short summary of this research. This includes the observation:

> *One basic prerequisite for the acquisition of metacompetencies is the ability to introspect about one's own cognitive processes and products, available from the third year of life and increasing with age.* (Weinert 1999, p.12)

His summary of metacognitive research adds to the view that learning to learn should be seen as a key developmental competency with progression from childhood, through schooling and post-compulsory education and training, into adult life.

Weinert distinguishes seven different ways in which the concept of competence is used (Weinert 1999, p.14). These include key competencies, action competence and metacompetencies. He comments on difficulties in conceptualising the competence concept and suggests some preliminary solutions (Weinert 1999, pp.15–22).

The implications of the Weinert paper for Australian interests in key skills and competencies will require considerable analysis and discussion.

what are the **essential** key competencies?

The authors of the commissioned DeSeCo papers were asked to identify essential key competencies. The range of responses is interesting. Reference has been made above to the response by the economists Levy and Murnane. Other responses include:

Helen Haste (psychology)

- technology competence
- dealing with ambiguity and diversity
- finding and sustaining community links
- management of motivation, emotion and desire
- agency and responsibility

The Haste (1999) set of key competencies have a varying balance of relevance to the workplace and social living, although several would promote foundations for autonomous, self-directed learners and workers who were able to adapt to changing conditions and function as responsible members of teams and enterprises. It is evident that these attributes would underpin a number of the Mayer key competencies and more recent lists such as those of the Allen Group.

Monique Canto-Sperber and Jean-Pierre Dupuy (philosophy)

- competencies for dealing with complexity
- perceptive competencies

- normative competencies
- co-operative competencies
- narrative competencies—i.e. a way of making sense of what happens in life

It is evident that there is some overlap between the Canto-Sperber and Dupuy (1999) and Haste lists—for example, in respect of dealing with ambiguity, complexity and diversity. As with the Haste set, a number of these attributes would underpin performance in the Mayer key competencies—for example, perceptive competencies and co-operative competencies.

As with the Hager proposal discussed above, both the Haste and Canto-Sperber and Dupuy sets of key competencies involve a search for more integrated and holistic sets of competencies that link to human development and experience in 21st century conditions and which would underpin performance in workplace competencies, such as the Mayer key competencies and competencies required for active life in society.

Both Canto-Sperber and Dupuy and Haste recognise that values and personal attributes need to be brought into sets of key competencies.

Canto-Sperber and Dupuy (1999, p.13) comment in the following terms:

> *These competencies for a good life are general cognitive and emotional abilities and dispositions that are used in a variety of situations …*
>
> *These competencies show an ability to learn from unforeseen situations and circumstances and show how to cope with life situations. They include a dimension of learning (knowledge) and a dimension of motivation (since they refer to values, attributes, beliefs, habits, emotions, and psychological constructions which regulate learning).*

The concerns of both Canto-Sperber and Dupuy and Haste with motivation, emotion, attitudes and values adds to the case that these basic underpinnings of competence should not be left out of national sets of generic skills.

Canto-Sperber and Dupuy, like Weinert, recognise that there are various types of competencies. Their discussion covers conceptual competency, procedural competency, motivational competency and action competency (Canto-Sperber & Dupuy 1999, p.13). It is evident that the Mayer key competency and British key skills range across these categories, although with a general exclusion of motivational competency.

Phillipe Perrenoud (sociology)

Perrenoud (1999) includes a larger set of competencies than Haste and Canto-Sperber and Dupuy, and relates these to the needs of an individual for autonomy. His list includes being able:

- to identify, evaluate and depend on one's resources, rights, limits and needs
- individually or in a group, to form and conduct projects, and to develop strategies
- to analyse situations, relationships and force field systematically
- to co-operate, act in synergy, participate in a collective, share a leadership

While other competencies are included, the above list gives the flavour of the Perrenoud approach, which has some overlap with the Haste and Canto-Sperber and Dupuy lists.

responses to the **expert papers**

The commissioned DeSeCo expert papers were circulated to a range of further experts for comment with the comments collected in a DeSeCo paper (OECD 1999g).

The second round of opinions confirms the diversity of views that exist from different perspectives on the essential skills and competencies required for the good life in society and workplace competence.

Points of interest in these comments include:

- Development of competencies for life in society cannot be separated from questions of values (Harris in OECD 1999g, p.34).
- Teaching skills or knowledge content without developing the underlying mental capacities that create the skills or knowledge leads to very brittle results (Kegan in OECD 1999g, p.67).
- The adult of the 21st century will need to be able to travel across a wide variety of contexts (Kegan in OECD 1999g, p.67).
- We do not know enough about how competencies are acquired and how they can be taught (Delors & Draxler in OECD 1999g, p.29).

The comment of Jacques Delors and Alexandra Draxler are of interest in reaffirming the importance of foundations for lifelong learning and development of skill and competence, and support the views of OECD on this question (Delors & Draxler in OECD 1999g, p.30, OECD 1996). Delors and Draxler also recognise the significance and relevance of the categories of competence suggested by Canto-Sperber and Dupuy, and the need for everyone to acquire these competencies (Delors & Draxler in OECD 1999g, p.31).

An important issue raised by Delors and Draxler relates to their view that the development of competencies requires a vision of how we can continue to strive for a better and more just society that goes beyond the empirical analysis (Delors & Draxler in OECD 1999g, p.33).

A useful discussion of cognitive processes and the acquisition of knowledge is given in the comments by Robert Kegan (Harvard Graduate School of Education). Kegan (in OECD 1999g, p.67) comments in the following terms:

> *A great benefit to a concept like 'competence' is that it directs our attention beneath the observable behavioural surface of 'skills' to inquire into the mental capacity that creates the behaviour. And it directs our attention beyond the acquisition of 'knowledge' … to inquire into processes by which we create the knowledge.*

The emphasis placed by Kegan on cognitive processes has links to the views of Haste and Canto-Sperber and Dupuy, and links to the greater emphasis in United States sets of key competencies (ASTD/DOL, SCANS) to foundation thinking, reasoning and learning skills than in the Anglo/Australian approach. The connection between these concerns and the generation of new knowledge, creativity and enterprise is also relevant to the requirements for success in the knowledge-based new economy.

timetable and **outcomes** of DeSeCo

The timetable for the OECD DeSeCo program envisages the final report being released in March 2002. The initial publication from the program, due around September 2000, should give a guide to the likely outcomes of the program. The country contribution process (CCP) will add value to the experts' opinions in the design aimed at an iterative process between conceptual and empirical work. Information on DeSeCo, including the program expert papers, is available from the program web site http://www.statistik.admin.ch/stat_ch/ber/deseco/intro.htm

generic **skills** and **human capital**

A further useful component in the DeSeCo program is an analysis of past OECD work on competencies. This analysis is available in one of the DeSeCo documents (OECD 1999f) and covers:

- Cross-curricular Competencies Project (CCC)
- International Adult Literacy Survey (IALS)
- Human Capital Indicators Project
- Ongoing Projects (these include the International Life Skills Survey and the CCC Problem Solving Project)

Perhaps the most relevant of these activities has been the Human Capital Indicators Project in view of the growing interest in human and social capital in the context of the knowledge-based new economy. Human capital was defined in this work as 'the knowledge, skills competencies, and other attributes embodied in individuals that are relevant to economic activity' (OECD 1998, p.9).

The OECD definition places generic skills as an important factor in the accumulation of human capital, while the inclusion of 'other attributes' in this definition enables personal attributes and values to be brought into the OECD concept of human capital. This conceptualisation of human capital includes the notion that the attributes of individuals extend beyond academic knowledge and encompass both cross-curricular skills (that is, generic skills) and attitudes (OECD 1999f, p.34). This provides a link to the work that OECD is also undertaking on social capital (OECD 1999d). OECD work on human and social capital is continuing and may provide further insights into the contribution of generic skills to the accumulation of those underpinnings of economic activity.

general **comment**

The overview of a selection of conceptual issues set out above points to the conclusion that more work is needed on theoretical and conceptual issues relating to essential generic skills. This need is recognised in the current OECD DeSeCo program which also points to the complexity of the issues and the current gaps in knowledge. There is much value in the DeSeCo approach of fostering an iterative process between conceptual and empirical work so that theoretical and conceptual insights might add richness and value to the empirical lines of enquiry and facilitate the implementation of key generic skills in the work of schools and VET institutions, and in the workplace. For this reason, it will be useful to monitor the progress of OECD work under the DeSeCo program.

part II: the issues

what are the essential generic skills?

There is no consensus in the international literature on the identification of the essential generic skills. This conclusion is confirmed by the papers prepared for the OECD DeSeCo program. However, two broad positions may be identified across the three countries we have focussed on in this review which articulate choices in the further development of generic skills.

These positions are:

- a pragmatic view that the current identified key skills/key competencies have served well enough and are valued by employers, so that the focus of future development should be on strengthening implementation of these generic skills rather than searching for a new set of key skills
- an alternative view based on the position that shifts in the context of VET, and the emergence of the knowledge-based new economy, require a more holistic approach that links more closely to the imperatives arising from those contextual shifts, including the pressures for lifelong learning, maintaining employability, adaptability, enterprise and creativity

It is of interest that the former position is most common in Australia and Britain—the two countries that have invested most heavily in national systems of key skills. The latter position is found most often in the United States—the country that is usually taken as the prototype of the new economy (Johnston 2000)—and in some European countries. This broader perspective in the United States is reflected in the more comprehensive sets of generic skills developed both by the SCANS Commission and by Carnevale as an outcome of the DOL/ASTD study of workplace basics (SCANS 1992, Carnevale 1991). These approaches are discussed in the chapter 'the search for key workplace competencies' of this review.

The Carnevale framework, which resulted from the 30-month DOL/ASTD study, is of interest as possibly the most developed attempt to date to link generic skills to the requirements of the new economy. This is set out in Carnevale's 1991

book *America and the new economy*. As noted in the chapter 'the search for key workplace competencies', the Carnevale framework includes learning to learn, adaptability and creativity skills, motivation and goal-setting skills, personal and career development skills, organisational effectiveness skills, as well as the workplace competencies included in the Mayer key competencies. The SCANS framework, by including a set of foundations skills, also provides a broader framework with more direct relevance to lifelong learning.

… a different mix of key generic skills is required by the conditions of the post-industrial information society.

The former, pragmatic position is reflected in Australia in the evaluation of the pilot phase of key competency implementation to research on integration of key competencies in training packages (Ryan 1997, Hager, Moy & Gonczi 1997, Field & Mawer 1996).

In some cases this position has been linked to the conclusion by Hager, Moy & Gonczi (1997) that the Mayer key competencies have been shown to be developmental in implementation so that they can serve to foster such goals as lifelong learning through the dynamics of their development (Hager, Moy & Gonczi 1997). However, there is not substantial evidence on the ways in which such development occurs.

A similar pragmatic approach has been adopted in Britain by NSTF. Surveys commissioned by NSTF pointed to the strong demand from employers for team working, customer handling, communication, problem solving, numeracy, and basic computing skills, in particular where firms sought to move into high quality product areas (NSTF 2000b, pp.116–21). NSTF therefore concluded that the focus should continue to be on implementation of the current set of key skills (NSTF 2000a).

