

# review of **research**

numeracy literacy

**literacy and numeracy in**

**vocational education**

**and training**

literacy and numeracy  
vocational education and training



I Falk  
P Millar

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# acronyms

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ABS	Australian Bureau of Statistics
ACAL	Australian Council for Adult Literacy
ACE	Adult and Community Education
ALBE	Adult Literacy and Basic Education
ALIO	Adult Literacy Information Office
ALLP	Australian Language and Literacy Policy
ALNARC	Adult Literacy and Numeracy Australian Research Consortium
ALRN	Adult Literacy Research Network
AMES	Adult Migrant Education Service
ANAMOL	Adult Numeracy and Maths On-Line project
ANTA	Australian National Training Authority
ARIS	Adult Education Resource and Information Service
ASTF	Australian Student Traineeship Foundation
CES	Commonwealth Employment Service
DEET	Department of Employment, Education and Training
DEETYA	Department of Employment, Education, Training and Youth Affairs
DETYA	Department of Education, Training and Youth Affairs (previously DEET and DEETYA)
DSS	Department of Social Security
ELICOS	English Language Intensive Courses for Overseas Students
EPEs	Employment Placement Enterprises

ESB	English-speaking background
ESL	English as a second language
ILY	International Literacy Year
LOTE	Language other than English
NCVER	National Centre for Vocational Education Research
NESB	Non-English-speaking background
NRS	National Reporting System
NSW AMES	New South Wales Adult Migrant English Service
OECD	Organisation for Economic Co-operation and Development
PEPEs	Private Employment Placement Enterprises
RPL	Recognition of prior learning
RTCA	Rural Training Council of Australia
SIP	Special Intervention Program
TAFE	Technical and further education
VET	Vocational education and training
WELL	Workplace English Language and Literacy Program



# executive summary

The aim of this report is to bring together the major insights from research since 1990 on literacy and numeracy as they relate to vocational education and training. The report reviews the literature and identifies issues and themes in the areas of policy, practice and research on the topic.

## background and definitions

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The field of adult literacy and numeracy has developed from the broader field of adult education. Literacy and numeracy are vital underpinning skills for effective and efficient vocational education and training. The literature on this topic comes from a variety of multi-disciplinary sources reflecting concepts of education and training, and issues of human and social capital and empowerment.

Literacy and numeracy are vital underpinning skills for effective and efficient vocational education and training.

Concepts of literacy and numeracy include:

- ◆ *Functional literacy*: literacy and numeracy skills are taught as basic skills, on the assumption that they can then be applied in those functional tasks that rely on them.
- ◆ *Integrated literacy and numeracy*: literacy and numeracy are seen as integrated, or embedded, in the social context.
- ◆ *Workplace literacy and numeracy*: a variety of basic skills instructional programs are offered at the workplace.
- ◆ *Whole language*: this approach focusses on the processes by which literacy acquisition occurs, as well as the 'whole' social context in which it takes place.
- ◆ *Critical literacy and numeracy*: basic literacy and numeracy skills are seen as being connected to all aspects of an individual's and a community's sense of social identity and capacity to command social resources. The concept envisages a multiplicity of literacies ('multiliteracies') for different purposes in different contexts.
- ◆ *Literacy, numeracy and social capital for lifelong learning and vocational education and training*: this covers the literature on links

between literacy and numeracy, human capital, social capital, and lifelong learning identifies a number of themes and issues of importance in the domain of practical applications of literacy and numeracy in VET.

### approaches to literacy and numeracy in VET

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The literature associated with adult literacy and numeracy in VET draws upon, and can be understood through, three main pre-existing groups of literature about approaches to literacy and numeracy: the basic skills approaches, the growth and heritage approaches, and the critical-cultural approaches.

- ◆ *Basic skills approaches* view reading and writing as perceptual and/or cognitive skills. There is an emphasis on how sight word recognition and phonics affect the acquisition of literacy. A body of literature has emerged which links these 'basic skills' of human capital theory with the supposed benefits of education in basic skills to industry and the economy, and thus also with vocational education and training.
- ◆ *Growth and heritage approaches*, 'whole language', focusses on the processes by which literacy acquisition occurs as part of the social context in which it occurs. The emphasis is not so much on the text or the product but on the relationship between comprehension, sight words, grapho-phonetic cues and the context in which these are used.

The primary principles of whole language are that learners are actively constructing meaning the whole time.

- ◆ *Critical-cultural approaches* view literacy as social practice and in cross-cultural perspective. Modern theories and methods in the field of linguistics have had a major impact on critical-cultural approaches to literacy education, especially in Australia. Critical-cultural theory is represented in adult education and workplace literacy and numeracy, although the practical manifestations are apparently not as prevalent as other approaches.

### policy in relation to literacy and numeracy in VET

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The present trend of the Federal government and State governments is to place a high priority on vocational education and training programs in post-compulsory schooling. Each State and Territory has its own policy response and structure to manage literacy and numeracy learning. The relationship between poor literacy skills and economic and social characteristics is well-documented and has had strong policy support through the 1990s, beginning with research during the International Literacy Year (1990), which found that one in ten of all adult Australians had some form of literacy difficulty. The Australian language and literacy policy (ALLP) (DEET



1991) addressed this need. The Australian National Training Authority (ANTA) and the Department of Employment, Education, Training and Youth Affairs' (DEETYA) Workplace English Language and Literacy Program became important sources of funding for adult literacy and numeracy.

In collaboration with the adult literacy and numeracy profession, the *National Framework for Adult Language, Literacy and Numeracy Competence* (Australian Committee for Training Curriculum 1993) was developed. It represents a common point of reference for the identification, recognition and development of language, literacy and numeracy competence, based on the principle that literacy, language and numeracy are central elements of competence for work and social activity, and that they are best taught, learned and assessed through activities in social contexts. The *National Reporting System: A mechanism for reporting adult English language, literacy and numeracy indicators of performance* (Coates et al. 1995) was a further significant development.

Incorporating language and literacy competencies into industry and enterprise standards was seen to be essential in making literacy training more likely to be delivered, and in making that training more likely to be tailored specifically for the needs of the workplace. The subsequent inclusion of literacy and numeracy in industry standards in training packages has been followed by evaluative research initiated by the ANTA and the Department of Employment, Training and Youth Affairs (DETYA), including research by the Adult Literacy and Numeracy Australian Research Consortium (ALNARC).

During the period 1990 to 1999, adult literacy became increasingly linked with the problem of unemployment, and with various interventionist strategies on the part of the Commonwealth Government.

## practice

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Significant and multiple implications for literacy practice have emerged from forces for change such as globalisation and technological advancement. Governments throughout the 1990s consistently implemented a policy of opening-up provision of education and training to a wider set of providers, with the intention of offering more choice to the user. The barriers between traditional sectors of adult and community education and vocational education and training have in many ways disappeared. Adult and Community Education (ACE) and VET sectors have been merged to a large extent. These changes have had important consequences for the way practitioners carry out their work.

The effects of the transition of adult literacy and numeracy practice in workplaces are documented by an expanding literature. Professional groups such as the Australian Council for Adult Literacy (ACAL) provide support for practitioners through publications and websites. A wide range of professional development packages and learner materials have been developed. While there is a growing literature investigating the impact on practice and workplace of inclusion of literacy and numeracy in industry standards via training packages, professional development literature is less extensive on this subject of integrated literacy and numeracy learning. There is also a need for professional development focussing on assessment in training package contexts.

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## research

Australian language and literacy research makes a major contribution to the international body of knowledge in this area. Through the 1990s, research supports the view that literacy skills are directly related to worker productivity, the economy and quality of life. Research has also thrown light on literacy's importance in everyday community life and its relationship to VET and vocational learning. Vocational skills merge with community, public and civic literacies.

There is a small body of work on the importance of social capital in literacy and numeracy. Literacy is seen as a participation-in-VET issue, since the trust and social cohesion of social capital is a requirement for learners to become participants in vocational learning. For the unemployed; however, by themselves, the literacy skills associated with human capital are not sufficient for achieving employment.

One important aspect of the intersection of literacy, numeracy and VET is the emerging field of VET-in-Schools programs. To date, however, no specific research is found that is concerned with literacy and numeracy as it relates to the VET-in-Schools program.

The literature on equity concerns in relation to literacy and numeracy in VET includes women's literacy, people with disabilities, rural and remote people, Non-English-speaking background (NESB) people, Indigenous people, and people with socioeconomic disadvantage.

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## numeracy

Numeracy has emerged through the 1990s as a complex issue, rather than a single concept that can be incorporated within literacy. It has become a distinct field with its own identity and growing body of literature. Definitions of numeracy usually

include emphasis on the practical or functional application and use of mathematics, involving a wide range of skills and implying a certain flexibility, which is dependent on the needs and interests of the individual within the context of the peer group, community or workplace.

Numeracy is now appreciated as a key skill area in VET, but its conceptual boundaries, cognitive underpinnings, and assessment, require further research. Much of the existing research on numeracy in VET concentrates on professional development needs of curriculum writers, industry trainers and vocational teachers.

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### common themes

In the literature on literacy and numeracy in VET reviewed, there are three major common themes, or patterns:

- ◆ Across policy, practice and research, there is an explicit awareness of the importance of literacy and numeracy in VET. It is viewed as the most significant underpinning (or ‘generic’) set of skills.
- ◆ The theme of ‘integration’ versus ‘basic skills’ recurs frequently.
- ◆ The theme of purposes for literacy and numeracy in VET also recurs. These purposes are twofold:
  - for gaining access to and participating in VET, and
  - for facilitating mobility within and between work contexts.

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### analysis, synthesis, conclusions and issues

Analysis and discussion of themes emerging from the literature on literacy and numeracy in VET leads to certain conclusions:

- ◆ The integrated literacy and numeracy approach provides the best option for work-based practice where learning the integrated literacy and numeracy skills is a practical option for the workplace.
- ◆ The stand-alone provision of literacy and numeracy approach continues to provide the best option for (a) work-based practice where intensive learning of literacy and numeracy skills is indicated, and (b) for situations where literacy and numeracy learning are required to facilitate access to and participation in VET. The latter groups include literacy and numeracy for the unemployed as well as for the underemployed.
- ◆ There is no co-ordinated and integrated policy, practice or research agency on literacies and numeracies for lifelong learning across sectors and portfolios. There is no objective research that examines the literacy and numeracy implications of VET-in-Schools programs while

recognising and reconciling the value and place of (often) opposing vested interests in that sector.

- ◆ There is unco-ordinated and incomplete research, policy and associated practice development about establishing physical and human structures for learning through the new literacies required online.
- ◆ There is no nationally consistent approach to all forms of professional development for integrated literacy and numeracy competencies as found in the training packages in pre-service and in-service courses that would build on existing best practice ANTA models.

#### from conclusions to directions for further research

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The gaps identified in the literature suggest the need for research in a number of areas.

- ◆ There should be investigation of strategies for creating awareness of the roles of both basic literacy and numeracy skills and embedded literacy and numeracy as integrated task competence in all facets of lifelong learning in and through VET.
- ◆ There is room for a needs-analysis and scoping study to establish the extent of stand-alone literacy and numeracy provision required to satisfy demand for participation in VET and to support existing VET provision.
- ◆ There is a need for a co-ordination function and agency, formalised, co-ordinated and resourced through ANTA, to liaise between those involved in implementing ANTA's lifelong learning strategies and those involved in literacy and numeracy in VET.
- ◆ A coherent suite of research projects is needed to document and evaluate the implications of the nature and scope of transition literacies and numeracies required in a diversity of VET-in-Schools programs, and special methods of incorporating these explicit competencies in student and staff learning courses.
- ◆ There is a need for a scoping study to determine the literacies and numeracies required for various forms of VET learning online.
- ◆ Research is needed into the blend of basic skills and social resources required for best practice literacy and numeracy learning, particularly in the context of training packages.



# context

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## background

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Literacy and numeracy are considered fundamentally important resources in today's world. In Western society, to be literate and numerate involves much more than the basic skills associated with being able to read, write and calculate. Yet, with the possible exception of so-called 'mass' literacy campaigns (for example, Street 1984; Freire 1985; Arnove 1988; Hassanpour 1993; Limage 1993), until the early 1990s, comparatively little inquiry has taken place in literacy education which focusses on adults' acquisition of literacy in their first language. Until the 1990s, there was even less research on the acquisition, informally or formally, of adults' numerical capabilities. However, since the increase in our society's emphasis on the question of industry productivity and its links with a literate and numerate workforce, triggered by International Literacy Year in 1990, considerably more resources have been dedicated to research, policy and practice in these areas.

There are many different and changing contexts in which literacy and numeracy skills are applied—in workplaces and industry, communities, public life and for leisure.

There are many different and changing contexts in which literacy and numeracy skills are applied—in workplaces and industry, communities, public life and for leisure. In each of these varied contexts, the literacy and numeracy demands are equally as varied. The nature of the literacy and numeracy skills and knowledge required to access funds at an automatic teller machine differs significantly from those required to chair a business meeting. Similarly, the skills required to learn the literacy and numeracy requirements of a job application differ from the skills required to participate effectively in a training program to learn about those very skills. This variety of tasks and accompanying literate and numerate skills and knowledge foreshadow the variety of policy, practice and research approaches in existence.

The examples of the teller machine, the business meeting and the job application also illustrate an added complexity for this report. Literacy and numeracy are both multi-contextual and therefore, multi-disciplinary. For each context, the literature has a different source. The workplace literature is found traditionally in the work on organisational psychology, perhaps management or human resources. The literature about learning might appear in the education section of a library; the work on cognition, a data base on learning, or a separate section on linguistics (applied linguistics and socio-linguistics are different bodies of literature). The work on social contexts which impact on literacy and numeracy is likely to be found in sociological and ethnographic sources. Further, literature on specific aspects of literacy and numeracy, such as 'reading' or 'assessment', can span a range of additional sources. In the case of assessment in literacy, for example, literature would be considered from mathematical, statistical, schooling, educational, adult learning, assessment and evaluation sources.

The focus of this publication is to bring together the major insights from literature on adult literacy and numeracy as they relate to vocational education and training (VET) so that readers gain an understanding of the breadth and depth of research which has been conducted within these sectors. The report overviews and integrates a disparate, multi-disciplinary and complex field with policy, practice and research literature. In order to make sense of this, the reader will first be provided with a brief background that explains the main definitions and themes in the field.

## **definitions** of adult literacy and numeracy in VET

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There is no doubt that literacy and numeracy are vital underpinning skills for effective and efficient VET (Fitzpatrick & Roberts 1997; ANTA 1998). However, the literature associated with literacy and numeracy in VET comes from a variety of multi-disciplinary sources. As a result, there are often difficult and overlapping concepts associated with the field, and some definitional issues will help to clarify matters before proceeding. Not only are the terms often overlapping, but they are used by different sectors in slightly different ways. An attempt is made here to start with some common understandings of the meanings involved, drawing on the relevant multi-disciplinary literature to do so.

