Chapter 13
Literacy in the Workplace

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Abstract This chapter considers the challenge of literacy, language and numeracy (LLN) issues in contemporary workplaces, both in Australia and internationally. It firstly considers the gradual recognition that adult LLN is a widespread issue warranting government responses and its links to debates about improving labour productivity. LLN issues among workers are then examined in detail, reviewing their distribution in the workforce and implications for LLN provision in the workplace. Implications of recent research studies of workplace LLN programs are discussed as well as the need to ensure that newly acquired LLN skills learned in courses are transferred back into everyday workplace practices.

National Recognition of LLN Issues among Adults

The history of LLN issues among adults is a relatively short one. Up until the 1970s, there was scant public recognition that a significant proportion of adults struggled to cope with daily demands involving LLN skills; this position was also mirrored among government ministers, departmental bureaucrats and funding bodies (Benseman 2008; Hamilton and Hillier 2006). LLN programs developed by community-based organisations were thought to cater for a small number of adults who had somehow 'slipped through the system' and national literacy rates were habitually claimed to be '99.9 %'.

In part, this was because there was scant research available on the issue. A few small-scale research studies were emerging at this time on specific groups such as the unemployed, prisoners and specific industry groups, but these results were largely shunned as being relevant only to these groups or written off as biased, designed to support the partisan claims of the steadily increasing body of LLN providers and advocates. Wickert's (1995) study in Australia and one sponsored by a newspaper group in Canada (Calamai 1987) were the first pieces of larger-scale research to signal that LLN issues among adult populations warranted serious consideration and were not confined to a small number of 'social cripples', but involved a much broader cross-section of adults.

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The turning point in most western countries came with the advent of a series of national incidence studies (the International Adult Literacy Survey, IALS) and its later development, the Adult Literacy and Life Skills Survey, ALL) under the auspices of the OECD and Statistics Canada at the turn of the century. More than twenty western countries such as Australia and New Zealand took part in these studies, the results of which have had considerable impact on public and governmental recognition of adult LLN issues. Many countries have undertaken several of these studies, the latter versions of which have provided increasingly sophisticated analyses and added problem solving to the document, prose and quantitative literacy skills being assessed. The latest iteration of these surveys (Programme for the International Assessment of Adult Competencies, PIAAC) is currently underway, with Australia's results due mid-2013 and New Zealand's (as part of a second cohort) in 2015.

While these studies have certainly encountered their critics for their 'narrow HRD' interpretation of literacy (Tett et al. 2012), they have certainly been significant for a range of reasons:

- The findings challenged the assumption that, because many countries had achieved very well in child-based studies such as PISA, they would also have a low incidence of adult literacy problems in the adult population.
- The surveys helped break down the traditional dichotomy of literate–illiterate by assessing literacy and numeracy skills along a continuum.
- They also showed literacy and numeracy skills across three domains in IALS and four (problem solving was added) in ALL and PIAAC, underlining the variable nature of literacy and numeracy demands.
- While it showed some groups to be disproportionately represented among those with low literacy and numeracy skills, it also showed that adults from all groupings were represented in the lowest levels—in other words, literacy and numeracy skills are an issue for all sectors of society, though to varying degrees.
- The findings helped make sense of some public controversies such as academics periodically criticising the academic literacy skills of tertiary students.

Nearly two decades since the first of these studies was undertaken and with governments purporting to be 'evidence-based' in their policy and program development, most of the participating countries have written national LLN policies and strategies (see for example, Standing Council on Tertiary Education Skills and Employment 2012; Tertiary Education Commission 2010, 2012). While the level of funding for these strategies continues to wax and wane with national political fortunes and international parameters such as the global economic crisis (GEC), adult LLN is now almost invariably publicly acknowledged centrestage in educational debates and other related spheres such as health, social services and increasingly workforce development.

The Link to Workplace Issues

Parallel to the emergence of adult LLN into public recognition and debate, most western countries were also grappling with the challenge of staying competitive in the international marketplace in part by improving labour productivity (see for

example IMD 2013). Which factors improve productivity has been hotly debated. For example, the New Zealand Treasury (Harvey and Harris 2008) identified:

- innovation;
- skills;
- investment; and
- access to natural resources,

while their counterparts at the Department of Labour (2009) identified:

- building leadership and management capability;
- creating productive workplace cultures;
- encouraging innovation and the use of technology;
- investing in people and skills;
- organising work;
- networking and collaboration; and
- measuring what matters.

Almost invariably however, any list of factors claiming to stimulate productivity includes some reference to 'skill development'. This factor is justified because skill development 'enables innovation, makes workers more capable with new technology, reduces mistakes and inefficiency, workers require less supervision by accepting more responsibility, they communicate better and companies are able to pay higher wages, leading to lower staff turnover' (Harvey and Harris 2008, p. 16). All of these things are seen to contribute to greater productivity within companies and, cumulatively, nationally.