However, NSTF also concluded that while employers needed not only specific vocational skills and the 'softer and transferable employability skills', they also require a workforce with 'the capacity for creativity, initiative, and continuing learning and development for the newer and flexible forms of work organisation which will be tomorrow's norm' (NSTF 2000a, p.13). NSTF is relatively silent on how these attributes in the workforce will be fostered.

The British policy of focussing effort on the identified top priorities is further reflected in the decision that the new Key Skills Qualification will be assessed in three skill areas only: communication, numeracy, and information technology (IT) skills (DfEE 2000a).

The British approach to identification of the essential key skills includes a duality in approach so that the set of six key skills have a national status while industry and businesses through their own initiatives can incorporate 'additional generic skills' into their skills development strategies. Additional generic skills identified in the employer survey include reasoning skills, scheduling work and diagnosing work problems, work process management skills, the ability to visualise output and work backwards for planning purposes (NSTF 2000a, p.23).

The press for a wider set of essential generic skills beyond the current key competencies is reflected in the results of a survey of 350 firms undertaken by the Allen Group for the Australian Industry Group (Allen 2000). The generic skills identified, in addition to the Mayer key competencies, included:

- basic skills—literacy, numeracy
- understanding of system relationships
- customer focus
- personal attributes:
  - capacity to learn
  - willingness to embrace change
  - practicality and a business orientation

The inclusion of key personal attributes in the results of the Allen Group survey is of interest and supports the view that personal attributes are a basic component in the new generic skills mix required by the conditions of the new economy.

the **alternative** view

The alternative view that a different mix of key generic skills is required by the conditions of the post-industrial information society is most commonly found outside of Britain and Australia. It is reflected in the current OECD DeSeCo program, which was discussed in the previous chapter, and in United States generic skills frameworks such as the ASTD/DOL structure and SCANS.

The alternative view to the Anglo/Australian approach is influenced by the socio-economic shifts in the context of education and training, and the consequent implications for enterprises, individuals and communities. These shifts were discussed in the chapter 'the search for key workplace competencies'. These include:

- pressures for lifelong learning
- the new competitive environment of firms

- maintaining employability in this environment
- recognition of the need for enterprise, innovation and creativity

A number of these pressures are recognised in the Allen Group snapshot of generic skills required by competitive firms, including the increased importance of personal attributes such as capacity to learn and willingness to embrace change. The OECD expert papers under the DeSeCo program, discussed in the chapter 'some conceptual issues', illustrate this strong interest in personal attributes and values (Haste 1999, Canto-Sperber & Dupuy 1999, Perrenoud 1999, Weinert 1999, Kegan in OECD 1999g).

Key issues that arise in formulating this broader framework for generic skill development relate to:

- the learning competence
- personal attributes and values
- enterprise, innovation, and creativity
- personal autonomy and adaptability
- cultural understanding

Comment follows on these issues and I then propose a framework to incorporate essential generic skills.

the learning competence

The view that willingness and capacity to learn should be regarded as an essential generic competence can be traced back to the ASTD/DOL set of key generic skills (1988) while it was then reflected in the SCANS proposals under thinking skills as 'the ability to learn, to reason, to think creatively, to make decisions, and to solve problems'.

Since then the work of OECD (1996) and UNESCO (1996) on lifelong learning, and that by a range of bodies on employability (for example, CBI 1998, EU 1997, OECD 1997), has given a new impetus to the notion that willingness and capacity to learn is an essential generic skill for the post-industrial age.

It is relevant that Commonwealth/State strategic planning for *Flexible learning for the information economy*, as set out in the *Framework for national collaboration in vocational education and training 2000–2004,* recognises the centrality of learning to learn as the key generic skill in the context of the information economy:

> *Increasingly these skills will become more sophisticated and will need to be developed in the workplace in a 'just-in-time' and 'just-for-me' basis in*

> *response to fast changing work practices and preferences. Learning to learn will become the bedrock capability of both individuals and organisations.*
> (Edna VET Advisory Group 2000, p.8)

Weinert, in his review of concepts of competence, comments on learning to learn as a fundamental metacompetence and provides a useful summary of how metacognitive competence is acquired based on cognitive research over the last decade (Weinert 1999, pp.12–14). This includes the ability to introspect about one's own cognitive process and products—an ability which increases with age.

Ott links a concept of holistic learning to his view of the need for holistic training which integrates vocational competence with character development (Ott 1999). Ott identifies four categories of holistic learning: contextual-technical, problem-solving, socio-communicative and affective-ethical (Ott 1999, p.54). Ott views holistic learning across these domains as the foundation for a new learning and corporate culture.

While much more research is required on the learning competence, it is abundantly clear that willingness and capacity to learn is an essential generic skill for the 21st century that underpins capability and performance in other generic and vocational skills.

personal attributes and values

The Mayer Committee precluded the inclusion of values and attributes in its set of key competencies on the grounds that these failed the tests applied by its principles. The Mayer Committee (1992b, p.9) view was that:

> *… key competencies can only include those things which can be developed by education and training, which do not require some innate predisposition or adherence to a particular set of values and which are amenable to credible assessment.*

On the other hand, personal attributes and values were included in the ASTD/DOL and SCANS sets of generic competencies while they are central to the essential generic competencies identified in most of the expert papers produced under the OECD DeSeCo program (Haste 1999, Canto-Sperber & Dupuy 1999, Perrenoud 1999, Kegan in OECD 1999g).

It is widely recognised that the conditions of the post-industrial age and new economy place a special onus and responsibility on the individual for self-direction and responsibility in such areas as lifelong learning, maintaining employability and being an active and responsible citizen in society (OECD 1996, CBI 1998, Carnevale 1991).

This recognition has led to a renewed interest in such personal attributes as autonomy, adaptability, self-understanding, confidence and self-esteem, and emotional intelligence, and it is now difficult to maintain the restrictive position on personal attributes adopted by the Mayer Committee.

There is also a growing recognition of the relevance of values to economic success in the knowledge-based economy. Scholars such as Davenport and Prusak (1998) and Nonaka and Takeuchi (1995) see values as directly relevant to the generation of new knowledge and the influence of culture on the generation of social capital and human capital is recognised in the current work of OECD in these areas (OECD 1999d).

The significance of personal attributes and values in the new economy supports the position adopted by many contemporary observers that a holistic or integrated approach to skill and knowledge is now required that integrates skill, knowledge generation and management, personal attributes and values (Ott 1999, Mehaut 2000). Such an approach is seen by Tomassini (2000) as the emergence of a new learning-based paradigm for skill formation.

The contextual shifts discussed in an earlier chapter make a compelling case for the inclusion of personal attributes and values in a new framework for generic skill development.

enterprise, innovation and creativity

Since the Mayer report, there has been an upsurge of interest in building a culture in Australia that supports enterprise, innovation and creativity so that Australian business and industry will be competitive in the conditions of the new economy. This interest is reflected in the Karpin Report of 1995, the National Innovation Summit held in February 2000 and the Commonwealth's Enterprise Education Program (Keys Young 1999).

… there is a compelling case to regard enterprise, innovation and creativity skills as essential generic skills.

In the context of national skill objectives for the knowledge-based new economy, there is a compelling case to regard enterprise, innovation and creativity skills as essential generic skills. At present the Commonwealth's Enterprise Education Program is operating as a discrete program separate from key competency development, and it would be sensible to link the Enterprise Education Program to a broader approach to generic skills.

Like the learning competence, this is also an area where considerable development work will be required in the definition and development of generic skills in this domain.

personal autonomy and adaptability

The strong international interest in encouraging and supporting individuals to be autonomous, responsible and adaptable is reflected across the OECD DeSeCo expert papers. This set of key competencies is related to metacognitive development and includes the metacompetencies discussed by Weinert (1999, pp.12–14). Weinert also observes that current teaching and learning models underlying school practices have tended to fall short in realising the goals of metacognitive competence acquisition. This is because teaching and learning focus on the products of learning (knowledge) and not on reflection about learning processes and their optimisation (Weinert 1999, p.14).

Kegan and Ridgeway in reviewing the OECD DeSeCo expert papers each pointed to underlying metacompetences that underpin the capacity of individuals to exercise and maintain competence in key generic skills (Kegan in OECD 1999g, pp.67–75, Ridgeway 1999, p.80).

In the case of Kegan, this metacompetence was seen as related to development of mental capacity to handle growing complexity and ambiguity in the post-industrial society and was related to Kegan's theory of five orders of increasing mental complexity and involved a requirement for a 'self authorizing order of mental complexity' (Kegan in OECD 1999g, pp.69–74).

Ridgeway (1999, p.81) considered that all the DeSeCo expert papers shared broad agreement about two central areas of competence:

- the ability to join and act effectively and democratically in multiple, complex, and socially heterogeneous social groups
- the importance of a positive self-concept that facilitates effective action and the ability to manage emotion and motivation to successfully handle challenges and avoid destructive conflict

The former of these competencies links to Kegan's metacompetence in the requirement to handle mental complexity. While this competence also links to the Mayer team skills competence, it goes beyond it in the complexity and range of contexts involved. A significant aspect is that Ridgeway regards both these central areas of competence as personal attributes.

This cluster of key generic skills focussed around autonomy, self-management and adaptability is also closely related to what Peter Senge termed 'personal mastery' as one of the five disciplines of a learning organisation.

> *Personal mastery goes beyond competence and skills, though it is grounded in competence and skills. It goes beyond spiritual unfolding or opening, although it requires spiritual growth. It means approaching ones life as a creative work, living life from a creative as opposed to reactive view point.*
>
> (Senge 1990, p.141)

While this cluster of key generic skills overlaps into the interpersonal cluster of generic skills, it is probably best regarded as an expression of the cognitive cluster of generic skills and linked to the cultivation of learning, thinking and reasoning competencies but with a strong emotional mastery (or emotional intelligence) underpinning.

cultural understanding

While cultural understanding had been proposed by the Finn Committee as a key competence, this proposal was rejected by the Mayer Committee on the grounds that cultural understanding was a body of knowledge and not a competence (Mayer 1992b, p.8).

This issue assumed considerable controversy, which continued into the pilot phase of implementation. Recent research has shown the crucial significance of the culture of the workplace, and more generally of the culture of the surrounding community and society, in learning, training and skill outcomes (Kearns & Papadopoulos 2000, Mulcahy & James 2000, Penn 1999). This includes the influence of microcultures within the workplace; whether on the basis of occupation, industry, or ethnicity which can lead to a bifurcation in learning/training outcomes with multiple tracks (Mulcahy & James 2000, Penn 1999).

In addition, the current interest in the accumulation of social capital and human capital (OECD 1999d, Fukuyama 1995) means that it is now important to foster cultural understanding and sensitivity in the workplace as a driver of the accumulation of social and human capital. This generic skill can also be linked to the interpersonal cluster of generic skills.

key generic **skills** in a **developmental framework**

The discussion above points to the key generic skills which could be fostered through education, training and workplace experience, but the question remains as

to how such generic skills should be structured into a framework that facilitates their on-going development and which stimulates interaction between the key skills.

While the Mayer Committee identified key competencies as separate, discrete competencies, research in the pilot phase of implementation showed how the competencies clustered and interacted in a developmental way (Hager, Moy & Gonczi 1997, Hager 1998, Ryan 1997).