What is now regarded as the field of adult literacy and numeracy as conceived in the brief for this publication has developed from the broader field of adult education. There are inter-woven influences on the field. Two of these require mention, since they assist in understanding the differences between approaches to

literacy and numeracy in VET, which will be reviewed later. Broadly speaking, they are binary terms, coming from schooling on the one hand, and the industrial world on the other. They are used in juxtaposition to each other, and are 'education versus training', and 'general versus vocational education' (Hager 1993, p.172; Stevenson 1993, p.5). The first terms in each of these couplets, namely 'education' and 'general', refer to more or less similar derivations: those stemming from the compulsory school sector in the UK tradition (Hager 1993, p.173). The second terms, 'training' and 'vocational education', have UK origins as well, albeit with a much longer tradition before that (Hager 1993, pp.174–5; Marginson 1993, pp.143–71).

The binaries of 'education versus training', and 'general versus vocational education' are terms which are widely used and institutionally supported in many Western countries. The influence of the compulsory age schooling sector is still evident in all sectors of adult education and training. The culture of schooling is evident, therefore, in adult literacy and numeracy learning and training and in VET. This is because it is still commonplace for adult literacy and numeracy professionals to have received their original training as either primary or secondary school teachers, and to have then moved into teaching literacy and numeracy to adults with little or no further specialist training for that field. They have subsequently learned what they know of teaching literacy and numeracy to adults through the experience they have gained while doing it 'on the job'. It is expected that the professional cultures of these various educational cultures would be found in the literature.

## VET and ACE

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In policy and practice there is an historical distinction between the various groups of activities in the wider field of adult education and training. The two main sub-fields are now known as vocational education and training and adult and community education. The group of activities linked socio-historically to VET encompasses skills, basic skills, competencies, work, managerialism, entrepreneurialism and quality. These characteristics, along with the historical links from Fordism and Taylorism, place this theme in alignment with a human capital position on the relationship between education and industrial productivity.

ACE is characterised more by activities about developing people, whole language and learning approaches, volunteerism, social activism, empowerment, learner-centred and needs-based emphases. Through these characteristics, it can be seen that ACE is traditionally not as closely identified with the skills development notion as the human capital notions that permeate the VET field, since included in it

are discernible traces of social and cultural concerns as well as economic, management and corporate ones. While the VET and ACE traditions originated independently, they are no longer so. Each now has vocational concerns, and each is engaged in vocational learning for communities and regional development. Systemically they are both funded and managed through the Australian National Training Authority. In other words, there is a blurring of the boundaries between the ACE and VET sectors (Falk 1998) as they both become resources for people's broader development (Centre for Research and Learning in Regional Australia 2000). It is for these reasons that research on social capital has become relevant to adult literacy, numeracy and VET (Falk, forthcoming), since it provides a theoretical and practical mechanism for explaining and operationalising through policy the new and more integrated VET.

### adult literacy

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The most widely accepted Australian definition of adult literacy was established by the Australian Council for Adult Literacy (ACAL):

*Literacy involves the integration of listening, speaking, reading, writing and critical thinking; it incorporates numeracy. It includes the cultural knowledge which enables a speaker, writer or reader to recognise and use language appropriate to different situations. For an advanced technological society such as Australia, the goal is an active literacy which allows people to use language to enhance their capacity to think, create and question, in order to participate effectively in society. (Australian Council for Adult Literacy Policy Statement 1989, cited in Wickert & Kevin 1995)*

Note that in this definition, the term 'numeracy' is appended as being incorporated in the meaning of literacy, as is the word 'language'. The rationale for this incorporation lies in the view that numerical and linguistic tasks are those embedded in everyday life, and that the skills required to execute these tasks are primarily based on a concept of literacy associated with reading, writing and other literate skills.

As a sample of other more recent definitions of literacy, Lo Bianco and Freebody (1997) support contemporary systemic views of literacy as:

*... an integrated complex of language and thinking processes and skills, incorporating a range of habits, attitudes, interests and knowledge, serving a range of purposes in different contexts. (Victorian Department of School Education and Catholic Education Office of Victoria, quoted in Lo Bianco & Freebody 1997, p.28)*



The term 'adult literacy and numeracy' is applied to education for learners whose first language is English, and to migrant participants whose levels of English language have excluded them from the language teaching resources provided for new settlers in their first three years.

The term 'language' is usually referred to as that set of research, policy and practice involving the teaching of English language to speakers of other languages, which is usually the migrant population. This field, with its own set of technical terms and distinctive practices such as English as a second language (ESL), is not covered in this report. It is primarily concerned with migrants who have only recently arrived in Australia, and who need intensive English language education to learn to cope with daily life. The language teaching field conducts a range of English language programs for migrants in their first three years of settlement. After that, there are TAFE courses at higher levels, and courses at language centres, but a significant responsibility for teaching English literacy and language to migrants is taken up by the field of 'adult literacy'. There is a branch of language teaching that deals with 'workplace language' as well, working with industry to provide English language skills for their workforces. The Workplace English Language and Literacy Program (WELL) is a DETYA program that resources both adult literacy and numeracy, as well as language programs for migrants in Australian workplaces. There are also English language programs offered to overseas non-English speakers for profit. These come under the heading of English language intensive courses for overseas students (ELICOS).

## adult numeracy

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The ACAL definition cited above includes the definition of numeracy. It is the definition endorsed by publicity and the media during the International Literacy Year (ILY), an event which created a large impact on policy, practice and research in the adult literacy and numeracy field. For example, it was taken up by, and substantially echoed in the policy definition to be found in the Australian language and literacy policy (DEET 1991):

*Literacy includes the integration of listening, speaking, reading, writing and critical thinking. It includes the cultural knowledge which enables a speaker, writer or reader to recognise and use language appropriate to different social situations.* (DEET 1991, p.4)

*Literacy also includes the recognition of numbers and basic mathematical signs and symbols within text ...* (p.9).

This definition does, however, begin to discuss the two components of literacy and numeracy as separate entities, even though they are situated in 'text'. It is from this time that numeracy emerges as more distinct field. A fuller discussion about the literature on adult numeracy occurs in the chapter which follows.

### basic skills

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The public and widespread meaning of literacy and numeracy is another important consideration for this report. Literacy has a meaning which is commonly understood and reported in the media; it is talked about by members of the public; it is institutionalised by various governmental bodies and individuals. The most commonly understood meaning of the term 'adult literacy' is of those adults who seek assistance with the literacy skills of English as their first language. That is, the word literacy is often used in its minority meaning of 'illiteracy'. This meaning is affected by, and in turn affects, the most commonly reported meanings of literacy used in the media. One such popular meaning is usually reported as 'problems' associated with a 'deficit' of 'basic skills' which appears as a form of 'illiteracy' perpetuated in the back-to-basics debates of the last two decades (for example, Luke 1988). Numeracy, similarly, is commonly interpreted as basic skills, arithmetic and computational work (Cumming 1996).

### functional literacy

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Functional literacy refers to those literacy skills required to perform certain 'functional' tasks, such as those related to managing one's domestic life, work life or public life. The example of operating an automatic teller machine illustrates the way in which 'literacy' is seen in the above definitions to incorporate 'numeracy' and that the literacy skills required in the task are viewed as 'functional'. To operate an automatic teller machine, one first has to understand the task, its purpose and its social meaning. One needs also to understand basic technological operations. Reading words is the next obvious task involved: one cannot proceed with this functional life task without reading words such as 'Enter PIN number and press ENTER', and 'Which account do you wish to access?' The argument here is that the actual mathematical or numerical components of the operation are only a small part of the overall task, and involve entering a few digits.

Much of the skills research performed by Sticht (for example, 1978) in the context of the USA armed services is considered to be part of 'functional literacy' (for example, Philippi 1988), an approach made popular in the workplace literacy procedures of literacy audits. However, the literacy and numeracy required for

'functional literacy' tasks is conceived of and taught as separate 'basic skills'. That is, while it is recognised that literacy and numeracy skills are those that are integrated into real life tasks, they are abstracted from those tasks for the purpose of skills acquisition. Literacy and numeracy skills are taught as such on the assumption that they can then be applied in those functional tasks that rely on them.

However, the assumption of transferability of the literacy and numeracy skills that are integrated into tasks is not taken as given in the next topic to be discussed, that of 'integrated literacy and numeracy'.

### integrated literacy and numeracy

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First seen as a form of functional literacy, literacy and numeracy skills are here viewed as the capacity to perform the literacy and numeracy components which are a part of and integrated into the existing and expected tasks with which people are confronted in all aspects of their daily lives.

The literacy and numeracy skills required are both at a basic level and those required for more complex tasks. The first systemic recognition of integrated literacy and numeracy occurred with the 1993–1994 Australian Language and Literacy Policy project, undertaken by the Foundation Studies Training Division of the NSW TAFE Commission, titled *Integrating English language, literacy and numeracy into vocational education and training: A framework* (Courtenay & Mawer 1995).

Literacy is here seen to be integrated, or embedded, in the social context (Baynham 1995), and there is a diversity of literacies in society (Hamilton, Barton & Ivanic 1994). The following working definition of integrated literacy and numeracy, consistent with those used by Freebody et al. (1993) and Falk (1995, 1997) brings together definitions such as those found in the *Queensland literacy and numeracy strategy* (DEVETIR 1994) and DEET (1991) in the specific context of vocational purposes:

*Numeracy, literacy and language are used for different purposes within a wide variety of differing situations. Vocational settings, or workplaces form one such group of settings, but each setting contains different, context-dependent numeracy, literacy and language competences. The vocational and workplace settings provide the social activities in which language, literacy and numeracy competences are embedded.* (DEET 1991, p.6)

That is, the term 'integrated' literacy and numeracy refers to the 'embeddedness' of the literacy and numeracy competence. The nature of the embeddedness determines the nature of the 'integration' of literacy and numeracy

competences in that site, in that context, at that time, with those varying activities which are displayed or required there. Moreover, embedded literacy and numeracy practices are always seen as being *about something* (Gee 1990), and always incorporate values or sets of values (Gee 1990; Falk 1995). The literacy and numeracy skills required for integrated tasks are not assumed to be teachable separately from the actual task. The nature of what the tasks are 'about' underpins the distinctions between the various approaches to literacy and numeracy outlined in this report.

The implication of this approach is that literacy and numeracy skills are more effectively acquired *not* in a separate learning or training context, but actually *on the job*. Typically, in a workplace this means that the focus is on the work task. If there are new and different literacy and numeracy aspects of those tasks, then the learner would be assisted with those aspects *while they are engaged in learning the task*. That is, instead of removing the learner from the workplace to a training area for literacy and numeracy work, they are kept on the job and taught as they work.

In the case of, say, apprentices in institutional settings such as TAFE, the literacy and numeracy skills would be addressed during the lessons on the content of their course, rather than forming a separate course that is separately timetabled. Literacy and numeracy learning support such as this does occur in some parts of Australia. In Queensland, for example, there are 'resource teachers' whose task it is to work as a team in training rooms helping apprentices and others with literacy and numeracy skills that are integrated with the lesson in progress.

#### workplace literacy and numeracy

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Workplace literacy is a relatively recent phenomenon. 'Workplace literacy', according to Askov and Aderman (1991), 'encompasses a variety of basic skills instructional programs offered at the workplace' (p.17). The connection between literacy and numeracy and job performance is highly complex and often misunderstood, with misguided views about workers' capabilities presenting barriers to permitting and requiring them to be literate and numerate at work (Hull 1993, 1997, 1999, 2000). Askov and Aderman (1991) note how Sticht's (1987) research demonstrated that '... general literacy skills instruction ... does not translate well to job-related basic skills needed for job performance' (Askov & Aderman 1991, p.17). Sticht's work on the lack of transfer of skills has been supported by Mikulecky (1988), who concludes that, 'Even though it is possible to note similarities across occupational and school settings, researchers have found transfer on the part of learners to be severely limited' (p.25).

The intersection of literacy and numeracy in VET was supported by ANTA throughout the 1990s. The inclusion of language, literacy and numeracy skills in national training packages has been ANTA policy since 1995, following the decision that relevant underpinning skills and knowledge and core competencies be incorporated into competency standards (Fitzpatrick & Roberts 1997). Among ANTA and DETYA-funded initiatives, three are playing a significant role in supporting provision for workplace literacy and numeracy, and in contributing to the quality of practice, research and policy development in relation to adult literacy and numeracy in VET.

The first initiative is called the Workplace Communication project, a national project located in ANTA's Melbourne office. This project co-ordinates the policy, professional development and other strategies related to the integrated literacy and numeracy competencies in training packages. Literacy and numeracy skills are recognised by ANTA as integral to successful workforce training. However, the approach follows that of 'integrated literacy and numeracy' outlined above, in that literacy and numeracy are built in as part of the workplace training, and not bolted on as an independent concern; hence ANTA's professional development packages called *Built in, not bolted on* (Wignall 1998) and *Ten fold returns* (McKenna et al. 1998).

The second initiative is the Workplace English Language and Literacy (WELL) program managed by DETYA. This program provides workers with language, literacy and numeracy skills to meet their current and ongoing employment and training needs, with funding available for training that is integrated with vocational training via partnerships between the industry and providers. Many practitioner reports of projects funded under this scheme have been published (for example, Local Government and Shires Associations of NSW 1997; Rural Training Council of Australia 1998; Adams 1998).

The third initiative is the Adult Literacy and Numeracy Australian Research Consortium (ALNARC) which grew from its predecessor, the Adult Literacy Research Network (ALRN) through Language Australia Ltd. ALNARC was funded through ANTA and managed by DETYA in 1999 to promote research activities in adult literacy and numeracy in all States. ALNARC centres undertake research studies into areas developed in collaboration with ANTA and DETYA, and in consultation with other adult literacy and numeracy stakeholders such as policy-makers and practitioners. Issues of literacy and numeracy in the implementation of training packages are a primary focus (Haines & Bickmore-Brand 2000; Kelly & Searle 2000;

McGuirk 2000; Millar & Falk 2000; Sanguinetti 2000; Trenerry 2000). Some of their reports on training packages and other significant literacy and numeracy research projects can be found at the ALNARC web site <http://www.staff.vu.edu.au/alnarc>.

### whole language

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Another popularly reported idea associated with literacy has been the set of views covered by the term 'whole language' (for example, Edelsky 1991), a notion which is often set against 'basic skills' in media reports. This approach focusses on the processes by which literacy acquisition occurs as well as on the 'whole' social context in which it takes place. Here, the emphasis is not so much on the text or the product, but on the nature of language as being a part of any social context, and that comprehension develops alongside skills in literacy. The approach also claims that the low coincidence of phoneme-grapheme regularity in English provides reason for basing literacy acquisition on the teaching of the phoneme-grapheme relationship.

### critical literacy and numeracy

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Another concept of literacy and numeracy that finds its way into VET is related to critical social theory. This is the view of 'critical literacy' as a set of socially organised practices (Fairclough 1989; Gee 1990, 1992, 1999; Hammond et al. 1992; Lankshear & McLaren 1993) in which basic skills for decoding, encoding, and fluency connect to all aspects of an individual's and a community's sense of social identity and capacity to command social resources (Freire 1985; Fairclough 1989, 1992; Gee 1999), sometimes referred to as 'empowerment'.