Most analysts agree that the paramount factor for better productivity is greater investment, but also that skills are a necessary but not sufficient condition in the mix (Keep et al. 2006; Leitch 2006; Mayhew and Neely 2006). However, they also argue that there is a lack of rigorous research on the topic, especially at the micro level of what happens in companies. Even so, some writers (Keep et al. 2006; Leitch 2006) still caution that 'skills deficits' are an easy scapegoat in these debates and are often seen as an easy policy lever for policy makers, especially in comparison with other factors such as increasing capital investment.

Some of the need for higher levels of skills is satisfied in the longer term by improving the schooling system and increasing post-school qualifications, but there is still the question of how the current workforce (and especially those in semi- and unskilled jobs) achieves higher levels of skill. New skilled immigrants can go some way towards solving the issue, although using their skills and expertise is not straightforward, especially with those whose languages do not match that of the host country. Inevitably, therefore, the challenge is predominantly to upskill workers currently working and to a lesser extent (in terms of numbers) those workers currently not in employment.

Few dispute whose skills should be upgraded, but identifying the skills to be taught is less straightforward. For while there is strong support for including skills development in efforts to improve productivity, it is interesting to note that few writers spend much time addressing the question 'which skills?' Even in major documents

such as the OECD's *Towards an OECD skills strategy*, scant attention is given to identifying skills beyond an initial definition: 'the bundle of knowledge, attributes and capacities that enables an individual to successfully and consistently perform an activity or task, whether broadly or narrowly conceived, and can be built upon and extended through learning' (2011, p. 7). Implicit in many of these documents is a differentiation between:

- specialised technical skills such as operating machinery or instruments; and
- broader, generic skills such as communication or literacy and numeracy.

It is evident that learning new technical skills (e.g. using a new piece of machinery) is necessary in economies that are increasingly mechanised and automated; however, the arguments to include literacy and numeracy are less obvious because their value and impact may be less apparent and immediate. Furthermore, work issues that are related to literacy issues are not necessarily identified as such by employers or supervisors; rather, these issues are seen as being related to general incompetence or the result of personal traits such as personal inadequacies and laziness (Schick 2005). There is however a growing recognition by employers that LLN issues are significant and need to be addressed. In a national survey by Business New Zealand and the Industry Training Federation (Green et al. 2008), the authors reported that after specific types of training (71 % of the total companies replying), communication skills (67 %) and literacy and numeracy skills (49 %) were reported as the next most important.

> No firm that had reported a literacy or numeracy problem in their workplace believed the needs were 'very widespread', but 40 % of those firms felt that they were 'moderately widespread'—in other words, they affected a 'noticeable proportion of employees' and had 'some impact on firm operations'. (Green et al. 2008, p. 5)

While historically workplace training has predominantly involved mid- and especially upper-level sectors of the workforce, the emergence of LLN as an issue in the wider context has also filtered through to the workplace as a focus for lower-level workers. Workplace LLN in many ways is the culmination of endeavouring to address LLN as well as labour productivity.

The Size and Nature of the Challenge

One useful benefit of the IALS and ALL national incidence studies has been their ability to generate valid sub-analyses of various national population groups such as ethnic groups, second language groups, regions, age groups and the workforce. One New Zealand report (Satherley and Lawes n.d.) showed that in 1996, 527,000 employed adults had level 1 or 2 document literacy, which increased significantly to 756,000 a decade later.

Another report (Dixon and Tuya 2010) has looked in depth at workers with lower literacy skills using data from the 2006 ALL survey. The study drew on a representative sample of over 7,000 New Zealand residents aged 16–65 years, of whom 12 %

were at level 1 (of five levels) and 28 % were at level 2. The study confirmed that lower levels of LLN skills were strongly related to low educational attainment, belonging to an ethnic minority, having English as a second language (ESL) and working in a low-skilled, low-paid occupation—especially in particular occupational groups such as cleaners, caretakers, labourers, machinery operators and assemblers.

Over a third of the group were ESL speakers. Interestingly, 38 % of this group had done some structured education or training in the previous year, but still less than those at higher LLN levels. They are more likely to receive training linked to qualifications than training provided by employers, usually on-site. The study showed that, although they are not as involved in various types of reading at work (e.g. reading letters, manuals, directions, etc.) as those with higher level skills, just under half of those at levels 1 and 2 still undertake these tasks at least weekly. In another study, Benseman and Sutton (2007) reported that employers use a range of strategies to minimise the impact of poor LLN skills in their companies, including developing an oral culture in the workplace, simplifying documentation, changing work practices and delegating literacy requirements onto a person in the team with the best skills.

Dixon and Tuya also point out that those with low LLN skills are not necessarily concentrated in part-time or part-year (i.e. seasonal) jobs, short-term jobs or small firms. In other words, it is an issue for many in the mainstream workforce.