These characteristics should be built into a new framework for key generic skills that would assist schools and VET institutions in their work, facilitate workplace learning and provide a framework to facilitate lifelong learning and personal development. Such a framework should be guided by findings from cognitive science and other relevant disciplines as reflected in the current OECD DeSeCo program.

However, it is also necessary to recognise, as Kegan does (in OECD 1999g, p.76), that the new generic skills 'take us into the world of complex psychological functioning'. Nevertheless, in the context of the post-industrial society and new economy, this entry is necessary for, as Kegan observes, 'teaching skills or knowledge contents without developing the underlying mental capacities that create the skill or knowledge leads to very brittle results' (Kegan in OECD 1999g, p.67). Kegan also observes that all the authors of the OECD DeSeCo expert papers argue that the adult and worker of the 21st century will need to travel across a wide variety of contexts.

It is difficult to disagree with these observations, which mean that the VET sector will need a deeper and more sustained interest in personal attributes and values in its work and that the convergence of general and vocational education will need to become a reality. This is a call for a new humanism in the work of VET that underpins the work of the sector in fostering skill and competence.

While the thrust of these comments require much more research and development work in identifying, defining and implementing essential generic skills required by 21st century conditions, I have set out in figure 1 my preliminary views on a possible framework for bringing the generic skills into a developmental structure that would facilitate their on-going development and interaction.

The four overlapping rings in this framework recognise:

- the basic cognitive and interpersonal foundations for the key generic skills
- the overlap, interaction and clustering between these foundations in various phases of human development

the cognitive cluster:

- the interaction between learning, thinking, reasoning and adaptability skills in cognitive development
- the need to include analytical and problem solving skills in this cluster
- the need also to include systems thinking in this cluster as an essential skill (helicopter vision) for lifelong learning and workplace competence

the interpersonal cluster:

- while this includes two of the Mayer key competencies; the cluster is expanded with the addition of cultural understanding and customer service
- other generic interpersonal skills may be required

enterprise, innovation and creativity cluster:

- this cluster links closely to both the cognitive and interpersonal cluster and is dependent on personal attributes and values

work readiness and work habits:

- while this cluster includes several Mayer competencies (planning and organising activities, using technology), it goes beyond Mayer in including other attributes that surveys such as the Allen Group survey show that employers require
- basic skills, including literacy, have been included as an essential foundation of work readiness

The implications of such a developmental framework for key generic skills include:

- considerable development work will be required for both the cognitive and enterprise/innovation/and creativity cluster in identifying, defining, and developing the components of these clusters including necessary sub-skills
- how to include the fundamental metacompetence relating to autonomy, self-direction, and personal mastery identified by Kegan, Ridgeway, Senge and others in such a framework, and required by lifelong learning, maintaining employability, and responsible citizenship in 21st century conditions

where to locate the autonomy/self-direction competence?

In addition to the observations of Kegan, Ridgeway, and Senge, most of the OECD DeSeCo expert papers reflect the need for everyone to develop autonomy,

self-direction and personal mastery in a world of growing complexity, uncertainty and exponential change. The responsibility of the individual for their own lifelong learning, maintaining employability and responsible citizenship is the foundation for a learning culture in firms and for building a competitive learning society.

Ridgeway (1990 p.81) saw this metacompetence as common to all the OECD DeSeCo expert papers:

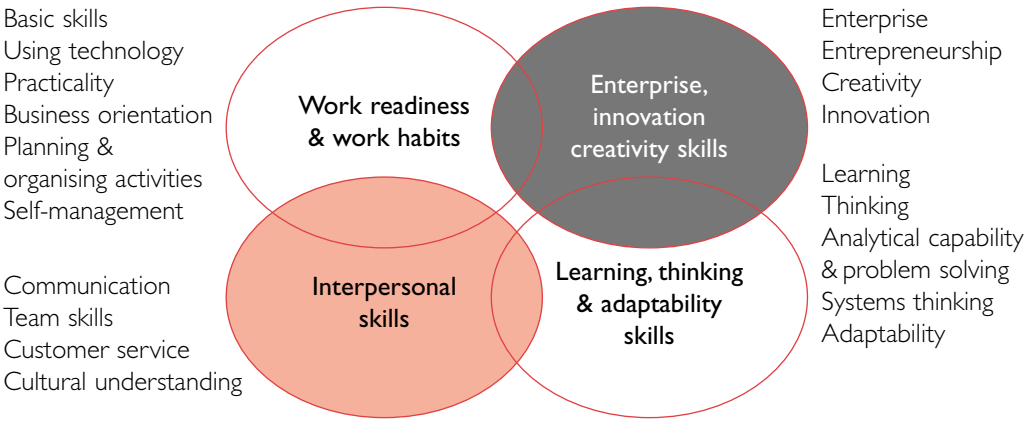
> *The importance of a positive self-concept that facilitates effective action and the ability to manage emotion and motivation to successfully handle challenges and avoid destructive conflict.*

This metacompetence also relates to, and interacts with, each of the clusters of key generic skills set out in figure 1. An option then is to locate this metacompetence at the centre of interaction of all the other clusters. This is shown in figure 2.

Such a model reflects the view that personal development is a dialectical process of understanding self and understanding others (Kearns & Schofield 1997), a foundation for good teaching practice throughout the ages, and even more critical in the Learning Age.

Figures 1 and 2 offer alternative concepts of the key generic skills required by the 21st century that merit further discussion.

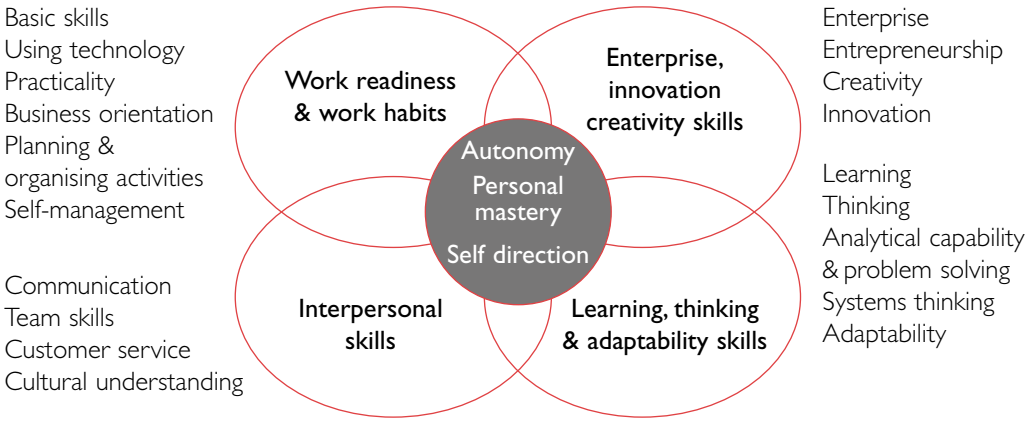
figure 1: clusters of key generic skills



- The interpersonal (or social) cluster with underpinning personal attributes & values e.g. emotional intelligence, self understanding

- The cognitive cluster with underpinning personal attributes e.g. willingness to learn positive attitude to change & complexity mastery of mental models

figure 2: clusters of key generic skills



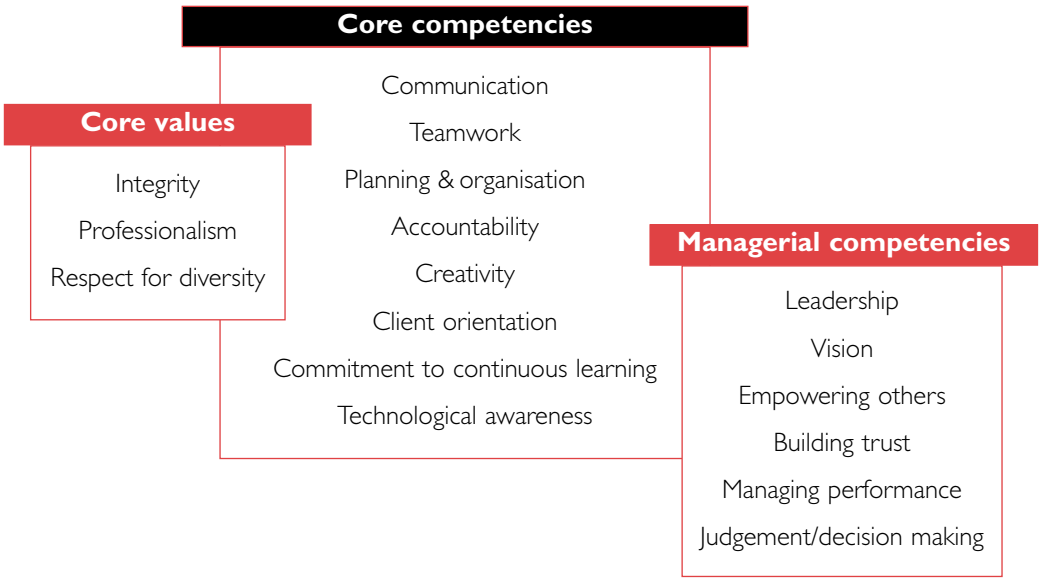
- The interpersonal (or social) cluster with underpinning personal attributes & values e.g. emotional intelligence, self understanding

- The cognitive cluster with underpinning personal attributes e.g. willingness to learn positive attitude to change & complexity mastery of mental models

It is of interest that the United States Secretariat has developed a new competency model for the United Nations which was announced recently by the Secretary-General, Kopi Annan, and which adopts a broad approach that includes core competencies, core values and managerial competencies. This is shown in figure 3. It will be seen that commitment to continuous learning is recognised as a core competency together with creativity.

The United Nations competency model illustrates how progressive organisations are adopting a broad approach to generic skills which links core competencies and values with management competencies and attributes which are required to give effect to these generic skills and values in a high performance workplace.

figure 3: United Nations competency model



teaching and learning implications

There is evidence from both Australia and Britain of a broad spectrum of unresolved issues in integrating generic skills successfully in teaching and learning strategies, both in VET institutions and schooling, and in the workplace.

In Britain NSTF concluded in its research report that 'there still seems to be confusion about how best to develop generic skills' (NSTF 2000b, p.139). In Australia a spectrum of issues has been reported from evaluation of the pilot phase of key competency development down to the current implementation of key competencies in training packages (Jasinski 1996, Downs 1997, Down 2000).

This sense of unresolved issues is echoed in the comments of Jacques Delors and Alexandra Draxler in their comments on the OECD DeSeCo expert papers:

> *… all four papers make it clear that we know much less than we wish we did about how competencies are acquired, and even less about how they can be taught.* (OECD 1999g, p.29)

Moreover, there is recent evidence for both Australia and Britain of bifurcated or multiple tracks emerging in skill development, on the basis of industry or occupational culture, with generic skills teaching and learning more significant in some tracks than others (Mulcahy & James 2000, Penn 1999). These equity aspects are commented on below.