Because of the dynamic natures of language and society, people are continually having to embrace new and specific practices, which in turn form a specific literacy (Lankshear et al. 1997). In fact, the multiplicity of literacies for different purposes in different contexts has come to be known under the heading of 'multiliteracies'. Once again, perceptions of numeracy parallel those of literacy. Varying numeracy skills are required to deal 'systematically [with] problems of concern in everyday life and [to] better understand the physical, economic and social environment in which we live' (Crowther 1959, quoted in Cumming 1996, p.11). Literacy and numeracy, therefore, both have social, political and educational implications. They are often seen to be involved with power and control of social resources (Searle 1999) of one group or individual in society over another. It is the importance of literacy and numeracy in this control over social resources that leads to a consideration of literacy, numeracy and VET in connection with that social resource known as social capital.

## literacy, numeracy and social capital for lifelong learning and VET

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In the Western world in the last decades of the twentieth century, the VET sector has been driven largely by economic policy debates focussed on investing in human capital, both as a way to encourage overall economic growth and as a way to expand opportunities for the economically disadvantaged (Mincer 1989; Stallmann 1991; Hobbs 1995). In this policy setting, forms of literacy and numeracy came to be viewed primarily as components of human capital. However, the literature reports that there is now a wide recognition that a purely economic strategy—while necessary—is insufficient (for example, Saul 1996; Rifkin 1999). Western society along with its educational and training systems is currently promoting the idea of lifelong learning, with the associated concepts of a learning society (Young 1995) and learning communities (Alheit & Kammler 1998; Holford, Jarvis & Griffin 1998; Falk 1999a). Effective engagement with these concepts requires that education and training for human capital be combined with social capital (Putnam 1995; Schuller 1996; Schuller & Field 1998). Social capital is the third form of capital after physical capital and human capital. It has been reported in a wide range of multi-disciplinary literature including sociology (Bourdieu 1983), political science (Putnam 1995), economic (for example, Silverman 1935; O'Connor 1973), social science (Woolcock 1998) and education (Coleman 1988). Portes (1998) observes that, '[W]hereas economic capital is in people's bank accounts and human capital is inside their heads, social capital inheres in the structure of their relationships' (p.7). Networks, norms, relationships of trust (for example, Fukuyama 1995) are all seen as vital for an active and healthy society.

*By analogy with notions of physical capital and human capital—tools and training that enhance individual productivity—social capital refers to features of social organizations such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit. (Putnam 1995, p.67)*

It is claimed that when human capital and social capital are combined, learning, education and training are perceived as more effective, and by bringing human and social capital together, the capacity of people to learn literacy and respond to change is increased (Falk & Balatti 1999; Falk 1999b; Falk & Kilpatrick 2000). Moreover, this literature shows how learning literacy and numeracy in VET is initiated by self-confidence and self-esteem, characteristics embedded in the learning process and which are the prime enablers of participation in vocational learning (Falk 1999b). Literature on links between literacy and numeracy, human capital, social capital, and lifelong learning, therefore identifies a number of themes and issues of importance in the domain of practical applications of literacy and numeracy in VET.

## summary

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Policy, practice and research in literacy and numeracy in vocational education and training occur at the interface of several historical and social movements. These movements draw on literature about schooling, education, training, perceptions of literacy and numeracy as 'basic skills', human capital, social resources and empowerment bases. Popular conceptions that tend to equate literacy with basic skills result in a view of literacy as meaning 'illiteracy', an anomaly pointed out in the research literature in times when to be fully literate is even more crucial than ever before.

Definitions of adult literacy and numeracy in vocational education and training (VET) have been reviewed in this chapter. They have explained a little of the historical context and provided an introduction to themes for the next chapter. In the themes reviewed so far the elements present in all manifestations of policy, practice and research of literacy and numeracy in VET are to be found.

The section that follows extends the review to cover the literature under the headings of Policy, Practice and Research. For each of these, consideration is given to covering any literature associated with literacy and numeracy in VET as it applies to workplaces, to adult and vocational education and training purposes, and to civic and social purposes. The integration of VET across all these sectors is also considered, since VET is not confined to one group of people or organisations in society.





# policy, practice and research in VET

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## introduction

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This chapter extends the review began in the last chapter concerning literacy and numeracy in VET. It begins with the three main approaches to literacy and numeracy found in the policy, practice and research in VET. The review of the three themes draws mainly on work from Australia, supplemented by international checks and comparisons. Portions of the discussion are based on Christie et al. (1991), and Freebody et al. (1993, pp.28–36). The chapter then describes the literature associated with policy, practice and research. It then moves to literature that examines the integration of the most successful elements of the three approaches to literacy and numeracy in VET, expands somewhat on the dimension of numeracy, and concludes with a section that brings together some of the common themes from the literature.

All literature associated with adult literacy and numeracy in VET therefore draws upon, and can be understood through, three main pre-existing groups of literature about approaches to literacy and numeracy: the basic skills approaches, the growth and heritage approaches, and the critical-cultural approaches.

## three approaches to literacy and numeracy in VET

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The field of VET has consolidated only over the last three decades. All literature associated with adult literacy and numeracy in VET therefore draws upon, and can be understood through, three main pre-existing groups of literature about approaches

to literacy and numeracy: the basic skills approaches, the growth and heritage approaches, and the critical-cultural approaches.

### 'basic skills' as human capital

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In this century, the skills approach to literacy education in English language countries can be traced from the behaviouristic work of Tyler (1949) and Bloom (1956). Drawing largely on psychological traditions of theory and research design (for example, Skinner 1953), the basic skills approach views reading and writing as perceptual and/or cognitive skills. This is in evidence in earlier works, for example, Gough (1972) and LaBerge and Samuels (1976). The result has been an emphasis on how sight word recognition and phonics (decoding and encoding skill and fluency based on linguistic sound patterns) affect the acquisition of literacy.

While in earlier decades the idea of basic skills was related solely to schooling, there then emerged a body of literature linking these so-called 'basic skills' of human capital theory with the supposed benefits of education in basic skills to industry and the economy. Hence the connection with vocational education and training. From the recession of 1973, there was a move from the mass production and mass consumption of Taylorism and Fordism to the 'flexible accumulation' (Harvey 1989, p.147) of capital. In a context of changed labour processes, international shifts of production, capital and commercialism, as well as increasingly fast technologies of communication, Australia could no longer claim shelter from these global influences.

The then Commonwealth Minister for Employment, Education and Training, John Dawkins (1988), foresaw the implications for Australia. He linked economic success to a dependence on '... the conceptual, creative and technical skills of the workforce, the ability to innovate and be entrepreneurial' (p.6) and from there to the need for enhanced education and training: '... education facilitates adaptability, making it easier for individuals to learn skills related to their intended profession' (Dawkins 1987, p.1). The training reform agenda was established by Dawkins to support these measures, and with it the *Training guarantee act* of 1990 which forced business and industry to spend a percentage of their payroll on training or pay the equivalent in tax. Industry training became a growth industry as a result, and industry training literature proliferated (for example, Donaldson & Scannel 1986; Heron 1989; Falk & McEwan 1990; Kroehnert 1990; Morton 1990). Industry training and TAFE training, previously seen as distinct from each other, now began to merge into the single new field called vocational education and training, a merging that has by no means been completed.

The linking of productivity and education and training by Dawkins was, then, '... characterised by a compatibility between human capital theory and arguments for market reform of education' (Marginson 1993, p.50), which saw characteristics such as innovation and entrepreneurialism assist in a 'freeing up' of the educational offering and a view of education as being a tool of economic change. Education was also seen as being the implementer of technological innovation. Literacy and numeracy 'basic skills', therefore, became a fundamental prerequisite for the more advanced educational attainments required for a strong economy. The link was made in education and training policy, and therefore in VET, that literacy and numeracy skills needed to be addressed as a human capital issue.

It was also Dawkins in the *Australian language and literacy policy* (DEET 1991), who documented in policy the links between economic productivity and literacy, with literacy viewed as a set of basic skills which were foundational to other educational practices. Such a move, in conjunction with the additional focus on literacy and numeracy provided by International Literacy Year and the accompanying pressure exerted by lobby groups such as the Australian Council for Adult Literacy, saw the matter of adult literacy move, as Wickert (1993) puts it, from '... margin to centre stage' (p.29). The centre stage, however, was an economic one, and the shift from margin to centre stage created, Wickert continues to argue, '... a shift from framing literacy in terms [of] an individual problem, to framing literacy as the variable on which the success of the government skill formation agenda depends' (p.36).

Internationally, Fuller, Edwards and Gorman (1987) provide empirical research concerning the relationship between literacy and economic growth. They report on a study spanning the period 1900 to 1940 in Mexico during a period of early commercial expansion within agrarian and manufacturing sectors. They examine closely the theoretical debate about the links between literacy and economic growth. They also examine in detail the question of these possible relationships in regard to notions of causal assumptions in the case of human capital theories, or of factors which relate literacy as a structural reinforcement which in fact follows economic growth rather than causing it. The conclusions of Fuller, Edwards and Gorman are that '... literacy can play a role in boosting growth during a nation's early period of commercial expansion' (p.338), but that those effects were limited not only by the restriction of the effect to the early period. The further conclusion was that, '... the resulting gains in economic productivity were realized only by urban residents involved in high, value-added, manufacturing enterprise' (p.338).

They also found that this effect ‘... may occur only within urban centres of manufacture and trade’ (p.338), and then only under certain conditions:

*In effect, literacy helped to reinforce the position of those towns and individuals involved with manufacturing, notwithstanding some degree of mobility for industrial workers. (Fuller, Edwards & Gorman 1987, p.338)*

However, the human capital view of people as units of capital assumes connections between education, work and earnings, although many claim that ‘... the core assumptions of the human capital theory have never been grounded empirically’ (Marginson 1993, p.31). It is in this broad ‘economic’ context that the links between literacy and numeracy on the one hand, and VET on the other, have developed, as a significant case in governments’ agenda for economic change, and in the social changes which inevitably follow economic change.

In other words, as Luke (1992) also concludes, ‘... there is little correlation between literacy and economic growth’ (p.7) if applied to the whole of a particular society. Therefore, as a ‘... relatively new use of education and of literacy skills’ (Gowen 1992, p.13), any causal relationship between literacy, education and work is questionable when measured across a particular society. This is, however, not to say that literacy and numeracy are not productivity issues for individual enterprises.

#### adult literacy and numeracy

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The specific parts of the field of adult education that support and draw upon the basic skills theoretical perspective are found in the VET literature dating from, for example, the Kangan report (1974). The identification of adult literacy and basic education occurred there in a number of places. It is a reinforcement of the formulation of literacy as a handicap or deficit, as a remedial issue, and it is aligned with the basic skills approach, especially that referred to as being allied with special education, derived from the compulsory age schooling sector.

With regard to the field of practice of adult literacy and numeracy, it is notable that the vast majority of published skills approaches to literacy acquisition involve children. Comparatively few have addressed adult learners in their first language. One of the latter studies (Johnston 1985) reports interviews with adults who had English as their first language and who had completed school, but who were attending beginning reading classes. Johnston finds that many of these people report having had, as children, what he terms ‘misconceptions’ about the nature of reading, specifically that they were not aware of the need to decode by attending to the alphabet.

Gowen (1992) describes the workplace literacy ‘functional context approach’ as:

*... a model well-suited to industrial modes of production because it is driven by the same set of behavioristic assumptions about knowledge that separate skills into discrete categories and emphasize the linearity and hierarchy of tasks involved in production. (p.17)*

In the UK, Mace (1992) reviews a variety of approaches developed for workplace literacy provision in that country. She notes that it began with the ‘... Basic Skills Project in 1978’ (p.121), which later became the Workbase project, whose names encapsulate the literacy skills approach of that provision, and equate it with the functional context approaches which were developing in the USA at that time.

### workplace literacy

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In Australia, the situation evident in the USA and the UK was repeated, with the strong association of the basic skills approach with that of functional context. Workplace literacy has also become a major issue, beginning with the industrial awareness programs associated with International Literacy Year in 1989–1990. These earlier programs also coincided with the Commonwealth Government’s economic agenda for education (Dawkins 1987, 1988) and the ensuing ‘seed’ funding through the *Australian language and literacy policy* of 1991, and administered centrally. One arm of the administration of these funds is the Workplace English Language and Literacy program. This program combines English provision in workplaces for two traditionally separate student groups: those of English-speaking backgrounds, and those whose first language is not English.

O’Connor (1993) confirms the accentuation of the skills approach in his critical social history of workplace literacy in Australia. He notes the existence of ‘... widely divergent approaches’ (p.195) to its provision. He argues that these divergent approaches include those embracing:

*... written and spoken language skills, maths, reading and comprehension, interpersonal skills, communication and problem solving, required in the effective performance of occupational tasks and functions and enabling participation in workplace and social processes. (p.196)*

O’Connor concludes, however, that more limited programs such as functional context approaches ‘... fail to acknowledge workers as anything more than workers’ (p.196).

The basic skills approach is located in the socio-cultural and political history of education and training in at least the three countries referred to so far. Both the duration of the occurrence as well as the depth of its penetration into educational, political and economic institutions suggest that the discourses associated with basic skills will be tenacious. The next group of educational ideologies to be discussed is the 'growth and heritage', or 'whole language approach'.

#### the growth and heritage approach: 'whole language'

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The whole language approaches are, Gowen (1992) explains:

*... in direct contrast to industrial models of learning, which rest on the assumption ... that learning takes place when a student moves from the part—the discrete, isolated skills of literacy—to the whole. (p.17)*

From traditional perspectives, 'whole language' (Edelsky 1991) is a significant component of the growth and heritage approach, but has been a difficult term to define. It means different things to different proponents:

*The primary principles of whole language are that learners are actively constructing meaning the whole time, not just passively absorbing information; and that this language learning takes place in a coherent, sensible, predictable, purposeful environment in which coherent, sensible, predictable, purposeful language is being used—not practiced—both with and in front of the learner ... That is, whole language intends reading and writing to be seen by students as useful and relevant—as both possible to acquire and worth acquiring. (p.130)*

This approach also includes pedagogies called by names such as 'needs-based', 'student-centred', 'language experience', 'psycholinguistic', 'growth', 'development' and 'process', early expressions of which are Goodman (1967) and Dixon (1967). Christie et al. (1991), and Freebody et al. (1993) call this approach the 'growth and heritage approach' (Freebody et al. 1993, pp.30–3). This approach focusses on the processes by which literacy acquisition occurs as part of the social context in which it occurs. Here, the emphasis is not so much on the text or the product but on the relationship between comprehension, sight words, grapho-phonetic cues and the context in which these are used.