Nevertheless, Australian research from the pilot phase of implementation of the Mayer key competencies points to clear implications for teaching and learning strategies in progressing to learner-centred strategies to underpin the acquisition of the key competencies. While this thrust links to the current efforts of ANTA to promote flexible learning strategies in VET, the extent to which such an approach has been adopted is not clear.

implications from the **pilot phase** of the **key competencies**

There is a fairly general consensus from the pilot phase of implementing the Mayer key competencies, from both schools and VET, on the implications of the key competencies for teaching and learning.

The MCEETYA Working Group on Key Competencies in reporting on the outcomes of the pilot phase saw the lessons of implementation as consistent with 'the current shift in teaching methods towards facilitating active, independent learning by individuals and groups of students in task situations which readily stimulate later life contexts' (MCEETYA 1996, p.2). Overall, implementing the key competence was seen as generally consistent with current educational theory regarding effective pedagogy (MCEETYA 1996, p.102).

This shift towards active, self-directed learning by students was seen as supporting the thrust towards greater relevance in the work of schools and for an agenda with an emphasis on higher order competencies in the process of general education directed at the development of more adaptable, productive and autonomous workers, persons and citizens (MCEETYA 1996, p.9).

Linking the key competencies to relevance and thrusts towards producing citizens who are adaptable, productive and autonomous is of interest in the light of the discussion in the previous two chapters. While the working group related the key competencies to the capacity for active, self-directed learning in students, this was not extended to the context of lifelong learning. However, the general thrust of the working group's conclusions was towards the need for a 'more dynamic pedagogy that motivates learners and is meaningful to them as well as more satisfying to teachers' (MCEETYA 1996, p.9).

… we know much less than we wish we did about how competencies are acquired, and even less about how they can be taught.

The thrusts towards active learning strategies, self-directed learning and enhanced relevance was substantially echoed in comments from the VET sector on the implications of the key competencies for teaching and learning.

Assessment of the implications for VET and workplace learning are provided in reports by Ryan (1997) Hager, Moy and Gonczi (1997), Jasinski (1996) and Downs (1997).

The conclusions from these reports are generally along the lines reported by the MCEETYA Working Group and support the requirement for active learning strategies and self-directed learning.

Ryan concluded that the key competencies have the potential to be an effective device to improve student learning (Ryan 1997, p.6). He saw the lessons as including active engagement in learning, contexts that are perceived by the learner to be contextually relevant, a requirement for reflection on both content and learning process, and the fostering of skills for lifelong learning (Ryan 1997, p.8).

Hager, Moy and Gonczi (1997) saw a strong link between the development of the key competencies and

- adult learning principles
- advanced teaching/training technologies
- holistic approaches to learning
- problem based learning
- lifelong learning skills
- learning how, why and exploring what if … not just learning the facts
- learner reflection, evaluation and articulation on learning experiences
- active and co-operative learner-centred approaches
- the teacher/trainer assuming multiple roles

While the MCEETYA Working Group, Ryan, and Hager, Moy and Gonczi all linked the key competencies to what was seen as good practice in the work of schools and VET, a number of cautionary notes also emerge in the literature, both during the pilot testing phase and more recently in the context of implementing training packages:

- Downs (1997) observed that awareness, understanding, application and integration of the key competencies is currently limited among VET sector staff and in VET sector organisations.
- Downs also observed that the perception that integration of the key competencies is 'just good practice' is widespread and appears to be counterproductive (1997, p.2). Jasinski (1996, p.1.9) also reported this.
- Jasinski (1996) concluded that while current teaching practice did embed the key competencies, this tended to be incidental and *ad hoc* rather than systematic and planned (1996, p.2.5).

Both Downs and Jasinski concluded from the patchy and variable practice they observed that a major teacher training effort was required. While Jasinski recognised a range of issues relating to current practice, her assessment of the implications of the key competencies for teaching and learning was similar to that of the MCEETYA Working Group and Hager, Moy and Gonczi (Jasinski 1996, pp.2.5–2.6).

later VET experience

The themes and issues identified in the pilot phase of key competency implementation have continued to emerge in subsequent VET research, in particular in relation to the current integration of key competencies in training packages and in the implementation of training packages.

Moy, in a 1999 research review of the impact of generic competencies on workplace performance, repeated the good practice implications that had been included in the 1997 Hager, Moy and Gonczi report (1997, p.24). Down, however, identified a range of issues relating to the integration of key competencies in training packages and their effective implementation (Down 2000, pp.2–4) including:

- While there was general agreement on the need for key competencies to be part of VET, there was no general agreement as to how this might be achieved.
- The sample of stakeholders surveyed had different levels of understanding and exposure to training packages.
- Knowledge and understanding of the key competencies were extremely variable among providers of training.
- There was confusion in terminology (which key competencies?).
- Many teachers and assessors lacked an enlarged perspective or 'big picture' and had a limited understanding of the context of training packages and the role of key competencies.
- There was confusion about the levels in the key competencies.

Overall, Down concluded that the integration of the key competencies within training packages required substantial change in VET and in assessment practices (Down 2000, p.4). The new responsibilities devolved to RTOs and their teachers were seen as both an opportunity and a threat (Down 2000, p.4).

It is evident, then, that the themes and issues identified in the pilot phase of key competency implementation are still relevant to the current implementation of

training packages. While the implications for active learning strategies and for pedagogies that foster self-directed learners are clear, the barriers identified by Jasinski and Downs still exist in the context of implementing training packages and need to be addressed on a sufficient scale, with teacher professional development a key priority.

technology, flexible learning and the generic skills

A further key implication relates to the role of new learning technologies and flexible learning strategies in fostering competence in generic skills. The role of modern technologies in building a capability for lifelong learning has been examined in a number of recent reports (Kearns et al. 1999, Kearns & Papadopoulos 2000) and is built into the reform strategies of a number of governments, including the British Government's use of the University for Industry and National Grid for Learning (Kearns & Papadopoulos 2000, pp.76–7).

In Australia a more strategic approach to promoting flexible learning in VET is being sought through the five-year *Framework for national collaboration in VET 2000–2004* under the *Flexible learning for the information economy program* (www.flexible learning.net.au) with annual collaborative plans (www.edna.edu.au). While the focus of this activity is on on-line delivery, flexible learning is viewed as a change process to bring VET into line with the requirements of the information economy. In addition, DETYA is co-ordinating the *Learning for the knowledge society* action plan, which aims to adapt education and training to the needs of the information economy (DETYA 2000). While the action plan has a focus on information technology skills, its ambit reaches to 'skills to drive the information economy' including 'leaders and workers with the vision and skills to develop and manage new approaches to learning and to implement co-ordinated and timely change' (DETYA 2000, p.4). The overlap with the broader promotion of generic skills is clear and raises a spectrum of co-ordination issues.

There is clearly a need to align teaching and learning strategies for the generic skills with the national promotion of flexible learning, the role of modern learning technologies and meeting the skill needs of the information economy. This requirement is recognised in the United States where the National Governors' Association and the ASTD are undertaking a major study on Technology and Adult Learning (Kearns & Papadopoulos 2000, p.77).

While one of the five goals of the Framework for National Collaboration is 'Creative, capable people' which is directed at the pedagogical, technical and

managerial skills of VET staff, it is not clear how far the key generic skills have been built into this policy thrust. The Framework for National Collaboration does include the comment that 'the skills base which is developed to support change is neither deep nor broad'.

Overall, the Framework for National Collaboration is directed at supporting VET in making 'a profound transition from the old mechanized economy to the new information economy' using 'the tools of the new economy—innovative ideas and technology embedded in its products and services'. Given these objectives, there is a compelling case to align the promotion of flexible learning strategies and modern learning technologies with the generic skills that enable VET staff, students and the workforce to be motivated self-directed lifelong learners through 'joined up policies'.

The requirement for better co-ordination of policy thrusts directed at teaching and learning strategies is a clear implication arising from this review. Joined-up policies with common objectives and strategies that create synergies between the policy instruments adopted is a clear requirement for bringing about the necessary cultural change in schools, VET institutions and in the workforce if a truly holistic and integrated approach to aligning Australian education and training with the needs of the information-based new economy is to be achieved.

A concerted approach along these lines would need to integrate policy thrusts directed at such objectives as lifelong learning, enterprise education, building an innovation culture, flexible learning and new learning technologies, the *Learning for the knowledge society* action plan, promoting generic skills, and assisting disadvantaged groups. At present, achieving such co-ordination is impeded by the absence of a national policy framework for lifelong learning and for building Australia as a learning society so that discrete policy thrusts are not sufficiently integrated in synergistic ways.

international experience

It is of interest that the themes and issues identified in the Australian research since the Mayer report are also evident in the international literature, in particular in the work of OECD and in the experience of Britain associated with developing a National Skills Agenda.

OECD in its work on lifelong learning has addressed the pedagogical implications of fostering a lifelong learning capability for all and has canvassed the possibility of a 'new pedagogy' as an instrument for this purpose (OECD 1996,

pp.110–12). The case for active learner-centred strategies is made in similar terms to that expounded by the MCEETYA Working Group and Hager, Moy and Gonczi (OECD 1996, pp.110) and draws on a research review undertaken for OECD by Raizen (1994).

OECD also notes the strong pressure for students to acquire through the work of schools cognitive, metacognitive, social, cultural and practical competencies and observes that this would require a re-conceptualisation of the core curriculum of schools (OECD 1996, p.111).

At the school level, OECD has followed up on these requirements in its work on 'Schooling for tomorrow' which led to a report on *Innovating schools* (OECD 1999i). This report considers innovations that are being adopted around the world in adapting schools to the global society. The implications of these developments are seen as possibly leading to a new learning infrastructure in which modern learning technologies would have a significant role (OECD 1999i, pp.100–1).

The current work of OECD in the DeSeCo program is discussed in the chapter 'some conceptual issues'.

The British experience in implementing key skills through appropriate teaching and learning strategies shows a similar pattern to that reported in Australia.

While Britain has been implementing key skills (and their predecessor core skills) that are similar to the Mayer key competencies over the past decade, NSTF in its recent final report concluded that 'employment requirements of the key skills are, unfortunately, still not fully appreciated by the education system' (NSTF 2000b, p.35). NSTF also reported considerable confusion in schools on how best to foster competence in the key skills (NSTF 2000b, p.139).

Further evidence on the British scene comes from a report by a team led by Professor Lorna Unwin on effective delivery of key skills in schools, colleges and workplaces (Unwin et al. 2000).

The Unwin report identified considerable confusion among teachers with regard to 'the Key Skills enterprise' with changes in policy direction and lack of clarity, so that the enterprise felt 'very fragile' (Unwin et al. 2000, p.98).

While some schools had integrated key skills in high profile activities such as European Awareness days, most organisations were moving away from an integrated approach and saw this trend increasing with the introduction of summative testing (see below; Unwin et al. 2000, p.47). Unwin reported that staff development was needed to help teachers and trainers develop strategies for integrating teaching and

learning key skills and more time was required for staff to work together and discuss issues (Unwin et al. 2000, p.47).

The British Government has responded to the identified issues with two initiatives:

- the introduction of a Key Skills Qualification
- the inauguration of a Key Skills Support program

The Key Skills Qualification (KSQ) will be available through schools at the upper secondary level and through Modern Apprenticeships. The KSQ will be assessed for three of the key skills only: communication, application of number and information technology (DfEE 2000b).

The introduction of the KSQ aims to provide incentives for schools, colleges, individuals and employers to take key skills more seriously and generally to raise the profile of key skills.

There will be incentives for schools and colleges to be more effective in their teaching of the key skills so that appropriate assessment outcomes are achieved. Incentives are provided for students to acquire competence in these key skills as an aid to employability and securing a job. Employers will benefit from certification of proficiency in key skills. Whether the KSQ may have the effect of leading some schools and colleges from integrated approaches to direct teaching of the key skills is a central issue.

The Key Skills Support Program with its own web site (www.dfee.gov.uk/key/intro.htm) provides information and assistance on key skills, with a particular focus on the introduction of the new KSQ. Separate organisations have been commissioned to work with schools and colleges and work-based providers in preparing for the new qualification.

equity issues

There is some evidence from both Australia and Britain of bifurcated or multiple tracks in skill development with the generic skills much more significant in one track than in the others. Mulcahy and James, in reporting on a national evaluation study of competency-based training conducted in enterprises in 1998, drew attention to this phenomenon. They reported that the study showed that the competency required of operational, technical and trade staff is commonly conceived as 'specific skills for specific jobs', while the competency required of managerial and professional staff is

commonly perceived more broadly as 'generic competencies' in areas such as self-management, problem identifying, problem solving, decision-making, strategic thinking, risk taking, innovation and leadership (Mulcahy & James 2000).

Mulcahy and James concluded that two broad models of VET were evident: a training model which emphasises competence in specific practices and a development model which emphasises competence in generic practices.

Penn, in a paper prepared for the British NSTF, reported similar bifurcated tracts, although he also reported a more complex pattern with the cognitive maps of skill formation of different groups leading to four main tracks, mainly on the basis of social class (Penn 1999):

- professional/managerial
- routine non-manual (clerical)
- skilled manual
- non-skilled manual

It would be surprising if the phenomenon reported by Mulcahy and James was not also evident in the work of VET institutions which reflect the same workplace culture. This is a priority research question which requires examination to ascertain if there are differences in the way key competencies, and generic skills more generally, are applied in courses directed to categories such as those identified by Penn in old economy and new economy occupations.

The more limited use and development of generic skills in the career development of operational, technical and trade staff is a major impediment to maintaining the employability of such staff and their capacity for lifelong learning, personal development and adapting to change. Bifurcated training/development tracts will also operate against the success of high performance workplace strategies.

integrated or stand-alone

While there is a strong presumption from much Australian research, in particular from the pilot phase of implementation of the Mayer key competencies, that integrated approaches were to be preferred with the key competencies integrated in the teaching of specific vocational skills (Hager, Moy & Gonczi 1997, Ryan 1997, MCEETYA 1996), more recent research has emphasised that not enough is known about how competence is acquired (OECD 1999g, p.29, NSTF 2000a, 2000b, Carnevale & Desrochers 1999), so that it is not possible to give a definitive answer to the integrated or stand-alone question. More research is needed on this question.

In some cases an integrated approach is seen as a characteristic of holistic VET (Ott 1999) and desirable for this reason. However, Unwin et al. (2000), in a recent evaluation of effective delivery of key skills in schools, colleges and workplaces, concluded that these institutions could be plotted on a delivery continuum based on the extent to which they were approaching key skills holistically or as a 'bolt-on' addition to their normal activity. Unwin and her associates also concluded that 'the majority of organisations were moving away from an integrated approach and saw this trend increasing with the introduction of summative testing' (Unwin et al. 2000, p.47).

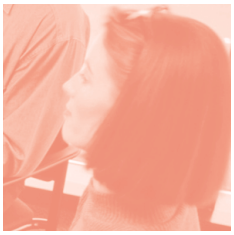
The experience of Britain in testing three specific key skills in the new KSQ is likely to provide useful evidence, with some fears being expressed that testing of three specific key skills will influence more schools to shift from integrated approaches to specific teaching of these skills.

general **comment**

This overview of Australian and international research on teaching and learning implications reveals a mixed picture. While the pedagogical implications for active learning strategies and holistic approaches which produce motivated, self-directed learners are clear, a range of barriers to achieving this goal have been identified and pictures of a mix of good and poor practice emerges in both Australia and Britain.

The need for a stronger teacher development effort has been consistently identified in both Australia and Britain, but the extent of progress made is unclear and the continued existence of barriers is reported.

The current pressures for lifelong learning enhance the requirement for teaching and learning strategies which develop motivated, self-directed learners who possess the essential generic skills to be proficient in a rapidly changing workplace, and in society, and for schools and VET institutions which are flexible and innovative in pursuing this objective.



the impact of generic skills on business performance

There is a range of direct and indirect evidence on the impact of generic skills on business performance. While studies of the effect of training on economic outcomes usually do not distinguish generic skills from other types of skills, a significant indicator resides in the growing demand of employers for generic skills—a phenomenon reported both in Australia and overseas. This rising demand, which is reflected in the market value of generic skills, is typically linked to workplace change and the development of new forms of organisation and management as a response to market pressures. This demand finds its clearest expression in the role of generic skills in the flexible high performance workplace.

Isolating the impact of generic skills on business performance is becoming increasingly difficult as many firms are seeking improved work performance and productivity from integrating a number of complementary human resource practices, including training and development, and linking these to other components, such as knowledge management, in business strategies (Field & Mawer 1996, Moy 1999, Allen 2000).

Overall, the impact of skills (including investment in training) on business performance is well attested. The United States research cited in a joint report by the United States Departments of Commerce, Education, and Labor shows a productivity gain of some 15 to 20 per cent on average from investments in employer-based training (Department of Commerce et al. 1999, p.7). This report also shows that firms where the workplace has a 10 per cent higher than average educational attainment level had an 8.6 per cent higher than average productivity level (Department of Commerce et al. 1999, p.7).

While generic skills are not isolated in these studies, the growing employer demand for generic skills, and the relationship of these skills to workplace reforms, allows us to infer that a proportion of these productivity gains is owing to the impact of generic skills.

Evidence from the United States Conference Board and National Employer Leadership Council shows similar findings:

- The United States Conference Board surveyed employers and reported a wide range of benefits gained by employers from workplace education and skill programs which included generic skills. These included:
  - increased quality of work
  - better team performance
  - improved capacity to deal with change in the workplace
  - improved capacity to use new technology
  - increased profitability (Conference Board 1999)
- The United States National Employer Leadership Council reported significant benefits to employers from cost/benefit analysis from participation by employers in school-to-work programs. These programs included generic skills with benefits to employers including higher productivity of students, and increased retention rates and lower turnover. (NELC n.d.)

The British NSTF drew on international studies of the rate of return to skills to inform its judgements on skill priorities (NSTF 2000b, pp.123–6). While some of the studies cited show greater social rates of return to academic qualifications than to vocational qualifications, a study showed almost identical social rates of return to both academic and vocational qualifications (around 13.3% and 13.1% respectively, Bennett in NSTF 2000b, pp.123–5).

… a significant indicator resides in the growing demand of employers for generic skills.

A study by Penn on the market value of generic skills led him to conclude that not enough is known about how generic skills are valued in the labour market (Penn 1999, p.1).

Penn did conclude, however, that communication skills, problem solving skills and computer skills were all valued in the British labour market (Penn 1999, p.1). Research undertaken for NSTF also showed that there were increases in demand for generic skills associated with work changes over the period 1992–97 with increased demand for problem solving skills, communication and social skills, and with a reduced demand for manual skills.

impact on **social** and **human capital**

Further insights into the impact of generic skills on business performance are provided by research on investment in social and human capital. OECD has made

this a priority in its relation to OECD work on the knowledge-based new economy. As with most of the research cited above, generic skills are not distinguished from other skill categories, but the strong links of generic skills (if broadly interpreted and including personal attributes and values) to the accumulation of social capital may be inferred, with a consequent impact on human capital (OECD 1998).

OECD has defined human capital as 'the knowledge, skills, competencies and other attributes embodied in individuals that are relevant to economic activity' (OECD 1998, p.9).

The inclusion of attributes in this definition means that personal attributes and values can be seen as relevant to the accumulation of human capital. And OECD specifically recognises the domains of motivation and aptitude as coming within its concept of human capital (OECD 1998, p.11). OECD sees human capital as an intangible asset with the capability to enhance or support productivity, innovation and employability (OECD 1998, p.9).

The growing interest in social capital, including the relationships which underpin the accumulation of social capital, is likely to enhance the relevance of generic skills in facilitating such relationships and so contribution to building human capital and productivity gains (OECD 1999d).

generic skills and workplace **change** and the emergence of the **high performance workplace**

While rates-of-return studies and other analysis of human capital provide useful inferences with regard to the impact of generic skills on business performance, the most direct evidence is to be found in research which links the increased demand from employers for generic skills with changes in the workplace, and in the organisation and management of firms, and the emergence of the flexible high performance workplace.

This has been a focus of both Australian and international research in linking generic skills to changes in work organisation and the emergence of new enterprise work practices and the high performance workplace (Field & Mawer 1996, Moy 1999, Allen 2000, ILO 1998, OECD 1999h). These shifts are related to the impact of globalisation and new technologies as firms have sought new ways to remain flexible and competitive in a world of exponential change.

Useful summaries of the research evidence on these shifts are provided in the ILO *World employment report 1998–99* (ILO 1998) and in the OECD 1999

Employment outlook where a chapter is devoted to the new enterprise work practices (OECD 1999h).

ILO, in its treatment of employability in the global economy, focusses its analysis on the interaction of globalisation, technological development, and changes in the organisation of work which have led to a shift in the demand for skills (ILO 1998, pp.33–43).

The impact of increasing competition and the pervasive influence of information technology have led firms to seek greater price competitiveness, greater flexibility, enhanced quality, quick customer response and the ability to introduce new products and services quickly (ILO 1998, p.41). This has led to the concept of the high performance workplace (or high performing firms) as a way of achieving these objectives.

ILO has linked the high performance workplace to the work practices set out in table 2 and has reported on a high rate of adoption of these practices in the United States.

table 2: high performance work practices in the United States with at least half of core workers involved, 1997 (percentages)

	Establishments	Employees concerned
Quality circles/off-line problem-solving goals	57.4	69.2
Job rotation	55.5	70.7
Self-managed work teams	38.4	42.1
Total quality management	56.8	49.8
Two or more practices	70.6	84.4
Three or more practices	39.4	45.0

source: ILO 1998

OECD (1999h, p.180), in its *Employment outlook*, adopts similar components for a high performance workplace but follows Betcherman (1997) in using the following components:

- job design involving multi-skilling, or multi-tasking
- extensive use of team working
- reduced hierarchical levels
- delegation of responsibility to individuals and teams

Both ILO and OECD adopt models of the high performance workplace which involves extensive use of team strategies, empowerment of the workforce and the

multi-skilling of the workforce through such methods as job rotation. These strategies raise issues such as the transference of skill between jobs and contexts and the role of generic skills and personal attributes in facilitating and supporting the strategies adopted.

Statistics cited by ILO in its *World employment report* show an extensive adoption of these practices in developed countries. The United States situation is given in table 2, with ILO reporting that the rate of adoption of new forms of work organisation was by 1997 double that of 1992 (ILO 1998, p.43).