In the United States workplace literacy context, Gowen (1992) refers to the 'worker-centred approach' (p.17), which is informed, she argues, by theories of whole language and participatory education. She cites Freire and Macedo (1987), Goodman, Goodman and Hood (1989), and Soifer et al. (1990) in support of her assertion. The characteristics of whole language she describes are in keeping with

those attributes already outlined, and include learner control of the learning process, literacy which is ‘... grounded in the cultural identity of the individual’ (p.17), and the idea that learners learn best when they move from the ‘whole’ aspect of ‘their’ expressed language to the part, where ‘part’ equates with Goodman’s (1967) grapho-phonetic and syntactic codes.

Whole language characteristics are similar to those described as being central to the ACE sector, exemplified in the Aulich (1991) report. The whole language characteristics are present in that report, but so are some other elements, for example, the reference to social processes, empowerment and social action. Such characteristics are in keeping with the theorisation of literacy as a ‘critical-cultural approach’, and it is this group of theories to which the review now turns.

### the critical-cultural approach

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This approach to literacy, and more recently numeracy education, is the most recent. In its theoretical orientation, it has drawn substantially on critical social theories, text and discourse studies, and ethnographic research methods as used in cross-cultural studies such as anthropology. The critical-cultural approach to literacy education is reflected in the work of, for example, Street (1993). Street notes that research into literacy education previously emphasised cognition, citing as an example of this a preoccupation with ‘... “problems” of acquisition and how to “remediate” learners with reading and writing difficulties’ (p.1), but he argues that the focus has changed:

*... toward broader considerations of literacy as social practice and in cross-cultural perspective. Within this framework an important shift has been the rejection by many writers of the dominant view of literacy as a ‘neutral’, technical skill, and the conceptualisation of literacy instead as an ideological practice, implicated in power relations and embedded in specific cultural meanings and practices. (p.1)*

Kress (1993) has described the characteristics of critical literacy. Critical theories, as a general banner, are utilised in the critical-cultural approach in specific forms, such as feminist theories, theories about social class and education, and theories about ethnicity. Kress points out how the selective traditions of literate practices enact favoured positions. Modern theories and methods in the field of linguistics have had a major impact on critical-cultural approaches to literacy education, especially in Australia. This work stems from studies of systemic functional linguistics—an approach most closely associated with the work of Michael Halliday and his colleagues, which views language as a strategic, meaning-making resource, and which focusses on the analysis of authentic, everyday texts

(Halliday 1994; Eggins 1994). A distinctive approach to critical linguistics in literacy education and ESL has been developed (for example, Martin 1985, 1991; Hasan 1989; Christie 1990; Halliday 1992), which is typified in Christie et al. (1991).

Text and discourse studies have an additional effect on literacy education through their attention to the functions of culturally and situationally embedded texts. The argument is that there are certain textual forms that are more effective than others to achieve certain purposes in a society at a particular time. Education should provide people with the means to control these powerful public texts.

It has been noted that anthropologists and cross-culturalists of literacy have contributed to critical-cultural approaches. Street's work (1984), for example, has reported research into literate practices in various Middle Eastern sub-cultures. Through his documentation of the range of distinct ways in which literate practices are embedded in various social structures, Street goes on to criticise what he calls the 'autonomous' models of literacy. This model, he argues, has as its assumption the homogeneity of literacy, and the perception of it as being somehow a 'separate' parcel of transferable skills that exist in isolation from the social contexts in which those skills are to be used. Instead, Street argues for an 'ideological' model of literacy, where literate practices are embedded in various social activities. It follows that the literate activities cannot be understood 'autonomously' from the social practices in which they are socially and 'ideologically' embedded.

Heath (1983) has also reported an extensive ethnography of working-class black communities in the central United States. Freebody et al. (1993) note that Heath '... has documented qualitatively distinct approaches to literacy, and to language use, in and out of school contexts, in those communities' (p.34). This cross-cultural, anthropological orientation emphasises the class- and ethnicity-based presumptions that underlie approaches such as found in the 'whole language' model earlier discussed, as well as allowing literacy educators '... to see the ways in which language usages in their privileged forms—written down and institutionalized—work in contexts in which there are contests about class, gender, ethnicity and generation' (p.34).

Hassanpour's (1993) work on Kurdish literacy provides an example of such contestation. Hassanpour concludes that the Kurds have maintained their racial identity partly by circulating Kurdish written materials, in spite of the efforts of Iran, Iraq, Turkey and Armenia to marginalise the Kurdish language and Kurdish literacy. The effect has been, it is claimed, to preserve the language in its written form. This has contributed over time to the Kurdish people's development of their particular political and cultural identity.



Freebody et al. (1993) describe the ambiguity in the critical-cultural approach for literacy educators:

*Educators working from a critical-cultural perspective have pointed to the ambiguous effects, both personal and cultural, of literacy acquisition. Literacy has the power to enhance a community's well being, as well as the power to homogenize cultures, to emphasize and even to justify marginality for some groups. It is now the case that there is no such thing as a strictly monolingual society; so there is thus a need to be constantly vigilant about the effects of adopting various literate strategies in educating youth and adults. In the case of, for example, some Australian Aboriginal and Islander societies, some forms of literacy education have played a part in killing off dialects and language groups. (p.35)*

Sachs (1992) has documented that, of the approximately five thousand spoken languages in the world currently, only a small percentage will survive for fifty years more if the process of cultural 'colonisation' continues through educational and language homogenisation. Moreover, European-style schooling is transmitted in the literacy-based, standardised education systems adopted increasingly by the poorer countries, which will in turn be those most affected (Olson 1977).

Critical-cultural theory is represented in adult education and workplace literacy and numeracy, although the practical manifestations are apparently not as prevalent as other approaches (for example, Mace 1992). Gowen (1992) in the United States concludes that the functional context and basic skills approaches to workplace literacy and numeracy were not sufficient. The problems she found were critical-cultural theory-related characteristics of class, gender, ethnicity and generation. She concludes that functional and skills workplace literacy overlooks:

*... the social and political contexts of the lives of entry-level workers and interprets their behaviors as signs of poor literacy and problem solving skills. This, in turn, serves to both justify and perpetuate their positions as entry-level workers. Poor literacy skills are seen as threatening to the workplace and a detriment to the economic and social well-being of the country. Entry-level workers are characterized as confused, incapable of problem solving, parenting or performing with competence on the job. The ways that these women and men actually do live in the world belie these myths. It appears, however, that the agenda for [workplace] literacy training may not be to increase literacy skills but to alter behavior to more closely match mainstream culture. (pp.131–2)*

Finally, in Australia, O'Connor (1993) concludes that:

*... education activists will need to clarify their perspectives of workplace basic education, and will need to take a much larger role in the education and*

*training debates in order to meet worker's [sic] needs and requirements adequately, to include equality of opportunity and social justice considerations, and to be conscious of these in their own practice. (p.204)*

That is, there is a need for a more critical view of workplace literacy and numeracy practice in those Western countries where this phenomenon is in current practice.

## **policy in relation to literacy and numeracy in VET**

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The relationship between poor literacy skills and economic and social characteristics is well-documented and has strong policy support. People having lower literacy skills, as defined in these studies, are more likely to be unemployed, work part time and have lower incomes (Wickert & Kevin 1995; ABS 1997). Literacy is also an important factor for determining health: lower literacy skills can be a significant barrier to a healthy lifestyle (Freebody & Freiberg 1997; Roberts & Fawcett 1998). The relationship between literacy and the socio-economic environment has consequences for public policy.

In 1991 the *Australian language and literacy policy* (Dawkins 1991) was adopted, attempting among other things to co-ordinate the various Commonwealth programs which had literacy components. The major increase in funding occurred in relation to the Labor Government's labour market initiatives, most of which were to be subject to tender (Wickert 1998a). Other sources of funding for adult literacy and numeracy came from ANTA and DEETYA's Workplace English Language and Literacy Program.

Wickert (1998a) summarised the policy changes that took place in the area of adult literacy and numeracy in the decade, arguing that pressures for greater accountability were positively responded to by the profession, which had resulted in the development of the *National Collaborative Adult English Language and Literacy Strategy* (ALIO 1993).

The *National framework for adult language, literacy and numeracy competence* (Australian Committee for Training Curriculum 1993) was developed as a common point of reference for the identification, recognition and development of language, literacy and numeracy competence, based on the principle that literacy, language and numeracy are central elements of competence for work and social activity, and that they are best taught, learned and assessed through activities in social contexts. It was intended to guide and inform the development and review of more specific programs for learning in English language, literacy and numeracy. It

operates as a nationally consistent reference point for individual progress, the recognition of prior learning, for program planning, for professional development, for industry training and for research and evaluation (Highet et al. 1994).

The *National framework for professional development of adult literacy and basic education* (TAFE National Staff Development Committee 1994) and the *National reporting system: A mechanism for reporting adult English language, literacy and numeracy indicators of performance* (Coates et al. 1995) were further initiatives arising from collaboration with the adult literacy and numeracy profession (Wickert 1998a, 1998b). The National Reporting System (NRS) was developed to identify language, literacy and numeracy competencies in industry training, and to measure language and literacy skills (Coates et al. 1995; Watts & Smith 1999).

Following the 1996 Federal election, the new Coalition government's dissatisfaction with the labour market literacy training programs and the Special Intervention Programs led to their discontinuation, with the loss of much associated funding to the adult literacy and numeracy field (Wickert 1998a), although ANTA funds and the WELL program remained. The tendering out of ESL programs, the privatisation of the Commonwealth Employment Service (CES) functions and the establishment of a network of private job placement agencies impacted on adult literacy and numeracy provision (Sanguinetti 1998), which Wickert (1998b) described as 'fragmented ... [with] casualised teaching [and] disappearing infrastructure and professional support' (p.62).

A new program followed the 1997 report of a survey of adult literacy in Australia: *Aspects of Literacy* (ABS 1997). The Commonwealth government's perspective on barriers to employment has shifted assistance to an individual, rather than a social focus, with an emphasis on individual responsibility and 'mutual obligation' whereby job seekers have an obligation to seek employment in return for training paid for from the public purse.

#### in workplaces

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Language and literacy training programs have occurred as both integrated and stand-alone provision in Australian workplaces since the early 1970s, but were initially focussed on improving the English language skills of non-English-speaking background workers (DEETYA 1996). Research during the International Literacy Year (1990), which found that one in ten of all adult Australians had some form of literacy difficulty (DEETYA 1996), directed a policy change which shifted the focus of workplace programs to encompass all workers. The Department of Employment,

Education, Training and Youth Affairs' 1996 research project to assess the impact of ESL and literacy training in the Australian workplace recommended that funding bodies, training providers, government agencies, industry bodies, and trade unions promote, as best practice models, those workplace language and literacy training programs where language and literacy skills are fully integrated into workplace training programs (DEETYA 1996). Further recommendations were:

*... that funding bodies seek to ensure that stand-alone 'general English' or 'generic, work-related' language and literacy training programs or courses are not promoted as a best-practice model [and] that all policy-making and funding bodies address and promote, throughout the Vocational Education and Training sector and in their dealings with industry, the notions that ... language and literacy is a key element in all training situations; [that] the language and literacy skills required of participants for successful participation in workplace training programs need to be made explicit and addressed as part of the program; and ... those language and literacy skills required of participants in the performance of tasks in the workplace on completion of workplace training programs should also be made explicit and addressed as part of the program. (DEETYA 1996, pp.13,14)*

Incorporating language and literacy competencies into industry and enterprise standards was seen to be essential in making literacy training more likely to be delivered, and in making that training more likely to be tailored specifically for the needs of the workplace (Gibb, Keenan & Solomon 1996). A number of studies of the effects of the subsequent inclusion of literacy and numeracy in industry standards in training packages have since been initiated by ANTA and DETYA, including research by the Adult Literacy and Numeracy Australian Research Consortium (ALNARC). Findings to date indicate a variability of outcomes, with some lack of clarity of specific literacy and numeracy requirements as part of competency-based learning in some training packages, and a tendency of some trainers to overlook literacy and numeracy as underpinning skills because of lack of knowledge and expertise on their part, compounded by a lack of resources to articulate literacy and numeracy requirements of training packages (Haines & Bickmore-Brand 2000; Kelly & Searle 2000; McGuirk 2000; Millar & Falk 2000; Sanguinetti 2000; Trenerry 2000).

in adult and vocational education and training

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The present trend of the Federal government and State governments is to place a high priority on vocational education and training programs in post-compulsory schooling (Courtenay 1994; DEETYA 1996; Gibb, Keenan & Solomon 1996; Lo Bianco & Freebody 1997; Wickert 1998a, 1998b). This has resulted in a primary

concern with the stand-alone provision of literacy and numeracy in classes and training rooms, whether in workplaces, TAFE institutes or community providers.

The adult literacy and numeracy teaching profession, responding to the demands of the dual thrust of restructuring in the interests of the delivery of a more competitive labour force, and restructuring in the interests of efficient management of public resources, evinced concerns about having surrendered control of its sector of education to 'new technologies' or techniques of public management (Wickert 1998a).

*Drawing here on Foucault's terms, we find ourselves 'governed' by these 'technologies' simply in order to continue to have a place in the determinedly industry-driven (as opposed to provider-driven) and market-driven agendas of the new federal government ... Adult literacy, in order to maintain funding, has had to become part of mainstream VET provision. (Wickert 1998a)*

Prioritising the significance of literacy and numeracy to economic reform has been necessary to secure Commonwealth funding. In line with this, the adult literacy profession has developed a national reporting system 'within a ... framework of outcome purchase' (Wickert 1998a), and tendered for program funds. It has also developed competency-based curriculum frameworks so as to get curriculum accredited according to the principles established through the reform agenda, and in order to be eligible to tender for labour market program funds. It has argued for and developed models for the integration of language and literacy into occupational competency standards and into mainstream vocational training, and developed draft teacher competencies (Wickert 1998a).

The benefits and disadvantages of the disciplining of adult literacy to the needs of economic forces continue to be debated. Lo Bianco and Freebody (1997) questioned whether adult literacy is tractable to the demands of corporate managerialism. An economic and labour market orientation for adult literacy and numeracy may not be relevant to many potential students. Equity issues arise from eligibility requirements for literacy assistance linked around a concept of capacity to benefit that is tied to job readiness (Wickert 1998a). Luke (1998) argues that the relationships between literacy, work and education are more complex than commonsense correlations between rates of literacy, rates of employment and economic competitiveness tend to indicate.

The emphasis on outcomes of employment and productivity also means that work opportunities for literacy teachers are changing. The prospect of having a career as a teacher or trainer in this field is fast disappearing (Wickert 1998a), and

adult literacy professionals may instead be found as case managers, industry trainers, and assessors and consultants to industry training advisory boards, enterprises and trainers.

#### in civic, community and social activities

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Literacy and numeracy provision for VET occurs in policy contexts related to civic and community settings, as stand-alone classes or one-on-one tutoring. The main thrust of volunteer tutoring in adult literacy and numeracy is vocational, for entry to the armed services, progression through vocations, and for job-related skills in general. There are numerous practical guides for adult literacy and numeracy teachers in this area, available through resource groups such as the Adult Literacy Information Office, or ALIO (NSW), and the Adult Education Resource and Information Service (ARIS) managed from Language Australia Ltd in Victoria. A great deal of literacy and numeracy learning occurs through the NSW Community College network. Each State and Territory has its own policy response and structure to manage literacy and numeracy learning.