ILO also makes the significant observation that firms which have introduced new work practices also report higher skill levels. In the case of the United States, survey results show that in firms which have introduced new work practices 78.5 per cent of all employees had moderate to high skills and 88.2 per cent of workers had undergone a change in skills since the introduction of such practices (ILO 1998, pp.42–4). A further significant aspect reflected is that 39.9 per cent of all workers and 51.1 per cent of all professional and technical workers had acquired more complex skills (ILO 1998, p.44).

… this broader portfolio of key generic skills … is necessary to enable high performance firms to remain flexible and competitive in a world of constant change.

This finding is important in raising the question of the role of generic skills (including the learning to learn capability) in assisting workers to acquire more complex and higher level skills, and suggests the importance of the cognitive cluster of generic skills, along with emotional aspects which may be termed emotional intelligence, in enabling workers to make this adjustment to more complex and higher skill levels. This further suggests the growing significance of personal attributes, such as self-direction and personal responsibility, in fostering this learning capability.

While the OECD findings on the high performance workplace are generally comparable with those of ILO, OECD work is of interest in highlighting fairly significant differences between member countries in the adoption of flexible workplace practices. These differences are shown in table 3.

table 3: percentage of workplaces in 1996 reporting selected management initiatives over the past three years[a]

	Job rotation	Installation of team-based work organisations	Greater involvement of lower level employment	Flattening of management structures
Sweden	38	29	60	46
Denmark	28	40	10	42
Netherlands	9	9	46	47
Germany	7	20	19	30
France	6	30	44	21
United Kingdom	13	33	48	45
Ireland	10	27	32	23
Italy	13	28	24	10
Spain	14	34	33	–
Portugal	9	22	9	3
Unweighted average	14	27	33	29

notes: – data not available (question asked was different)
a data for Italy refer to the three months prior to the survey
source: secretariat calculations based on data from the EPOC survey, referring to workplaces with 50 or more employees; OECD 1999h, p.188

The significant country differences shown in table 3 point to the significance of cultural influences in the adoption by firms of various kinds of flexible work practices. The influence of culture in strategies adopted was shown in a recent study by Kearns & Papadopoulos of policies and strategies adopted in five OECD countries to build a learning and training culture (Kearns & Papadopoulos 2000). The fairly strong performances of Sweden and Britain across all four flexible work practices are of interest. Separate OECD statistics for the United States show a strong growth in the adoption of each of these work practices throughout the 1990s (OECD 1999h, p.188).

impact on **business performance**

While the growth of flexible work practices in high performance firms is well documented, the impact on business performance is still subject to a number of caveats (OECD 1999h, p.182). OECD adopts the cautious position that 'there is now a certain amount of evidence to suggest that flexible work practices can improve firms' financial performance' (OECD 1999h, p.182).

Nevertheless, OECD cites a range of research reviews which provide substantial evidence for positive outcomes (Becker & Huselid 1998, Delery & Doty 1996, Ichniowski et al. 1996, Kling 1995, Norflex—forthcoming):

- *Firms that report the use of flexible working practices tend to enjoy better financial performance and higher levels of productivity than those that do not.*
- *This beneficial effect is stronger when flexible practices are used in combination both with each other and with support from other human resource practices, such as training and appropriate compensation policies.*

(OECD 1999h, p.182)

The second of these conclusions is significant in pointing to the need for the impact of generic skills to be seen in combination with other 'high performance' strategies, rather than as a discrete strategy. This requirement was noted by Field and Mawer (1996, p.18) in advocating a broader and more holistic model which linked the key competencies with a broad range of enterprise goals and characteristics such as empowerment, quality, flexibility and commitment.

The Field and Mawer model, which is consistent with the OECD and ILO reports cited above, is also of interest in including:

- *routine technical skills*
- *learning competence, to adapt to new circumstances and facilitating the learning of others*
- *empowerment, or competence to act independently to achieve individual, team or organisational goals (which include being proactive)*
- *an intellectual and attitudinal core, which includes an intellectual dimension (knowledge, thinking and concepts) and an attitudinal dimension (values, beliefs and aspirations)*

(Field & Mawer 1996, p.18)

The broad congruence of the Field and Mawer model with the conclusions emerging from the OECD and ILO reviews of research also point to an approach to generic skills along the lines of figures 1 and 2 in this review which links to the requirements of flexible, high performance workplaces and which includes:

- the learning competencies
- a strengthened cognitive and attitudinal core (thinking, reasoning skills etc.)
- enterprise, innovation and creativity skills
- work readiness skills

Such an approach would mean that more attention will need to be given to personal attributes and values, as the authors of the OECD DeSeCo expert papers also recognise, than has been the case up to now. In a context where the 'sovereign individual' functioning alone and in groups is the prime source of enterprise, innovation, creativity and the flexibility and capacity of firms to adapt to change, the personal attributes and values of individuals can no longer be precluded from assessments of key competencies as the Mayer Committee did.

Australian research evidence

While most of Australian research has focussed on the implementation of the Mayer key competencies and their integration in training packages, the limited Australian research on the broader issues relating to generic skills is generally consistent with the evidence emerging from the OECD and ILO reviews cited above.

Moy (1999) cites the Field and Mawer study and concludes that 'there is merit in researching and promoting a broader, more integrated approach to workplace performance' (Moy 1999, p.38) and recognises, as Field and Mawer do, that generic competencies are only one ingredient in the recipe for effective performance by individuals and work teams (1999, p.38). Robinson (2000) also recognises the need for new directions with lifelong learning central to such new directions.

The recent Allen Group survey of 350 companies shows how key generic skills are being integrated into broader strategies for high performance firms (Allen 2000). This is leading to a requirement for a broader set of key generic skills which include capacity to learn, willingness to embrace change, understanding of systems relationships, independent problem solving and reasoning capability, and practicality and a business orientation (Allen 2000, p.31).

There is a strong case to conclude that this broader portfolio of key generic skills, which includes certain personal attributes and values to drive lifelong learning and adapting to change, is necessary to enable high performance firms to remain flexible and competitive in a world of constant change.

findings and directions for further research

The analysis of this review points to a choice of two directions for policy in respect of key generic skills required by the workplace of the 21st century and for living in an increasingly complex and uncertain society.

These are:

- a pragmatic approach, as in Britain, of strengthening the existing base of key competencies through addressing the issues identified in this review
- an alternative view that a broader and more holistic set of key generic skills is required by the conditions of the information-based new economy, the mounting pressures for lifelong learning and maintaining employability in the workforce, and for creating a culture that supports learning, enterprise, innovation and creativity

While Britain has opted for the pragmatic approach of the first option, the choice for Australia is more complex, and there is much that inclines in the direction of the more ambitious, but perhaps necessary, second option.

There is evidence emerging from the review that the conditions of the information-based new economy, and its companion society, require a workforce with a broader, more flexible and more holistic set of generic skills than is provided by the current set of Mayer key competencies.

The pressures for self-direction, autonomy, adaptability and lifelong learning generated by the new economic environment of Australian education and training go beyond the current ambit of the Mayer key competencies and raise a spectrum of fundamental issues relating to skill, personal attributes and values, and the generation, management and use of new knowledge.

There is a strong case that the current exclusion of personal attributes and values from the key competencies can no longer be maintained in the new environment of education and training, and that it is now necessary to wrestle with

the complex issues involved in the relationships of skill, personal attributes, values, knowledge, and economic and social outcomes.

The set of OECD DeSeCo expert papers point to this conclusion, as do the commentaries in these papers (with the possible exception of the paper by the economists Levy and Murnane who do, however, recognise the relevance of emotional intelligence). It is now necessary to place culture and values in the stage of education and training policy and to examine carefully the relationships between culture and the generation of social and human capital. There is mounting evidence that values influence the generation of both social and human capital.

The pressures for lifelong learning and for maintaining employability throughout the lifecycle lead in the same direction. Australian business and industry will benefit most from motivated lifelong learners who are autonomous, self-directed and adaptable, so that the conditions for creating this outcome merit the closest examination.

This review indicates a spectrum of current initiatives across education and training that are not sufficiently connected to provide for progression and synergistic relationships in 'joined up policies'.

Initiatives relevant to the role of generic skills include enterprise education in schools, follow up on the National Innovation Summit, ANTA's action in marketing VET and lifelong learning, the *Learning for the knowledge society* action plan and the flexible learning Framework for National Collaboration.

The success of all of these initiatives will depend on the cultivation of foundation generic skills and personal attributes that underpin learning, enterprise, innovation, adaptability, self-direction and autonomy.

This will require much closer attention to the cognitive, interpersonal and cultural foundations of these attributes and to strategies that foster these attributes and bring about the necessary cultural change.

In identifying, defining and developing generic skills for the 21st century a more iterative process between theoretical and conceptual work and empirical/functional work will be necessary than has been the case in Australia up to now.

Figures 1 and 2 of this review provide a preliminary perspective on what a second option approach might encompass. These exhibits are based on research findings that the key competencies cluster and are developmental, and overlap and interact with each other. Frameworks for the key generic skills are required that

maximise interaction between these skills on a lifelong basis, progression and development in the acquisition of competence, and which build the personal attributes, motivation and values to drive this lifelong process of personal development and skill enhancement. Aspects such as emotional intelligence can no longer be ignored in producing a workforce that is enterprising, skilled, self-reliant and adaptable.

The evidence reviewed in this paper supports the ILO view set out in its *World employment report* that skill is a multidimensional concept as most jobs require a combination of skills for adequate performance, ranging from physical attributes to cognitive skills (analytical and synthetic reasoning, numerical and verbal abilities) and interpersonal (supervisory, leadership, social, communication) skills (ILO 1998, p.35).

There is also considerable merit in the ILO view that four levels of capabilities can be distinguished, although different terminology would be used in Australia:

- foundation skills including literacy and numeracy
- basic skills including analytical skills such as calculation and problem solving
- general skills which are transferable between jobs such as computer skills
- specific skills which are specific to an employer

A definition of generic skills might cover the first three levels in this framework or could be restricted to the second and third levels.

While there is likely to be considerable debate on the boundaries to encompass generic skills, a clear conclusion is that the learning competence, the willingness and capacity to learn, is central to any definition of generic skills relevant to the 21st century conditions. This metacompetence underpins all the other key generic skills that might be brought into a revised set of key generic skills.

If the pragmatic approach of the first option is followed, there is still a very strong case to add the learning competence to the current set of key competencies. This competence is included in the British key skills as the ability to improve personal learning and performance and is included in most of the sets of key generic skills cited in the paper (including Allen Group report, ASTD/DOL, Conference Board, SCANS). The omission of this fundamental metacompetence from the Mayer key competencies omits the quality that drives enhancement in all the other generic skills. A formulation along the lines adopted by the Allen Group and the United

States Conference Board ('willingness and capacity to learn') would sum up the essential components of this metacompetence which combines motivation with a number of specific skills.

If fostering a willingness and capacity to learn is accepted as the central metacompetence, this has significant implications for teaching and learning strategies in VET and schools (as discussed in the chapter 'teaching and learning implications') and for strategies for workplace skill formation. This will require a better integration of strategies to foster key generic skills with other policies and strategies such as the flexible learning strategies, enterprise education, VET in Schools and New Apprenticeships. The models given in figures 1 and 2 are directed at such integration.