Literature in this category includes Moraitis and McCormack (1995) and some work by Millar (1991), and Millar, Morphet and Saddington (1986). This existing work describes a broader adult literacy and basic education using a more critical-cultural approach. The authors use the development of understandings about society and the way it works to help adult literacy and basic education (ALBE) students understand the influences that are brought to bear on them.

During the period 1990 to 1999, adult literacy became increasingly linked with the problem of unemployment, and with various interventionist strategies on the part of the Commonwealth government to deal with it. Recognition of the social consequences of unemployment, involving financial implications, health effects and social cohesion (Committee on Employment Opportunities 1993), led to the Commonwealth government's active employment strategy in 1991, with its program of interviews of unemployed people and assessments for skills and training considered to be necessary for their eventual employment (DEET 1992). With this policy strategy came a concept of reciprocal obligation:

*... if the Government is providing income support, labour market programs and other services, it is only fair that clients take up any reasonable offer of assistance and do whatever they can to improve their employment prospects ... To reinforce this, the CES has been given authority to cancel Jobsearch and Newstart allowances if clients breach their reciprocal obligations. (DEET 1992, pp.17–18)*

Drawing on the claims of the Australian language and literacy policy, that:

*... there is a strong and well-demonstrated relationship between low levels of literacy or English language competence and high levels of unemployment and other forms of social disadvantage ...* (Dawkins 1991, p.1)

Literacy programs emerged as part of the context of the active employment strategy, and in this way came to be seen as playing an integral economic role in developing a more productive culture in which Australia could become more internationally competitive. Under the Coalition government from 1996, this evolved into the concept of mutual obligation, which requires the unemployed to undertake work or training and education in return for 'the dole'. The prevailing discourse of literacy programs for the unemployed was criticised as involving 'perspectives of corporate federalism ... [and] human capital' (Black 1995, p.8), which left the unemployed vulnerable to manipulation in the interests of broader socio-political concerns (Black 1995; Cambourne 1997; Freebody 1998; Wickert 1998a).

## practice

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Literacy and numeracy provision for VET occurs in practice as stand-alone classes and/or one-on-one tutoring. The major activities in these settings, including that of volunteer tutoring in adult literacy and numeracy is vocational, for entry to the armed services, progression through vocations and for job-related skills in general (Brennan, Clark & Dymock 1989; Falk 1991).

Significant and multiple implications for practice, including literacy practice, have emerged from forces for change such as globalisation and technological advancement. The barriers between traditional sectors of adult and community education and vocational education and training have in many ways disappeared, with important consequences for the way practitioners carry out their work. Cameron and Howell (1994) documented the value of ESL and ALBE teachers working together. Of wider potential significance is 'the bringing together of the two largest sectors, known by different names but commonly Adult and Community Education (ACE) and VET' (Falk 1999a, p.713). Where the term 'vocation' had been previously contextualised in the VET sector of practice, economic and social pressures, particularly in regional Australia, have led to an increased merging of VET with adult education services. This merging is paralleled by active learning communities of what Falk (1999a) calls 'people busy at the task of creating their own sustainable futures and social capital, and hence sustainable vocations' (pp.714–15). Such a new and emerging kind of VET requires a more flexible and needs-based resourcing base (Centre for Research and Learning in Regional Australia 2000).

In other ways, however, barriers and segmentation remain. The Australian Council of Adult Literacy's Brisbane forum in 1999 noted a number of resulting issues. To counter a perceived lack of cohesive planning between Commonwealth, States and Territories, the Forum recommended that the Commonwealth government initiate a national strategy for co-ordinating literacy and numeracy provision between Commonwealth, States and Territories. The forum's perception of a lack of active collaboration in development of programs and inadequate communication between DETYA staff, Centrelink, and literacy and numeracy program providers, led to a recommendation that DETYA develop a process of regular consultation with all providers, and fund an independent evaluation of the Language and Literacy Program, with input from all stakeholders (ACAL 1999a).

### professional development

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As noted in the previous section under 'policy', there are numerous practical guides for adult literacy and numeracy teachers in this area, available through resource groups such as the Adult Literacy Information Office, or ALIO (NSW), and the ARIS office managed from Language Australia Ltd in Victoria. A few include Marr, Helme and Tout (1991), Marr and Helme (1992, 1994), Jones (1994), Coates et al. (1995), Branson and Wyatt (1995), Fitzpatrick and Roberts (1997) and Lohrey (1998). Such a list does not, however, do justice to the wide range of professional development packages and learner materials that have been developed and are available in Australia. In addition, there are professional groups such as the Australian Council for Adult Literacy (ACAL) which provide support for practitioners through publications and websites. ACAL is a national body with affiliated State-based associations. There is also an 1800 phone number and associated media education campaign for members of the public to access assistance in referral for literacy and numeracy learning.

Professional development literature is less extensive on the subject of integrated literacy and numeracy learning. D'Agostino et al. (1995) reported on the professional development needs of curriculum writers, industry trainers and vocational teachers in relation to the development of language, literacy and numeracy competence in vocational education and training. They noted a paucity of well-documented, formal professional development programs and a lack of awareness about existing training packages and professional development options. Their recommendations included a resource to disseminate information about professional development to all three groups, and national forums to promote good practice in the integration of language, literacy and numeracy competence into vocational education and training. The late



1990s witnessed a growth of awareness and skills about the issue of integrated literacy and numeracy skills in training package requirements (Fitzpatrick & Roberts 1997; Wignall 1998), but research (Gillis et al. 1998; Griffin et al. 1998; Gillis et al. 1999) indicates that there is less awareness of the issues on the part of industry and training providers.

The area of assessment has become highly important in the adult literacy and numeracy sector, with systems such as the National Reporting System requiring significant and demanding attention from practitioners and policy-makers (Cumming & van Kraayenord 1996). Part-time teachers may have fewer opportunities for professional development in assessment than those in full-time work (Doherty, Mangubhai & Shearer 1996). Improving practice and the understanding of teachers' roles in undertaking assessment has been the focus of some research (for example, Bailey et al. 1996; Kelly 1996; Hodson 1999; Watts & Smith 1999), but there is a need for professional development focussing on assessment in training package contexts.

#### literacy and numeracy practice in VET

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The Department of Employment, Education, Training and Youth Affairs' research project *More than money can say: The impact of ESL and literacy training in the Australian workplace* (1996) lists a number of areas where workplace language, literacy and numeracy training programs produced beneficial outcomes involving communicative practices in the workplace (DEETYA 1996). Provision occurs primarily through stand-alone training, although there is an increasing move to integrated approaches to literacy and numeracy provision in workplace VET.

The literature in this category is accumulating as researchers examine the effects of the transition of adult literacy and numeracy practice in workplaces resulting from significant policy changes. Newcombe (1994) considers issues frequently arising in workplace basic education in a report charting the development and history of a Workplace Basic Education Project which began in 1984. Serle (1995) investigated literacy and numeracy demands of work in the forest industries, identifying current literacy and numeracy skills of the workforce and areas in which improvement was needed, and developing a strategy plan and recommendations to help the industry achieve an improved occupational health and safety record and greater productivity.

Beginning in 1999, the Adult Literacy and Numeracy Australian Research Consortium (ALNARC) investigated the impact on practice and workplace of

inclusion of literacy and numeracy in industry standards via training packages (Haines & Bickmore-Brand 2000; Kelly & Searle 2000; McGuirk 2000; Millar & Falk 2000a; Sanguinetti 2000; Trenerry 2000). Further data-gathering and analysis of outcomes in relation to literacy in training packages continues via ALNARC in 2000, including an investigation of the role of Workplace English Language and Literacy programs in supporting provision for literacy and numeracy in training packages.

Governments throughout the 1990s consistently implemented a policy of opening up provision of education and training to a wider set of providers with the intention of offering more choice to the user (ACAL 1999b). The Australian Council for Adult Literacy has expressed concern that there may be insufficient checks in place to ensure quality literacy and numeracy provision, and has advocated the urgent development of strategies for the continuing upgrading of the skills and knowledge of language, literacy and numeracy teachers and VET teachers and trainers (ACAL 1999b).

The literature in this category includes a growing number of microcosmic studies. A 1994 NSW TAFE discussion paper on issues affecting contemporary language, literacy and numeracy provision in relation to vocational education and training offered examples of the application of a range of integration strategies (Courtenay 1994). McGuirk and Wickert (1997) produced a small-scale, local, longitudinal study of the literacy development of ESB and NESB adults, which offers information about teaching and learning in curriculum contexts.

Cumming et al. (1997) examine issues related to the use of the National Reporting System across a range of providers, learning contexts and purposes nationally. The project found that the NRS provides a valid reporting framework across a range of sectors, contexts and learners, and outcomes included recommendations for the modification and use of the NRS in areas of reporting, curriculum development and review, professional development and future research.

ALNARC has provided a national focus on practice and adult and vocational education and training in its collaborative State-based research in 1999. In 2000 the research includes investigation into strategies that registered training organisations use to provide and accommodate literacy and numeracy support in delivering training to their clients, as well as a project that developed a professional development package for assisting practitioners to implement integrated literacy and numeracy in training packages.

## literacy practice in civic, community and social activity

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'Literacy teaching is always first and foremost a social practice, one that is constrained and enabled by the changing economies and politics of schooling and communities' (Luke 1998). Connections between characteristics of communities and literacy practices have implications for literacy educators which are not always recognised in practice. Literacy and numeracy provision occurs in this area mainly as stand-alone classes or small groups. The ways that literacies are shaped produce uneven benefits for particular communities, and outcomes of literacy teaching favour already advantaged groups in those communities. People with access to fewer literacy practices may appear to be less literate than might be expected, and a fair measure of levels of literacy may only be derived by supplementing results of a testing program with a sociocultural mapping of community literacies and literacy practices (Luke 1998; Anstey & Bull 1999).

The concept of participation in adult literacy and numeracy development becomes increasingly complex as researchers attempt to represent the many multi-dimensional influences on participation, which includes but are not limited to, literacy instruction (Wikelund, Reder & Hart-Landsberg 1992). Characteristics of people whose performance ranked them in the lowest 25 per cent of literacy and numeracy ability were analysed by Wickert and Kevin (1995).

## research

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Literacy research has the potential to impact on every section of teaching, training and research and on society as a whole. Australian language and literacy research makes a major contribution to the international body of knowledge in this area.

The first comprehensive survey of adult literacy in Australia was Wickert's 1989 report, updated and finalised in 1995 (Wickert & Kevin 1995). An initiative funded under the *National Policy on Languages* (Lo Bianco 1987) Adult Literacy Action Campaign, the report found that the greatest literacy problems were to be found in two segments of the population: in those who had attended school for fewer than six years, and in people older than sixty (Wickert 1989; Wickert & Kevin 1995). Overall the survey found that the great majority of Australian adults were able to perform straightforward literacy tasks, but that many—approximately one million—were unable to complete tasks of moderate complexity. In 1990, the International Year of Literacy, this figure was featured prominently (Lo Bianco & Freebody 1997). Ten per cent of Wickert's (1989) survey sample failed to achieve at all on quantitative literacy, or numeracy. The best predictor of literacy performance

was found to be the current level of literacy activity (Wickert 1989; Wickert & Kevin 1995).

The Organisation for Economic Co-operation and Development's International Adult Literacy Survey (OECD 1995) assessed the overall literacy of the adult population in a number of OECD countries and concluded that disturbingly large proportions of these populations lack the skills necessary to function as members of the knowledge society. The report indicates literacy skills are directly related to worker productivity, the economy and quality of life.

Brindley et al. (1996) developed an integrated research strategy document describing the processes for setting priorities and commissioning research, and guidelines for the conduct, management and dissemination of research across a variety of sectors. The range of options available in adult ESL, literacy and numeracy research, and the range of funding types, and how they are distributed, were listed to assist potential researchers. Lo Bianco, Bryant and Baldauf (1997) mapped research in literacy and language and suggested an agenda of research for the next decade.

#### research on literacy and numeracy in workplace VET

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The Department of Employment, Education, Training and Youth Affairs initiated a study from 1995 to 1996 to determine the impact of workplace language and literacy training on key aspects of the workplace in regard to the whole process of workplace change, which emphasised quality in training (DEETYA 1996). More than 500 respondents in over 30 different workplaces representing 13 industries across five States were involved in interviews, questionnaires, and in-depth follow-up research which showed that there had been 'significant gains in productivity, efficiency and economic competitiveness linked directly to workplace English language, literacy and numeracy inclusive training' (DEETYA 1996, p.3). The research project identified and quantified direct cost savings accruing from language and literacy inclusive training in several of the participating workplaces (DEETYA 1996, p.5). It showed a direct correlation between the provision of language and literacy inclusive training and the subsequent successful entry into specific job-skills training programs by workers who would otherwise not have applied for or completed training courses (DEETYA 1996, p.8).

However, the research reported perceptions, not measured productivity gains. These perceptions were that worker participation in teams and meetings is increased by language and literacy inclusive training (DEETYA 1996, p.9). They also indicated quite clearly that language and literacy inclusive training were perceived to have 'a

positive and considerable impact on improving worker flexibility in the workplace' (DEETYA 1996, p.10). The survey produced reports that language and literacy inclusive training has a positive impact on workplace issues such as worker morale, confidence to communicate, and management/shopfloor relations (DEETYA 1996, p.11).

That workers need more than 'basic' literacy skills is evidenced by most research. Hull et al. (1996) argue that 'a literate identity means ... being able ... to dip appropriately and as needed into a wide and deep repertoire of situated ways of using written language and other forms of representation in order to carry out a work-related activity' (p.204). Others advocate concentrating on specificity. A model for incorporating English language and literacy competencies into industry/enterprise standards (Gibb, Keenan & Solomon, 1996) showed how literacy competencies could be incorporated explicitly into industry standards in such a way that a form of language and literacy training specifically tailored for the workplace could be delivered.

Brandon (1998) investigates the extent to which critical literacy is taught within a workplace language and literacy course at a work-site subject to restructuring, and the ways in which critical literacy is taught there. The evidence suggests that the workers undertaking the course gain in self-confidence, and also demonstrate a greater willingness to engage in decision-making and problem-solving processes. The findings imply a link between workers securing control over learning strategies and outcomes, and an observable increase in the magnitude and sophistication of critical literacy capabilities as displayed in critical dialogue.

#### research and adult and vocational education and training

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From 1995 to 1997 the Adult Literacy Research Network Node (ALRN) in Victoria was closely involved in promoting and supporting the use of online technologies by adult literacy teachers and learners. The process of developing this relationship between computing technology and literacy (Bigum & Green 1993; Corbel 1996) raised a number of issues needing to be researched. One of these is the impact of the application of new learning technologies on the practice of literacy teaching. Another is the influence on adult literacy learners of the introduction of new learning technologies. A third concerns the components of new learning technologies that might be most successfully used and integrated with conventional learning (Javed & Wilson 1997).

Colman (1999) finds some barriers to the use of computers in Adult Literacy and Basic Education programs, in that students must first have a certain degree of

computer literacy. However, students cannot acquire this unless they have reading and writing skills. A major limit for distance literacy teaching in rural areas is identified as access to computers. Given the development of rural community-based computer online and access centers, this problem could be being addressed in some measure. However, there are limits to student use of online centres and other public access centres. They offer free training and access in the first year of operation; in the second year centres may have to charge fees. Transport and access costs preclude some students from using them. The major barrier is lack of confidence.

While some students can use access centres without tutor support, the great majority need assistance at least at the outset. Some support would need to be ongoing. The sort of teaching would vary from student to student. However, people are adopting learning online. In Tasmania, in the case of Colman's (1999) research, there are 10 935 registered users of rural access centres. Within 12 months 5774 email accounts were created. This figure does not include email accounts opened by householders through commercial internet access providers. There is an access and equity issue here in that if literacy students are to achieve equity with the rest of society they need access to computers, the internet and related online vocational learning and training.

The limits of literacy provision in this report (Colman 1999) are identified as: inadequate technological infrastructure; inadequate staff development with respect to use and development of new learning technologies; staff shortages; and time and cost constraints. Students can advance learning online, but Colman notes that further research is needed to establish how far students could advance by these means, how much tutor support is needed before students can work independently, what programs they can work independently in, and how much support they need to make use of access centres.

Information and communications technology does lead to a greater range of literacy practices among over-55s in rural centres (Millar & Falk 2000b). There is a relationship between positive outcomes as a result of online interaction and experience of a variety of social practices, including literacy and numeracy aspects.

#### research in civic and social literacy and numeracy in VET

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Work on literacy's importance in everyday community life and its relationship to VET and vocational learning is demonstrated in Falk (1998, 1999a) and Falk and Harrison (1998). This research shows how vocational skills, especially in the small business area, merge with community, public and civic literacies. Informal learning

is, in these latter reports on research, the pathway to vocational learning. Vocational learning is argued to be the most accurate way of describing how people acquire the skills and knowledge for vocational purposes. One of the findings that can be drawn from these studies is that literacy and numeracy in vocational education and training is largely a social construct. At the grass roots level, 'lived literacies' and 'lived vocations' are merged with community life in such a way that they are indistinguishable from each other, and not discrete skills or entities as implied by the practice and policy that enacts them.

Freebody and Freiberg (1997) report research with reference to literacy in vocations in health sciences field. The changes people experience through learning and using new literacies are described in a study by Hamilton, Barton and Ivanic (1994). There is also research by Barton and Hamilton (1998) which documents the literacies of a whole community through a community ethnography. In addition to this work, there is another growing body of research literature that relates literacy to social and civic matters, including education at school level. The latter is most notably occurring in the area of VET in schools where literacy and numeracy are considered very important. Literacy and numeracy in connection with VET-in-Schools programs are discussed in the next section.

There is a small body of work on the importance of social capital in literacy and numeracy (Stanton-Salazar 1995; Falk & Balatti 1999; Falk 1999b). Specifically, literacy is dealt with in Falk (1999b) as a participation-in-VET issue, since the trust and social cohesion of social capital is a requirement for learners to become participants in vocational learning.

### VET-in-Schools programs

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One important aspect of the intersection of literacy, numeracy and VET is the emerging field of VET-in-Schools programs. Senior levels of schooling have traditionally offered literacy and numeracy through stand-alone courses in 'communication' and 'workplace skills', as well as courses for 'low stream' students in what are viewed as 'remedial' English and mathematics.

No specific research is found that is concerned with literacy and numeracy as it relates to VET-in-Schools programs. Policy in this area is strong, and stems from a number of groups and sectors. These include the school education departments of the various States and Territories, the vocational education and training departments, and semi-government bodies such as the Australian Student Traineeship Foundation (ASTF). In terms of practice, it is known that there is considerable concern about the

literacy and numeracy issues in VET-in-Schools programs, while there are only hearsay reports to support this statement. For example, it was reported by a number of practitioners at a recent Adult Literacy Forum (ALNARC Tasmania, 2000) that there is a strong need for research into and resourcing for, all aspects of literacy and numeracy for VET in schools. These reports illustrated the intersection of practices and policies from the schooling and adult learning and training sectors with particular interest in assessment of literacy and numeracy in VET-in-Schools programs.

#### the underemployed and the unemployed

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Scollay (1998), CEO of ANTA, notes the increasing role of VET in assisting achieve social cohesion. Social cohesion is the effectiveness and quality of networks between people. The number of networks to which people belong is not the most critical factor in gaining a vocational placement for the unemployed, but it is the nature of those networks that is important. Two earlier groups of research relate the issue of networks to employment, namely that of Stack (1974) and Granovetter (1973). In each of these cases, it is found that access to employment is enhanced if people have networks outside their immediate circles. These ties are called strong ties and weak ties by Granovetter. He finds that strong ties—those bonds that people use regularly, such as family and neighbourhood interactions—are not as useful for finding employment as the ties that bridge to outside the immediate community, which he calls weak ties. In fact, Gittell and Vidal (1998) differentiate between these two kinds of ties by the terms ‘bonding ties’ and bridging ties’. Stack’s (1974) comprehensive ethnography shows how the lack of ties to sources outside the community results in restricted (among other things) knowledge of vocational employment opportunities.

It is clear from Granovetter’s and Stack’s studies that the business of a simple causal relationship between a more highly skilled population (Dawkins 1988) and skills and greater productivity through increased employment is flawed, posing problems for the impact of human capital by itself, and emphasising the significance on the role of the literacy skills associated with social resources and social capital.

Following the election of the Coalition to government, the (then) Minister for Employment, Education, Training and Youth Affairs (1997), released the ministerial statement, ‘Reforming Employment Assistance’. The document states that,

*The Government has developed a streamlined package of assistance that involves a wide range of assistance to meet the needs of employers and help eligible unemployed people find work. (p.5)*



Changes to the existing training programs for unemployed people who have language, literacy and/or numeracy difficulties are outlined. In particular, the Special Intervention Program (SIP) was scheduled for dismantling in May 1998. This occurred as part of the replacement of the Commonwealth Employment Service (CES) and the Department of Social Security (DSS) with Centrelink, and the tendering-out of the development and delivery of labour exchange service training to private and semi-government enterprises. The training placement co-ordination previously organised centrally by the CES was taken over by the new Private Employment Placement Enterprises (PEPEs) and Employment Placement Enterprises (EPEs), the public equivalent.

### literacy and social policy

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Recent policy on literacy in relation to labour market programs is taken in this report as being from the transition between the Labor government's *Working nation* social welfare policies and the Coalition government's current 'social coalition' approach. *Working nation's* dismantling paved the way for the approach of the ensuing Coalition government's radical changes to those policies, that is called the *social coalition* approach, to use the Prime Minister's own term for his newly forged method of tackling social disadvantage. These two approaches to policy equate to two different views about social welfare, with significant literacy and numeracy implications for each.

The social justice approach assumes that many people need help to get jobs, and that they will be helped to get better jobs if they have some income to assist with this process — the unemployment benefit or dole—and they receive training in skills which will assist them become more attractive in the job market. These skills may involve complex and 'high order' skills associated with professions or trades, and involve a long period of training, tertiary or further education. However, in the case of those who are long-term unemployed, it was found that a large proportion of these people 'suffered' literacy or numeracy problems. The last two terms of the Labor government (from 1992 onwards) resulted in *Working nation*, a comprehensive and articulated set of differentiated provisions of employment-linked training for job-seeking people with literacy and numeracy difficulties.

The then Commonwealth Employment Service acted as a screening agent for eligible job seekers in this category, using a simple literacy and numeracy screening mechanism. Eligible people so screened were then referred to a training provider, often a TAFE institute, for more detailed testing and referral to specific literacy and language training courses. These courses fell into two broad groups—those for

teaching English to speakers of other languages, and those for teaching literacy and numeracy to those for whom English was their mother tongue. Within each of these two broad groupings, there were groups of courses from beginning levels to advanced levels, but all had a job-seeking focus. Even the beginning literacy courses utilised materials and content which was employment and work-related, or taught a range of job-seeking skills.

The second policy approach, the 'social coalition', encourages the unemployed to seek and gain employment, while training and education are treated as secondary tools rather than as a primary focus. Here, government sees its role as providing a free-market environment for job placement. Training is only paid from public funds for the extremely disadvantaged, if all else fails, and not for long periods. 'Work for the dole' has become a reality, with groups such as Green Corps charged with finding useful work for unemployed people to carry out their side of the 'mutual obligation', where the government's obligation is to provide some financial support while the recipient's obligation is to work for it. The Coalition government that took power from the Labor Party from 1996 has introduced a free market approach to employment agencies, dismantling the CES and the DSS in favour of Centrelink and a variety of tendering arrangements for private employment placement providers, reducing its financial support for training to a very small trickle. Lately, the free-market approach has been expanded to embrace the term 'social coalition', focussing on the role of partnerships to help tackle social disadvantage.

There are elements of social capital in both the social justice and the social coalition approaches. Social capital is locked into the Labor Party's education and training policy, while it is the Coalition government's notion of a social coalition that provides the link between literacy and social capital.

The term 'social coalition' has been derived in response to what many see as the government's responsibility for social cohesion (for example, Falk 1999b, p.16), which is a term used in the social capital literature to refer to the reciprocal ties between people that bind a society together (for example, Woolcock 1998). Social capital is also used by both sides of politics in Australia, as evidenced by Labor Party opposition policy for education and training noted during their national conference in Hobart in 1997, and Mr Howard's many references to social capital in his earlier speeches as Prime Minister. However, social capital carries implications for a radical new way of viewing policy, one that Stewart-Weeks (2000) describes as:

*... a profound challenge to the way we have become used to seeing public policy and government operate .... you have to confront the need for*

*profound, systemic change in the methods, structures and values of government ... The social capital logic challenges the balance between government and civil society. (p.285)*

Governments have a record of supporting back-to-basics literacy policy and initiatives. However, the current Prime Minister's policy on the 'social coalition' is one that begins to merge left-right policy strands through the notion of a partnership '... between business, government and welfare organisations aimed at tackling social disadvantage' (Falk 1999b, p.16). It is, however, a policy that is not linked to the literacy policies of the government of the day. Using the concepts of social and human capital, Kemp's policy promotes the basic literacy and numeracy tools of human capital, while the Prime Minister's social coalition overlays basic skills with the principles of social capital.

Underpinning the current policy moves for a social coalition lies the 'mutual obligation' principles. Provision of labour market literacy courses is now tied in to this concept. The reciprocity envisaged in mutual obligation is between the recipients of social welfare, including the literacy training, and other sectors in society. The welfare recipient's role is epitomised presently through 'work-for-the-dole' schemes. The corporate sector is another partner, their role captured by the Prime Minister's associated notion of 'corporate philanthropy' whereby the corporate sector is encouraged to foster partnerships with communities and community groups. The new literacy training is implicated in the idea and implications of the term 'obligation'.

Adult literacy and community education have come to be recognised for their role in supporting 'second chance' learning. This means that those who have for some reason missed out on formal education in their earlier years can have a second-chance at learning through provision of learning programs for adults. It is these second chance programs that often lead to a vocational pathway. One of the key features of these programs that appears to underlie their success is the manner in which they develop trust, confidence and supporting networks among their adult students (for example, Falk & Kilpatrick 1999).

The literature identifies that there is a direct relationship between, first, the formation of trust through learning relationships, then the learning of skills (Falk 1999b; Falk & Kilpatrick 2000). This research shows that trust is undermined by systems that create suspicion through entrenched anomalies. The biggest such anomaly is the 'literacy=job' equation, where those in need of literacy learning report that literacy and further education do not provide an automatic passport to a

job. In this research, the unemployed report that the work is not available, and that its nature has changed to render it inaccessible to them, but the system 'pretends' the equation is correct. For some, then, the literacy skills associated with human capital are not sufficient for achieving employment by themselves. This literature, dealing as it does with the intersection of social and human capital, reports that when human capital and social capital are combined, learning, education and training are perceived as more effective.

This strand of literature shows that literacy and numeracy in VET is a participation issue. By bringing human and social capital together, we increase the capacity of people to learn the literacy and numeracy required for vocational learning, as well as assisting with their response to change.

#### other equity literature

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Provision for equity groups often but not always, occurs on a stand-alone basis, occasioned by the special needs of the learners. The primary literature on equity concerns in relation to literacy and numeracy in VET stem from Wickert (1989) and ABS (1997), discussed in an earlier section. These two studies show that participation in the workforce is more difficult or not possible for those people with low literacy levels. The main equity issue is not only that of the effects on employment; effects on social matters of poor literacy and numeracy skills also prevent access of participants to vocational learning and employment. The latter has already been covered in previous sections.

Other studies into equity matters of literacy and numeracy are summarised below:

- ◆ *Women:* Equity issues involving women's literacy occur in the research literature, among other equity concerns, but do not always attract specific and detailed investigation. An exception is MacDonald's examination of barriers to employment, training and job promotion for women with language and literacy difficulties (MacDonald 1993). Literacy and numeracy issues are implicit in female factory workers' perception of their employment options and of barriers to their participation in workplace literacy programs (Merrifield, Norris & White 1991; Milton 1996). They are also an implicit factor in women's successful transition from non-credit, informal courses to accredited vocational courses (McIntyre & Kimberley 1998). Numeracy as an issue in women's education has been addressed specifically, but not often. The experience of a 1990 mathematics group for women was developed into a collection of hands-on numeracy activities, with supporting

worksheets (Norrish & Lord 1990). Harris (1997), exploring the mathematical activities of textile workers, claimed that the mathematical content of the work of many women is largely ignored.

- ◆ *Indigenous people:* Vocational literacy for Indigenous people is the subject of a Victorian project (Rizzetti 1995), which addressed language and learning issues applicable to Koori students in a range of vocational education contexts. Koori English, learning styles, and the classroom dynamics which shape Indigenous students' involvement and achievement in vocational training are a particular focus. A research report by the Australian National Training Authority and the National Staff Development Committee (1996) provides information to guide recognition of prior learning (RPL) staff development for Aboriginal and Torres Strait Islander peoples and others working in the national VET system. It considers cultural issues around RPL and provides models of good practice.

Writing in response to the Royal Commission into Aboriginal Deaths in Custody, Boughton and Durnan (1997) criticise Commonwealth adult education policies for, among other things, prioritising Aboriginal access and participation in terms of existing mainstream VET/TAFE/higher education providers, rather than in terms of self-determined Aboriginal adult education. Wignell (1999) featured practical and political issues in a collection of practitioner-written case studies from varying contexts, including workplace literacy and training for Indigenous workers in the mining industry, and literacy in Arnhem Land and Central Australian primary and secondary schooling.