While a holistic and developmental approach to fostering key competencies has been advocated in research reports since the pilot phase of the Mayer key competencies, current conditions make this objective even more central. A holistic approach in the context of the new economy is likely to range across the four levels of capabilities identified by ILO (although not necessarily with this terminology), to place the learning competence at the centre, and to have a closer regard to other personal attributes and values that drive learning, the on-going development and maintenance of skill, and other target attributes such as enterprise, innovation, and creativity, and the accumulation of social and human capital.

This means that the present restrictive approach to personal attributes and values is no longer tenable and complex issues arising from these domains will need to be confronted.

Such a broader and more holistic approach to generic skills will stimulate a convergence of general and vocational education and provide for greater continuity between the work of schools and VET. It will enrich and add value to the VET enterprise and support an approach to skill and knowledge formation that is relevant to the conditions of the knowledge-based new economy.

achieving **continuity** and **progression**

An approach along the lines outlined above could provide a basis for securing greater continuity and progression between the work of schools and VET in the context of developing a framework for lifelong learning encompassing all sectors of education and training and learning in other contexts.

There is much in the Adelaide Declaration of 2000 on National Goals for Schooling in the 21st century that could provide a foundation for a broader and more holistic approach to generic skills and which could link the work of schools and VET more closely.

These elements include the overall goals set out in the declaration, the cognitive objectives included, the personal attributes cited (self-confidence, self-esteem, optimism etc.), the capacity to exercise judgement and responsibility in matters of morality, ethics and social justice and to make sense of the world, the need for positive outlooks towards VET, employment and lifelong learning.

The strong personal attributes and attitudinal components in these goals are relevant to producing responsible and adaptable self-directed lifelong learners, and are as relevant to the work of VET as they are to the work of schools in the conditions of the 21st century. There is also much in the goals that higher education could subscribe to and which would be valued by employers.

the specific **questions**

While there is no international consensus on the identification and definition of the key generic skills, and no useful way of distinguishing personal attributes/values from skills, there are clear answers to the other questions set for this review:

- Fostering generic skills requires active learning strategies in which learners take responsibility for their own learning so that they develop the attributes, habits and skills of motivated lifelong learners. There are many examples of good practice in Australia and overseas of the use of strategies such as action learning, situated learning and project-based learning, although the extent of such good practice in Australia is not clear. National collaborative action to foster flexible learning is aligned to these requirements, although the learning components within strategies (including the development of key generic skills) need to be strengthened to achieve a more synergistic relationship between learning and technology.
- There is both direct and indirect evidence of the impact of generic skills on business performance. This includes the increased employer demand for generic skills and for higher skill levels generally, market valuations of generic skills on remuneration levels (especially for university graduates) and the role of generic skills in the operations of high performing firms. There is evidence that as firms cultivate the high performance workplace, the demand for generic skills rises and skill

strategies are more closely integrated in other human resource strategies, and in strategic business development overall.

the **need** for a **broader approach** to generic skills

This review also points to the complexity of the issues to be addressed, and the value in a more iterative process between theoretical/conceptual work and empirical work, as OECD is seeking in its current four-year DeSeCo program. Up to now, the focus in Australian development has been on an empirical/ functional approach as in the work of the Finn and Mayer Committees. Conceptual insights from disciplines such as cognitive science, sociology, economics and philosophy have not been brought sufficiently into this development process. This will need to happen if a truly holistic approach, aligned with insights into human motivation and development, is to be achieved.

For this reason, there will be substantial value in future Australian work on generic skills keeping in touch with the products and outcomes of the OECD DeSeCo program.

There would also be value, at this stage, of a deeper analysis being undertaken of the DeSeCo expert papers and commentaries than has been feasible within the aims and scope of this review. The outcomes of a public consultation with employers and other stakeholders will depend to a significant degree on the quality and relevance of the input to this consultative process, so that the best feasible analysis of relevant considerations should be available to inform this process.

The role of generic skills in the conditions of the knowledge-based new economy raises a broad spectrum of significant issues that are highly relevant to the forging of a new paradigm for skill formation in this context that will support the necessary process of adaption by business, industry, and the education and training system to these conditions, and which will support individuals as lifelong learners maintain their employability in a context of exponential change. Confronting these issues in a constructive and proactive manner will also contribute to building Australia as a competitive learning society attuned to the conditions of the information age.

references

Allen Group 2000, *Training to compete: The training needs of industry*, Australian Industry Group, Sydney.

ANTA (Australian National Training Authority) 2000, *A national marketing strategy for VET—Meeting client needs*, ANTA, Brisbane.

ASTD (American Society for Training and Development) 2000, 'Four facts about the new jobs of chief learning officer and chief knowledge officer', *Performance in Practice*, Fall, pp.1–2.

ASTD/DOL (ASTD/Department of Labor) 1988, *Workplace basics: The skills employers want*, ASTD, Alexandria.

Becker, B & Huselid 1998, 'High performance work systems and team performance: A synthesis of research and managerial implications', *Research in Personnel and Human Resource Management*, vol.16, JAI Press, Stanford.

Betcherman, G 1997, *Changing workplace strategies: Achieving better outcomes for enterprises, workers and societies*, Government of Canada and OECD.

Canto-Sperber, M & Dupuy, J-P 1999, *Competences for the good life and the good society*, OECD (DeSeCo), Paris.

Carnevale, P 1991, *America and the new economy*, Jossey Bass, San Francisco.

Carnevale, P, Gainer, L & Meltzer, A 1990, *Workplace basics: The essential skills employers want*, Jossey-Bass, San Francisco.

Carnevale, P, & Desrochers, D 1999, 'Training in the Dilbert economy', *Training & Development*, December, pp.32–6.

CBI (Confederation of British Industry) 1998, *In search of employability*, CBI, London.

Conference Board 1999, *Turning skills into profit: Economic benefits of workplace education programs*, New York.

Davenport, T & Prusak, L 1998, *Working knowledge*, Harvard Business School Press, Harvard.

Delery, J & Doty, D 1996, 'Modes of theorising in strategic human resource management: Tests of universalic, contingency and configurational performance predictions', *Academy of Management Journal*, no.4, pp.802–35.

Departments of Commerce, Education, Labor, National Institute for Literacy and Small Business Administration 1999, *21st century skills for the 21st century jobs*, Washington.

DETYA (Department of Education, Training & Youth Affairs) 2000, *Learning for the knowledge society*, DETYA, Canberra.

DISR (Department of Industry, Science and Resources) 2000, *Report of human dimension working party for the national innovation summit*, DISR, Canberra.

DfEE (Department for Education and Employment) 2000a, 'Key skills', position paper, DfEE, Sheffield.

— 2000b, *The place of key skills in modern apprenticeships*, DfEE, Sheffield.

Down, C 1997, 'Tapping into commonsense and experience: Using the key competencies to enhance workplace experience', paper for 1997 VET Research Conference, 10 July 1997.

— 2000, 'Key competencies in training packages', paper presented at the 9th Annual VET Research Conference, Coffs Harbour, 4–7 July 2000.

Downs, J 1997, 'Teaching and learning the key competencies in vocational education and training: A professional development strategy' (unpublished).
Edna VET Advisory Group 2000, *Flexible learning for the information economy: A framework for national collaboration in vocational education and training 2000–2004*, ANTA, Brisbane.
EU (European Union) 1997, *General report*, Section 5, 'Employment and social policy', EU, Brussels.
Field, L & Mawer, G 1996, *Generic skills requirements of the high performance workplace*, Department of Training and Education Co-ordination, Sydney.
Finn Report 1991, *Young people's participation in post-compulsory education and training*, AEC, Melbourne.
Fukuyama, F 1995, *Trust: The social virtues and the creation of prosperity*, Penguin, London.
Goody, J 1999, *Education and competences: An anthropological perspective*, OECD (DeSeCo) Paris.
Hager, P 1998, 'Developing judgement: A proposal for facilitating the implementation of the key competencies', paper given at the 7th VET Research Conference, Wagga Wagga, 14–17 July 1998.
Hager, P, Moy, J & Gonczi, A 1997, *Piloting the key competencies in the Australian vocational education and training sector and workplaces*, NSW Department of Training and Education Co-ordination, Sydney.
Halal, W 1998, *The infinite resource: Creating and leading the knowledge enterprise*, Jossey Bass, San Francisco.
Haste, H 1999, *Competencies: Psychological realities—A psychological perspective*, OECD (DeSeCo) Paris.
HDWG (Human Dimension Working Group) 2000, *Report of the Human Dimension Working Group*, DISR, Canberra.
Ichniowski, C et al. 1996, 'What works at work: Overview and assessment', *Industrial Relations*, July, pp.299–333.
ILO (International Labour Organization) 1998, *World employment report 1998–99: Employability in the global economy*, ILO, Geneva.
Jasinski, M 1996, *Teaching and learning the key competencies in vocational education and training*, Western Adelaide Institute of TAFE, Adelaide.
Johnston, D 2000, *The new economy*, OECD, Paris.
Karpin Report 1995, *Enterprising nation: Report of the industry task force on leadership and management skills*, AGPS, Canberra.
Kearns, P, McDonald, R, Candy, P, Knights, S & Papadopoulos, G 1999, *VET in the learning age*, NCVER, Adelaide.
Kearns, P & Papadopoulos, G 2000, *Building a learning and training culture: The experience of five OECD countries*, NCVER, Adelaide.
Kearns, P & Schofield, K 1997, *Learning across frontiers*, ANTA, Melbourne.
Keys Young 1999, *Evaluation of the enterprise eduction in schools element of the school to work program*, Keys Young, North Sydney.
Kling, J 1995, 'High performance work system and firm performance, *Monthly Labor Review*, May, pp.29–36.
Levy, F & Murnane, R 1999, *Are there key competencies critical to economic success?*, OECD (DeSeCo), Paris.
McDonald, R 2000, *Towards general vocational qualifications*, ANTA, Brisbane (unpublished).
MCEETYA (Ministerial Council on Employment, Education, Training & Youth Affairs) 1996, *Report on the outcomes of the key competencies pilot phase*, MCEETYA, Melbourne.
— 2000, *The Adelaide declaration on national goals for schooling in the 21st century*, Melbourne.