- ◆ *Disabled people:* Access is a dominant theme in the research literature on people with disabilities. Their access to VET and to employment may be limited by their disability, by society's perceptions of them, and by the nature of programs on offer (ALIO 1992; Healey 1996; Logan 1996). For people in rehabilitation programs, a significant barrier to participation in adult literacy programs is staff ignorance about literacy programs and literacy-related issues (Love, Ryan & Clark (1992). The needs of deaf and hearing-impaired people in relation to employment opportunities are examined by Duffy, Warby and Phillips (1993), with recommendations regarding good practice in teaching literacy and numeracy to these clients. Shannon (1995) produced a practical guide for teachers and trainers in addressing the basic language, literacy and numeracy needs of employees with intellectual disabilities working in open industry or supported employment.
- ◆ *Rural and remote people:* Access to training and to workplace literacy programs is also problematic in many rural areas, resulting in reportedly

low rural participation rates across all Australian States and Territories (Stephens 1991; Holdsworth 1992; Milton 1996). These rates are contrasted with urban rates in case studies reported by Breen and Loudon (1994), who find that socio-economic differences might have a more significant bearing than urban or rural location on participation in literacy activities at school. However, Butler and Lawrence (1996), in a report aimed at informing ANTA of the priority training issues relevant to VET for people in rural and remote communities, challenge the existing metrocentric provision of VET. Factors which construct adult literacy practices in rural communities are outlined by Bull and Anstey (1995), with a discussion of the implications of these findings for those involved in adult literacy and numeracy. Cox and Searle (1995) consider how teaching and learning activities might be developed to respond to the identified needs of individuals and communities, within the National Framework of Adult English Language, Literacy and Numeracy Competence. Cliff (1997) reports on a project which investigates how rural workers' access to training and further education can be improved, and how the literacy and numeracy levels of rural workers could be increased.

- ◆ *Migrants*: Non-English-speaking background (NESB) people form an equity group whose amorphous nature gives rise to its own particular issues in relation to literacy and numeracy in VET. Practitioner concerns have recently focussed on a perceived 'redefinition of ESL, which, other than the on-arrival program, has largely been subsumed as a subset of literacy' (Wyse 1999, p.3). Changes in the Australian workforce and in VET have impacted on NESB trainees and workers. A number of early 1990s studies investigate language, literacy and numeracy training options available to NESB workers, describing programs and considering various teaching and assessment methods (Virgona 1991; Brogan 1992; Bee 1992; Hamilton 1992; Teichman 1992; NSW AMES 1993). By 1994 the focus had shifted to the generic communication competencies required by employees in Australian workplaces, and NESB people's needs with regard to these (Baylis & Thomas 1994; Virgona 1994; Mawer & Field 1995; de Neef 1995).
- ◆ *Socio-economic disadvantage*: Socio-economic disadvantage is an equity concern in relation to literacy and numeracy in VET. Johnston et al. (1997) explore effective pedagogy in numeracy for unemployed young people. A Canadian study in 1992, relevant to the Australian context, compiled information on the relationship between illiteracy and poverty, the barriers faced by those who grow up disadvantaged, the difficulties in undertaking adult basic education and the implications for job training (National Anti-Poverty Organisation 1992). Similarly

relevant to the Australian context is an American report of 1993 which looks at the problem of insufficient literacy in prison inmates (Newman, Lewis & Beverstock 1993). Curtis (1990) describes an integrative model of literacy education which has been used with success in many countries to combine learning and community action. He argues that literacy educators must channel their efforts into larger goals of constructive community and societal change, rather than merely serving to promote the status quo.

## numeracy

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Numeracy-related activities vary depending on the culture and the context in which they occur, a view represented by the term 'ethnomathematics' (Bishop 1988), but nevertheless always require a range of mathematical skills, essential for participating effectively in society. These include basic number skills, spatial and graphical concepts, use of measurement and problem-solving. Although there are no universally accepted definitions of numeracy or agreement about the ways in which numeracy differs from mathematics, definitions usually include emphasis on the practical or functional application and use of mathematics.

The definition of numeracy in the Australian language and literacy policy of 1991 is couched as part of literacy:

*Literacy includes the integration of listening, speaking, reading, writing and critical thinking. It includes the cultural knowledge which enables a speaker, writer or reader to recognise and use language appropriate to different social situations.* (DEET 1991, p.4)

*Literacy also includes the recognition of numbers and basic mathematical signs and symbols within text ...* (p.9).

From this time, numeracy began to emerge as more distinct field with its own identity and growing body of literature.

International studies of adult literacy in the United States, Canada and Australia (Wickert 1989), and the ABS (1997) *Survey of Aspects of Literacy*, differentiated between prose and document literacies and quantitative literacy. Policy definitions and the national surveys, however, maintained a focus on arithmetical operations within text, and 'the realm of numeracy itself [remained] undefined and unexplored at a national level' (Cumming 1996, p.7).

The adequacy of the ways in which numeracy has been traditionally defined within literacy is questionable. Numeracy is 'conjoint with literacy [but] separate in

identity' (Cumming 1996, p.9). It is a complex issue rather than a single concept that can be incorporated within literacy (Cumming 1996). Emerging from this perception, numeracy research in the late 1990s has established the beginnings of a separate literature. This is indicated by the fact of its separate definition in publications. For example, here is how the Queensland State government (DEVETIR 1994) defines numeracy:

*Numeracy involves abilities which include interpreting, applying, and communicating mathematical information in commonly encountered situations to enable full, critical and effective participation in a wide range of life roles. (No page reference in original document)*

Johnston (1994) articulates the relationship between numeracy and mathematics, an issue under full discussion in the numeracy sector:

*There is no particular 'level' of Mathematics associated with [numeracy]; it is as important for an engineer to be numerate as it is for a primary school child, a parent, a car driver or a gardener. The different contexts will require different Mathematics to be activated and engaged in. (p.33)*

Numeracy therefore refers to a wide range of skills, and implies a certain flexibility, which is dependent on the needs and interests of the individual within the context of the peer group, community or workplace (ARIS Numeracy Web Page 2000). Context is a crucial factor determining pedagogical relationships between literacy and numeracy (Lee, Chapman & Roe, 1996).

The relationship between mathematics and numeracy was increasingly discussed and debated in the last decades of the twentieth century (Tout 1991; Marr & Tout 1992; Helme & Goddard 1993) and the view of numeracy and mathematics that developed in Australia sees numeracy as making meaning of mathematics and sees mathematics as a tool to be used efficiently and critically (Tout & Johnston 1995). The concept of 'critical' numeracy thus parallels an approach to literacy.

*To be numerate is more than being able to manipulate numbers, or even being able to 'succeed' in school or university mathematics. Numeracy is a critical awareness which builds bridges between mathematics and the real world, with all its diversity. (Johnston 1994, p.32)*

Numeracy demands occurring in the context of workplace restructuring continued to be included with language and literacy in much of the research of the late 1990s, but a separate literature was gathering volume. Cumming (1996) presented an overview of current research in adult numeracy and related fields, making recommendations for strategic planning of research to involve three strands:



policy, provision and pedagogical. The theme of assessment of numeracy skills was addressed by Cumming and van Kraayenoord (1996), who produced a series of papers from the Adult Literacy Research Network program of action research. Cumming (1997) followed this with an analysis of Australia's performance in the International Adult Literacy Survey's Quantitative Literacy Scale.

The *Numeracy at Work* project (Lukin 1998) investigated numeracy and work by focussing on the mining industry. The outcomes and recommendations of the project were widely applicable. The project aimed to determine how changing work practices in the black coal mining sector had impacted on the numeracy demands being placed on workers, and to consider the implications of numeracy at work for vocational education and training (Lukin (1998)). The report recommended that further integrated research into numeracy in the workplace be undertaken, with a focus on effective explanatory training strategies.

In fact, much of the existing research on numeracy in VET concentrates on professional development needs of curriculum writers, industry trainers and vocational teachers (Johnston 1992; Tout & Johnston 1995; D'Agostino, Palfreeman, Quill & Ward 1995; Marr, Johnston & Tout 1999). Thiering, Hatherly and McLeod (1992) produced a resource for teachers of trade or vocational maths, which covered a range of numeracy topics and provided examples in a number of industries. Numeracy strategies, including examples of student difficulties, were among the Western Sydney Institute of TAFE's selection of literacy strategies (1996) offered to tutorial support teachers of vocational students.

ANTA's commitment to numeracy concerns in relation to VET is exemplified by a 1998 ANTA Adult Literacy National Project award, which enabled the *Adult numeracy materials and assessment on-line action research project*, piloting a distance model of action research in numeracy teaching and assessment (Marr, Johnston & Tout 1999). The teaching materials and assessment tasks developed in the project were referenced against State-accredited curriculum and the National Reporting System. The project also established a web page as a basis for support and communication between numeracy practitioners nationally, the ANAMOL or Adult Literacy and Maths On-Line project page (ANAMOL 1999).

Numeracy is now appreciated as a key skill area in VET, but its conceptual boundaries, cognitive underpinnings, and assessment, require further research (Tout 2000, p.2).

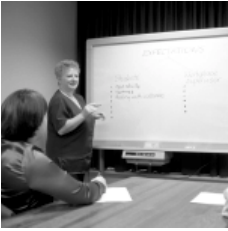
## common themes and summary

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In the literature on literacy and numeracy in VET reviewed so far, there are three major common themes, or patterns. First, the most encompassing observation is that there is, across policy, practice and research, an explicit awareness of the importance of literacy and numeracy in VET. It is viewed as the most significant underpinning (or 'generic') set of skills. It is recognised as essential to all VET activities by ANTA (1998), a point reinforced through numeracy's incorporation as a 'key competency'. Literacy and numeracy are everywhere viewed as skills that underpin not only the activities that contribute to productive living, but also underpin other generic skills. For example, literacy and numeracy are often essential underpinning skills for problem-solving, analysis and communication in a range of contexts.

The theme of 'integration' versus 'basic skills' is the theme next in importance. Integrated literacy and numeracy occurs not only in the national peak adult literacy body's (ACAL) policy statement (in Wickert & Kevin 1995) but in the national *Australian language and literacy policy* of 1991 as well as in the research literature (for example, Lo Bianco & Freebody 1997). However, there are pragmatic reasons why literacy and numeracy cannot only be learned on the job or as part of another task. Basic skills, if defined as the capacity to decode, recognise and manipulate the written and spoken texts of the English language, are an important resource for the wider literacy required of active citizens. The literature related to practice is underlined by the need for literacy and numeracy learning to occur as a stand-alone activity. Specific classes or other provision of literacy and numeracy are required for addressing basic skills learning, and as a means for encouraging people who are unwilling to show others that they have 'a problem' with literacy.

Third, there is the theme of purposes for literacy and numeracy in VET. There are two purposes for literacy and numeracy that emerge from the literature: for gaining access to and participating in VET, and for facilitating mobility within and between work contexts. Learning the literacies and numeracies required of work and vocational learning is no simple matter, a view that emerges strongly from the research, policy and practice reviewed in this chapter.



# findings and directions for further research

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## analysis, synthesis, **conclusions** and **issues**

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The main themes, carried over from the previous chapter, are threefold:

- ◆ Literacy and numeracy are reported as the most significant enabling, underpinning or ‘generic’ skills for VET.
- ◆ Literacy and numeracy learning is reported as occurring in two pragmatic and sustained forms: the integrated or ‘built in’ approach as found in training packages, and in separate provision such as classes or one-to-one tutoring as a stand-alone or ‘bolted on’ literacy or numeracy learning activity.
- ◆ Literacy and numeracy in VET are reported to be important for two main purposes: gaining access to and participating in VET, and facilitating mobility within and between work contexts.

The literature reviewed indicates that basic skills in literacy are necessary but not sufficient for participation and mobility in VET. It is proven beyond any doubt from the research literature over many decades that, while basic skills are an important tool, they are not sufficient in themselves.

These matters are addressed in the following sections. Discontinuities between research outcomes, policy and practice are noted in the course of the following discussion before and during the conclusions.

### integrated and stand-alone literacy and numeracy learning

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The literature reviewed indicates that basic skills in literacy are necessary but not sufficient for participation and mobility in VET. It is proven beyond any doubt from

the research literature over many decades that, while basic skills are an important tool, they are not sufficient in themselves. There is an equally convincing set of research that shows that basic skills, like most learning, do not transfer easily to other tasks and contexts (for example, Mikulecky 1988) without additional on-site learning to aid the transfer-of-learning process. The problem of transferability of literacy and numeracy (and other) learning is implicitly recognised by the implementation in recent years of VET-in-Schools programs, and their success (by and large) is further testimony to the need for a bridge of some kind between de-contextualised learning (such as much of school-based, general education) and the vocational contexts of use (for example, workplaces) in which those skills are expected to be applied.

Another affirmation in the policy literature for an integrated literacy approach is afforded by the Australian National Training Authority policy on literacy and numeracy. In this policy, articulated in the ANTA (1998) *Bridge to the future* document, literacy and numeracy are operationalised as integrated or embedded competencies within applied tasks. Training packages are required to incorporate and make explicit the training and assessment implications of the embedded literacy and numeracy competencies (Fitzpatrick & Roberts 1997). These embedded competencies are to be checked against the National Reporting System (Coates et al. 1995) as part of the assessment process, a process which requires a great amount of knowledge and expertise on the part of the assessor/trainer. ANTA provides or funds professional development packages to assist trainers and teachers in coming to terms with literacy and numeracy in training packages. Information may be accessed via ANTA's website at <http://www.anta.gov.au>. All such requirements are therefore widely disseminated and are now impacting on practice, with reservations about the quality assurance processes of assessment and training (Griffin et al. 1998).

The assumption of the 'basic skills' approach in policy is that, once the 'basic skills' are acquired, they can be applied easily in any situation at will. There is, however, a need for clarity about what is included in the term when people use it—is it simply a capacity to be able to read and write through basic sight words and phonics? Is it inclusive of comprehension? Of critical thinking? It is uncommon to see the term 'basic skills' defined as anything apart from mechanical technical skills such as recognising words, and writing simple sentences. From here, learners are expected to be able to apply these basic skills in a range of contexts of use, virtually unaided, as if the context itself and the applied tasks had no further competencies embedded in them. And we know that applied tasks do indeed have additional competencies involving high levels of cognitive, technical and affective skills.

Therefore, another problem identified in the literature and associated with the basic skills approach becomes apparent when an applied task is analysed and the assumptions governing its competent execution are unpacked. The example of operating an automatic teller machine stands as a good example. When the literacy (and numeracy) components embedded in the task are analysed alongside the other components—such as understanding the purpose of the operation as a whole, being confident enough to approach and use the machine, understanding how to use the technology, and understanding the sequence and the integration of the literate and numerate tasks in the operation as a whole—it can be seen that ‘basic skills’ are only one component of an integrated cognitive, affective and technical array of task-embedded skills.

The other assumption is that to function in daily life, such as using an automatic teller machine, is dependent on basic literacy skills. Literacy and numeracy are not, as has been seen, as simple as this. Totally illiterate people, those who cannot read and write at all, can and do still operate apparently normal daily lives, as any adult literacy practitioner can attest to. Through observation and peer mentoring, often with a special person as an aid, illiterate people learn how to carry out functional tasks in alternative, or ‘paraliterate’, ways. This is not to say that the latter situation is desirable for the individuals concerned or for society as a whole, but it is nevertheless an assumption that does not hold up.

Literature about practice shows that literacy and numeracy learning have always occurred in stand-alone provision of some kind, be that in classes, one-to-one tuition or in withdrawal groups. However, there is a question implicit in supporting the integrated literacy and numeracy position. If literacy and numeracy are catered for as part of work tasks (‘built in’), why is there a need for separate (‘bolted on’) literacy and numeracy classes and courses? Does the shift from literacy and numeracy training in groups and classes to on-the-job learning of these skills mean that the delivery of literacy and numeracy as it is now known is no longer required, and therefore no longer needs resourcing?

The historical literature provides the answer to this question, which is twofold:

- ◆ The first response is a cost-effectiveness one. When levels of literacy and numeracy skills are identified as low, one-on-one, on-the-job provision is cost-prohibitive and impractical, requiring intensive labour to teach the required literacy and numeracy, and maintain work activity at the same time. The historical provision of English as a second language provides an illustration of this point, where migrants are provided with 500 hours of stand-alone language and literacy tuition as a matter of

settlement rights. With non-English speakers whose literacy levels are poor, it is usually considered more cost-effective to withdraw such groups from the workplace, and to provide the sort of literacy and numeracy tuition that has the best chance of transferring back to their workplace tasks.

- ◆ In addition to the cost-effectiveness response, there is the participation response. The national goals in VET are for maximum workforce participation, and this includes those who are presently unemployed or underemployed. It also includes VET-in-Schools program participants. These groups do not, by definition, have access to the work tasks of the future, yet every effort must be made to generate transferable generic literacy and numeracy skills. However, the integrated approach still has merit in selecting those tasks that are most likely to be used in future employment.

Based on the literature, the first conclusion and related issue concerns the learning of literacy and numeracy for VET in workplaces:

*conclusion and issue 1*

*The integrated literacy and numeracy approach provides the best option for work-based practice where learning the integrated literacy and numeracy skills is a practical option for the workplace.*

There are, it has been seen, situations where literacy and numeracy learning is best carried out as stand-alone activities, for example, through classes. This may be the case in workplaces where literacy and numeracy skills are required in such intensity that it is more cost-effective for provision to occur in a withdrawal situation such as a training room or similar. However, the literature on participation in VET shows that stand-alone provision is also crucial for those seeking to participate in VET but who do not currently have access to work contexts. The learning of literacy and numeracy skills through on-the-job tasks is not possible where no job is available.

The second conclusion and issue therefore relate to stand-alone literacy and numeracy learning in VET:

*conclusion and issue 2*

*The stand-alone provision of literacy and numeracy approach continues to provide the best option for work-based practice where intensive learning of literacy and numeracy skills is indicated, and for situations where literacy and numeracy learning is required to facilitate access to and participation in VET. The latter groups include literacy and numeracy for the unemployed as well as the underemployed.*

## literacy as human and social capital

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The literature (for example, Stewart-Weeks 2000) identifies that there needs to be a new way of developing and implementing policy that devolves and accounts for policy at local levels. To achieve a reality that reflects the rhetoric associated with ‘lifelong learning’, a ‘learning society’ and ‘learning communities’, a recent strand of the literature suggests that a different form of learning is required. The literature reviewed here indicates that strategic attention needs to be placed on the literacies and numeracies of social as well as human capital development. The main forms of literacy in policy in Australia presently are components of *human* capital which does not account for the effects on social cohesion, a declared part of the new agenda for VET in Australia. Western countries are employing the term ‘lifelong learning’, yet the society’s practice and policy is still largely founded in systems and structures based on a human capital, rather than a social capital, sense of the world.

The issue emerging from this section of analysis of the literature is that:

### *conclusion and issue 3*

*There is no co-ordinated and integrated policy, practice or research agency on literacies and numeracies for lifelong learning across sectors and portfolios.*

## literacy and numeracy for VET-in-Schools programs

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The cultures of vocational and general education intersect in the VET-in-Schools programs. Similarly, the literacies of work differ from those of schooling, a point well made in the research found throughout this report. A point also noted earlier is that VET in schools appears to be successful in transferring, or scaffolding students’ transition from the culture and literacies of school to those of another context—those of various workplaces.

There are strong vested interests involved in the values and structures of traditional schooling as discussed in the literature earlier as ‘general education’. There are equally strong interests in maintaining the values and culture of business and workplaces. Vested interests can often stand in the way of objective research, policy and indeed practice, yet objective research is what is required now. While it seems to be the case that VET-in-Schools programs are successful at providing such a transition by offering a learning environment that explicitly transits the cultures and accompanying literacies, there is no research that either documents or in fact proves this point. It remains conjecture and hypothesis.

conclusion and issue 4

*There is no objective research that examines the literacy and numeracy implications of VET-in-Schools programs while recognising and reconciling the value and place of (often) opposing vested interests in that sector.*

#### literacy and numeracy for lifelong and online VET learning

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It is clear from the research reported herein that the explicit and task-embedded skills required for vocational learning independently throughout life via various modes, including online technologies, differ from those required to participate in a class or training room learning context; for example, reading class notes, discussing issues with a break-out group, or reading training materials. The small amount of research found and reported in this report indicates that adult literacy and numeracy learners can and do learn online, but there are certain barriers. These barriers include access to computers, fear of using computers, the encumbent need for help in using computers and in contextualising existing knowledge and skills in literacy to an online learning environment, and the issue of staff development for those people helping these transitions.

conclusion and issue 5

*There is unco-ordinated and incomplete research, policy and associated practice and development relating to the establishment of physical and human structures for learning through the new literacies required online. New numeracies were not investigated in the literature, but it is presumed they follow suit.*

#### professional development of VET and industry staff in integrated literacy and numeracy

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Literacy and numeracy learning as a stand-alone activity is an established field with an accompanying literature. This is not the case for integrated literacy and numeracy learning. While there is a greater degree of awareness and skills about the issue of integrated literacy and numeracy skills in, for example, training package requirements, research (Gillis et al. 1998, 1999; Griffin et al. 1998) indicates that there is less awareness and appreciation of the issues and value to quality outcomes of literacy and numeracy on the part of industry and their training providers. In existing certificate 3 and 4 training courses for workplace training and assessment, literacy and numeracy only form a very small part of the content.

There is, however, an excellent base on which to build professional development for staff involved in VET, provided by the Australian National Training



Authority's Workplace Communications Project, and their range of publications. This set of material (for example, Wignall 1998; McKenna, Wignall & Colvey 1998) provides a core and an exemplar model. This model could be extended into all forms of VET pre-service and in-service professional development, so as to be included as a compulsory component, adequately covered for that purpose. It is important that existing university pre-service courses as well as VET certificate qualifications and purpose-made learning packages are targeted in this case.

*conclusion and issue 6*

*There is no nationally consistent approach to all forms of professional development for integrated literacy and numeracy competencies as found in the training packages in pre-service and in-service courses that would build on existing best practice ANTA models.*

From the previous discussion, conclusions and issues that have emerged from the examination of the literature on policy, practice and research in literacy and numeracy in VET, the report now suggests directions for further research.

## further research

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In this section, gaps in the literature emerging from the conclusions and issues highlighted in the previous section point to directions for further research.

*conclusion 1:*

*The integrated literacy and numeracy approach provides the best option for work-based practice where learning the integrated literacy and numeracy skills is a practical option for the workplace.*

On the one hand, there is the issue of entrenched public, media and policy views about literacy-as-basic skills. On the other, there are awareness and best practice strategies already in place that explicitly and implicitly recognise the essential value of embedded literacy and numeracy as integrated task competency in the VET agenda.

Included here is the Workplace Communications unit of ANTA with its various materials and packages. These positions are not irreconcilable, and the literature shows this to be the case. But there is confusion evident in the literature over the respective purposes, needs and outcomes of basic skills and integrated approaches. One direction for further research should involve strategies for creating awareness of the roles of both basic literacy and numeracy skills and embedded literacy and

numeracy as integrated task competence in all facets of lifelong learning in and through VET. Collaborations and partnerships between stakeholders such as ANTA, NCVER, DETYA, ASTF and ALNARC would value-add the outcomes of this process.

*conclusion 2:*

*The stand-alone provision of literacy and numeracy approach continues to provide the best option for work-based practice where intensive learning of literacy and numeracy skills is indicated, and for situations where literacy and numeracy learning is required to facilitate access to and participation in VET. The latter groups include literacy and numeracy for the unemployed as well as the underemployed.*

The literature shows that there has been a shrinkage of the stand-alone provision of literacy and numeracy, especially where it is related to participation in and access to VET, and that this runs counter to the national VET strategies as found in, for example, ANTA's *Bridge to the future* (1998). Historically, the literature shows that literacy and numeracy programs for the long-term unemployed emphasise those learners in extreme circumstances of some kind. Literacy and numeracy learning for participation in and access to VET and work is no longer widely available.

The gap in the literature suggests room for a needs-analysis and scoping study to establish the extent of stand-alone literacy and numeracy provision required to satisfy demand for participation in VET and to support existing VET provision. Such a study should be seen as additional to programs for the unemployed, since it is a participation, access and equity in VET issue rather than the literacy and numeracy programs for special groups managed through DETYA.

*conclusion 3:*

*There is no co-ordinated and integrated policy, practice or research agency on literacies and numeracies for lifelong learning across sectors and portfolios.*

The segmentation of the literacy and numeracy literature and professional and practical literature indicates the need for a co-ordination function and agency. This agency could be formalised, co-ordinated and resourced through ANTA to liaise between those involved in implementing ANTA's lifelong learning strategies and those involved in literacy and numeracy in VET within ANTA, NCVER, ALNARC and DETYA. Also involved should be bodies such as the Australian Student Traineeship Foundation (ASTF), and other similar bodies in the State and Territory systems.

ANTA and NCVER both have within their brief and current strategies the skills and capacity to lead the consolidation of existing efforts to focus on a set of projects

which would examine and document the literacies and numeracies required for various stages and forms of lifelong learning. In addition, the national body for research into literacy and numeracy in VET, the Adult Literacy and Numeracy Australian Research Consortium (ALNARC), can be called upon for input and advice.

*conclusion 4:*

*There is no objective research that examines the literacy and numeracy implications of VET-in-Schools programs while recognising and reconciling the value and place of (often) opposing vested interests in that sector.*

VET-in-Schools programs are escalating, and from reports appear to be successful, given attention to particular aspects of their conduct (see Falk & Kilpatrick 1999). There is, however, no research on literacy and numeracy requirements, practice or policy associated specifically with VET-in-Schools programs, yet hearsay suggests there are significant problems there. One problem is the professional development of the co-ordinators and teachers of courses for VET-in-Schools such as 'communications' and similar literacy and numeracy courses. Therefore, from the evidence available, there is believed to be a significant gap in policy, practice and research of literacy and numeracy needs and issues of VET-in-Schools programs.

A direction for further research would involve a coherent suite of research projects to document and evaluate the implications of the nature and scope of transition literacies and numeracies required in a diversity of VET-in-Schools programs, and special methods of incorporating these explicit competencies in student and staff learning courses.

*conclusion 5:*

*There is unco-ordinated and incomplete research, policy and associated practice and development relating to the establishment of physical and human structures for learning through the new literacies required online. New numeracies were not investigated in the literature, it is presumed that they follow suit.*

An identified gap in research shows the need for a scoping study to be carried out to determine the literacies and numeracies required for various forms of VET learning online. This direction for further research should be taken to include the gap in publications (identified earlier) that seek to educate identified adult literacy students in the policy and civic and social areas. The critical-cultural approach upon which this work is based is well covered in the research literature, but not covered well or at all in the practice and policy areas.

*conclusion 6:*

*There is no nationally consistent approach to all forms of professional development for integrated literacy and numeracy competencies as found in the training packages in pre-service and in-service courses that would build on existing best practice ANTA models.*

The implication of this point for literacy and numeracy in VET is highly significant for the resolution of the issues outlined in literature reviewed in this publication. It is a question of the blend of basic skills and social resources required for best practice literacy and numeracy learning. Stand-alone provision is well-established, and sufficient good quality professional development exists for this mode of literacy and numeracy learning. However, this is not the case for integrated literacy and numeracy learning. Training packages require literacy and numeracy competences to be embedded or integrated into the industry standards.

Assessment of literacy and numeracy achievement is an associated and crucial issue, and there are questions raised in the research literature about the knowledge and skills of the trainers and assessors in literacy and numeracy dealt with in this way (for example, Gillis et al. 1998; Griffin et al. 1998). Ultimately, of course, this becomes an issue for the learners who need the learning support of skilled literacy and numeracy practitioners in the process of vocational learning. It is also an immediate issue for the successful implementation of training packages.

Literature gaps indicate an immediate and urgent need for an introductory learning package for practitioner professional self-development that identifies, documents and writes up as case studies, aspects of best practice approaches to literacy and numeracy integrated into training packages. Targetted case studies could focus on specifics such as on-the-job assessment of literacy and numeracy using training packages and the National Reporting System (NRS), developing partnerships with workplaces in literacy and numeracy delivery, and developing literacy and numeracy learning materials from training packages. This package would be most appropriately managed by ANTA's Workplace Communication project.

Related research stemming from conclusion 6 would concern the documenting, description and evaluation of pre-service and in-service modules, learning packages and courses that do and should contain professional development on integrated literacy and numeracy for VET. A collaborative task force (perhaps managed from ANTA) would establish appropriate competencies for professional development components in each of the pre-service and in-service modules, packages and courses.

## concluding remarks

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This review and resulting analysis shows that managing employment, training and careers development for participation in VET in the new millennium requires learning that diverges markedly, in quality, duration and intensity from the traditions of schooling, education, training and learning of yesteryear. The literature shows that literacy and numeracy in VET are important for two main purposes: for gaining access to and participating in VET, and for facilitating mobility within and between work contexts. In times when the nature of work is changing so rapidly, and when the 'portfolio worker' is a reality, access to and participation in work takes on new meanings from the marginal status it has held by access and equity in policy to date. The growing divide between the haves and have-nots in terms of full-time paid work will lead to a situation where national economies will need to re-orient themselves to the 'unemployed' and 'underemployed' as their major markets. Already portfolio workers, moving between outsourced project work and multiple stakeholders, represent a significant and growing group of micro-businesses. Their training is not provided by their employers, as they are self-employed. Literacy and numeracy for accessing and participating in VET for these groups will need to be re-thought, and the significance of publicly funded provision re-appraised.

For VET to succeed under these conditions of instant global communication and the information explosion, a particular form of lifelong learning society for Australia will be required. To achieve this learning society, genuine partnerships need to flourish between bodies such as NCVET, ANTA and other stakeholders such as ALNARC and ASTF. Such a leadership initiative will establish, document and ascertain the implications for policy, practice and further research, of the literacies and numeracies demanded by a lifelong learning society.

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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.

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