Mayer Committee 1992a, *Employment-related competencies: A proposal for consultation*, Mayer Committee, Melbourne.
— 1992b, *Putting general education to work: The key competencies report*, AEC/MOVEET, Melbourne.
Mehaut, P 1999, 'Training, skills, learning: How can new models be developed?' *European Journal of Vocational Training*, no.18, pp.3–7.
Misko, J 1995, *Transfer: Using learning in new contexts*, NCVER, Adelaide.
Moy, J 1999, *The impact of generic competencies on workplace performance*, NCVER, Adelaide.
Modernizing Forum Skills Commission, *Skills for industrial modernization*, Department of Commerce, Washington.
Mulcahy, D & James, P 2000, *What skill? Whose knowing? Future for CBT*, NCVER, Adelaide.
NCVER (National Centre for Vocational Education Research) 2000, *Survey of employer views on vocational education and training*, NCVER, Adelaide.
NELC (National Employer Leadership Council) (n.d.), *Intuitions confirmed*, NELC, Washington.
Nonaka, I & Takeuchi, H 1995, *The knowledge creating company*, Oxford University Press, New York.
Norflex (forthcoming), *Flexibility matters—Flexible organisations in the Nordic countries*, NUTEX, Stockholm.
NSSB (National Skills Standards Board) 1995, *Gateway to the future: Skill standards for the bioscience industry*, Washington.
— 2000, *Summary of the NSSB guidelines for a voluntary national skill standards system*, Washington.
NSTF (National Skills Task Force) 2000a, *Skills for all: Proposals for a national skills agenda*, DfEE, Sheffield.
— 2000b, *Skills for all: Research report*, DfEE, Sheffield.
OECD (Organization for Economic Co-operation and Development) 1989, *Towards an enterprising culture*, Paris.
— 1996, *Lifelong learning for all*, Paris.
— 1997, 'Meeting of Labour Ministers', Theme 3 of the *Draft analytical report: Lifelong learning to maintain employability*, OECD, Paris.
— 1998, *Human capital investment: An international comparison*, Paris.
— 1999a, *What works—Innovation in education 1993: Improving student motivation for lifelong learning*, Paris.
— 1999b, *Thematic review of the transition from education to working life*, Paris.
— 1999c, *Knowledge management in the learning society*, Paris.
— 1999d, *The role of human and social capital in sustaining economic growth and development*, Paris.
— 1999e, *Definition and selection of key competencies (DeSeCo)*, Paris.
— 1999f, *Projects on competencies in the OECD context: Analysis of theoretical and conceptual foundations (DeSeCo)*, Paris.
— 1999g, *Comments on the DeSeCo expert opinions (DeSeCo)*, Paris.
— 1999h, 'New enterprise work practices and their labour market implications', *Employment outlook*, Chapter 4, Paris.
— 1999i, *Innovating schools*, CERI, Paris.
— 2000a, *Is there a new economy?*, first report on the OECD Growth Project, Paris.
— 2000b, *Definition and selection of competencies: Theoretical and conceptual foundations (DeSeCo)*, background paper, Paris.
Ott, B 1999, 'Structural characteristics and target categories of holistic vocational training', *European Journal for Vocational Training*, no.17 pp.52–61.
Penn, R 1999, *The dynamics of decision making in the sphere of skills formation*, NSTF Research Paper no.2, DfEE, Sheffield.

Perrenoud, P 1999, *The key to social fields: Essay on the competences of an autonomous actor*, OECD (DeSeCo), Paris.
Raizen, S 1994, 'Learning and work: The research base', in *Vocational Education and Training for Youth*, OECD, Paris.
Ridgway, C 1999, *Common ground and pragmatic problems. A comment on the expert opinion papers defining and selecting competencies*, OECD (DeSeCo), Paris.
Robinson, C 2000, *New directions in Australia's skill formation*, NCVER, Adelaide.
Ryan, C 1997, *NSW key competencies pilot project report*, NSW Department of Training and Education Co-ordination, Sydney.
SCANS (Secretary's Commission on Achieving Necessary Skills) 1991, *What work requires from schools*, Department of Labor, Washington.
— 1992, *Learning a living: A blueprint for high performance*, Department of Labor, Washington.
Secretary of State for Education and Employment 1998, *The learning age: A renaissance for a new Britain*, DfEE, London.
— 1999, *Learning to succeed: A new framework for post-16 learning*, DfEE, London.
Secretary of State for Trade and Industry 1998, *Our competitive future: Building the knowledge driven economy*, DTI, London.
Senge, P 1990, *The fifth discipline: The art and practice of the learning organisation*, Doubleday, New York.
Tomassini, M 2000, 'Knowledge dynamics, communities of practice: Emerging perspectives on training', *European Journal of Vocational Training*, no.19, pp.38–47.
Unesco 1996, *Learning: The treasure within*, Report of the Commission on Education for the 21st Century, Paris.
Unwin, L, Wellington, J, Fuller, A & Cole, P 2000, *Effective delivery of key skills in schools, college and workplaces*, University of Sheffield, Sheffield.
Weinert, F 1999, *Concepts of competence*, OECD (DeSeCo), Paris.
Winslow, D & Bramer W 1994, *Future work: Putting knowledge to work in the knowledge economy*, The Free Press, New York.

glossary

Action competence	This systematically combines constructs of the cognitive and motivational approach related to the goals, demands, and tasks of a particular action context (Weinert 1999).
Basic skills	The foundation skills such as literacy and numeracy which provide a platform for lifelong learning.
Cognition	A general term for any process (and the underlying structure) that allows an organisation to know and to be aware. It includes perceiving, learning, remembering, reasoning, thinking, speaking and judging (Weinert 1999).
Competence	✦ Cognitive fitness for a particular class of tasks (Weinert 1999). ✦ A roughly specialised system of abilities, performances, or individual dispositions to learn something successfully, to do something successfully, to reach a specific goal (Weinert 1999).
Emotional intelligence	A hypothetical construct underlying an individual's abilities to deal with emotions in self and others (includes ability to motivate oneself, deal with frustration and conflict, to control and regulate one's moods, to empathise with people, be intuitive).
Enterprise education	This uses the education and training process to develop individuals who have the necessary mindsets and skills to recognises opportunity, manage risk, and mobilise resources for a social or economic purpose (Karpin 1995).
Employability	The possession by an individual of the qualities and competences required to meet the changing needs of employers and customers and thereby to help realise his or her aspirations and potential in work (CBI 1998).

Employability skills	The skills that enable an individual to maintain his or her employability throughout the life cycle. This terms is sometimes used as being synonymous with generic skills.
Generic skills	The skills which can be used across a large number of different occupations. They include the key competencies (or key skills) but extend beyond these to include a range of other cognitive, personal, and interpersonal skills which are relevant to employability.
Key competence	This is a central competence ✦ upon what others depend ✦ which facilitates understanding and learning a variety of different concepts, rules, principles, strategies, and skills ✦ which could be applied to solve different problems in different situational contexts (Weinert 1999).
Key competencies	Key competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. Key competencies are generic in that they apply to work generally rather than being specific to work in particular occupations or industries. This characteristic means that the key competencies are not only essential for effective participation in work but are also essential for effective participation in further education and in adult life more generally (Mayer 1992a).
Key skills	The British concept: those transferable skills, essential for employability, which are relevant at different levels for most (NSTF 2000b).
Mental models	These are deeply ingrained assumptions, generalisations, or even pictures or images that influence how we understand the world and how we take action (Senge 1990).
Metacompetencies	These make the acquisition of new competencies and the use of available competencies more adaptive and efficient.

	They refer to knowledge, motivational attributions, and volitional skills that allow cognitive resources to be used most efficiently across different tasks, in different content areas, and for different purposes (Weinert 1999).
Metaknowledge	This is knowledge about knowledge and deals with the cultural and individual repertoire of rules and regularities for the proper use of the available knowledge (Weinert 1999).
Personal attributes	These include attributes such as individual responsibility and self-direction, confidence, self-esteem, sociability, and integrity which enable people to be autonomous, responsible members of work teams, and adaptive in changing conditions.
Personal mastery	Personal mastery goes beyond competence and skills although it is grounded in competence and skill. It goes beyond spiritual unfolding or opening, although it requires spiritual growth. It means approaching one's life as a creative work learning life from a creative as opposed to reactive viewpoint (Senge 1990).
Skill	✦ An acquired aptitude ✦ An ability to perform complex motor and/or cognitive acts with ease, precision, and adaptability to changing conditions (Weinert 1999).

a note on **terminology**

There is confusion across OECD countries with respect to terminology for generic skills. The United States NSSB uses the term 'employability skills', the United Nations terms them 'core skills' while ANTA has now adopted the term 'enterprise skills'.

While each of these terms describes important aspects of generic skills, none of these terms is adequate. ANTA's use of the term 'enterprise skills' adds to the ambiguity and confusion that has followed use of this term since the Karpin Report and the Commonwealth's Enterprise Education in Schools program, with enterprise skills being used both in the entrepreneurial sense intended by the Karpin Task Force and in the broader educational sense defined by MCEETYA and OECD (Keys Young 1999, OECD 1989).

The use of terms such as 'enterprise skills' and 'employability skills' also perpetuates a dated dichotomy between work and life which is no longer relevant to the 'learning age' with the emerging new patterns of work and non-work, and with imperatives for lifelong learning and personal autonomy.

The new agenda of generic skills is as much about life skills as work skills, and the metacompetencies relating to learning to learn, creativity, innovation, and personal autonomy and self-direction will underpin both success in the workplace and quality of life and personal fulfilment.

For this reason, it is highly desirable to avoid the confusions and divisions of the past and to find agreement on terminology that is acceptable to all stakeholders—schools, VET, higher education, employers, individuals, and communities—and which recognises that the new agenda of generic skills for the 21st century is about essential life skills as well as enterprise and employability skills.

OECD DeSeCo Program

questions to be studied

On the basis of these general considerations, a certain number of subjects are to be discussed and analyzed over the course of the DeSeCo Program. The following list provides examples of the kind of research questions developed to guide project activities generally.

What is meant by notions of competence, key competencies, skills etc? Although terms such as key competencies, basic skills, and key qualifications have become very fashionable in both scientific and policy domains, different meanings and vague usage have led to much conceptual confusion. A clarification of the significance of these terms, an identification of the issues at stake, and a common terminology are therefore a prerequisite for communication in an interdisciplinary and international context.

What ideas about the nature of human beings and society should serve as a starting point for the identification of key competencies? What are the premises for a so called successful life in various spheres of life from the perspective of both the individual and society? What are the underlying normative criteria for defining key competencies? Are there common denominators among the different viewpoints on this issue?

How can the perspective of an economist, a sociologist, a philosopher, an anthropologist, a psychologist, or an educator contribute to the construction of a set of competencies and skills that are indispensable for individuals to lead a successful and responsible life and for a democratic society to face the challenges of a changing and often conflictual world?

To what extent is it possible to arrive at an identification of key competencies of culture, age, gender, status, professional activity, etc? How do these factors affect the conceptualization of key competencies, and to what extent?

Which competencies are necessary for understanding and acting in different fields of life—including economic, political, social, and family domains, public and private interpersonal relations, individual personality development etc? How can these competencies be described and theoretically justified, and what empirical evidence of their importance does available research provide?

Do competencies operate independently, or should they be viewed as an interdependent set or constellation of competencies? In either case, how do the identified key competencies relate to each other?

What are the theoretical foundations, rationale, and selection processes behind the set of key competencies? What are the political, social, and economic factors that influence the definition and selection processes of key competencies in different socio-economic and cultural environments, and how is this influence exercised? What is the role of scientific findings and scientific methodology in these processes?

What are the convergences between the different processes and between the different sets of key competencies?

This review of research on vocational education and training is one of a series of reports commissioned to guide the development of future national research and evaluation priorities.

Peter Kearns is managing director of Global Learning Services, an international network of consultants. He has a special interest in lifelong learning, building learning communities and strategies for meeting the learning and skill requirements of the information economy.

ISBN 0 87397 724 6 print edition
ISBN 0 87397 725 4 web edition