Implications in the Workplace

There is an increasing body of literature that has analysed the need for LLN skills in workplaces at the macro level (see for example, CBI 2006), as well as research on the degree of match between workers' LLN skills and the level of LLN skills required in their jobs. For example, using ALL data from the 2006 New Zealand survey, Earle (2011) found that 42 % of workers in employment have either a shortfall or partial shortfall between their level of LLN skills and the LLN demands of their job practices; this figure compares with 14 % whose LLN skills are 'in excess' either partially or substantially of the LLN demands of their jobs (see Fig. 13.1 below). People with a skills shortfall or partial shortfall were less likely to say they have enough reading, writing and maths skills to do their job well. The area they felt least skilled in was maths. The report concludes:

		Low	Medium	High
Job practices	High	**Skills shortfall** 9%	**Partial shortfall** 27%	**Matched** 27%
	Medium	**Partial shortfall** 6%	**Matched** 10%	**Partial excess** 8%
	Low	**Matched** 7%	**Partial excess** 4%	**Skills excess** 2%
		Low	*Medium*	*High*
		Document literacy		

Fig. 13.1 Match and mis-match of literacy and job practices. (Source: Earle 2011, p. 22)

> This suggests that within the 40 % of people with lower levels of literacy and numeracy, there is a small group whose skills fall short of what may be needed for their jobs and a larger group who may have difficulty performing some aspects of their jobs. (2011, p. 31)

At the company level, employers tend to identify reasonably straightforward LLN needs. For example in the Upskilling Project (Department of Labour 2010), the participating employers were asked what their main overall drivers were for undertaking their LLN courses. The five drivers rated most highly were improving communications, improving staff retention, cost savings, improving attitudes towards work, and improving health and safety. Responses such as improving productivity and increasing profitability came well down the list of responses, while the three rated least important—coping with existing technology, coping with planned technology and encouraging innovation—show that LLN is not rated as particularly important in relation to technology and innovation. These managers were also asked what specific outcomes they wanted their workers to achieve as a result of the programs. The top four outcomes were listening skills, communicating with other workers, communicating with supervisors, and speaking and reading skills. Rated lowest were taking on new work roles, better use of technology and computers, and greater community involvement. Both of these sets of responses show that employers are primarily concerned with resolving the most immediate issues of communications between staff and their supervisors, while longer-term goals such as technology-related skills rate lower than these other more immediate outcomes.

The Response to the Issue

Workplace-based LLN programs have developed steadily in most western countries over the past two decades. In New Zealand, for example, initial funding was allocated to pilot some workplace programs as part of International Literacy Year in 1990, which culminated in the establishment of a national centre, Workbase: The New Zealand Centre for Workforce Literacy Development. This centre has functioned both as a professional resource centre for the sector and a provider in its own right alongside about 25 private and public providers (usually institutes of technology and polytechnics). These providers are funded by a government agency (the Tertiary Education Commission) to run workplace programs (based on learning needs analyses) in conjunction with employers. Funding for this provision has been maintained at a similar level for some years now.

In Australia workplace LLN has historically been delivered within national training packages, where the LLN components are integrated with other training content—'built in, not bolted on'; operating alongside the industry training packages are a raft of accredited courses that also lead to qualifications. It is in this area that many courses deal directly with literacy and numeracy issues. More recently, the government has released a new foundation skills strategy for adults (Standing Council on Tertiary Education Skills and Employment 2012), replacing the Australian

Language and Literacy Policy of 1991. This national strategy notes that 'government investment in increasing the literacy skills of adults has a direct and positive impact on labour productivity and gross domestic product per capita' (2012, p. 9). Strategy objectives include references to the involvement of employers. The strategy document goes on to state:

> A priority for Australian governments under the National Strategy is to provide individuals and employers with more information about foundation skills education and training, encourage broader community understanding of the importance of developing these skills, and promote the idea that everyone has a role to play in supporting adult foundation skills. (2012, p. 14)

Section 3.3 then details how the Australian government plans to strengthen foundation skills in Australian workplaces, with clear links to the work of the Workforce and Productivity Agency.

Looking at the numbers of workers with low-level LLN skills identified in the national incidence studies (conservatively say half a million in New Zealand) and the numbers catered for in current LLN programs in total (approximately 40,000 at the time of writing),[1] the questions arise: how adequate is the response to date and is it feasible to address the problem fully in the future? The answer to the first question is immediately obvious: the coverage by current provision (even if provision includes non-workplace programs that workers might attend in their own time) has not even remotely matched the scale of need identified in national surveys. While the validity of the incidence studies has been challenged in some quarters (Elley 1999; Hamilton and Barton 2000), these critiques have been predominantly around the validity of the assessment measures to adequately address the complexity of multiple literacies, rather than the scale of the issue.

The focus therefore switches more to the question of whether provision of any shape or size can ever adequately respond in the future. The hope that improved schooling will at least reduce the numbers of young adults entering the workforce with low LLN skills is soon dashed when school research findings such as PISA are examined (see www.oecd.org/pisa/). It also ignores the fact that the majority of adults are already in the workforce and most of this group will constitute the bulk of the workforce for some considerable time yet. This hope is also tempered by the reality that LLN demands in most jobs are constantly increasing (Felstead et al. 2007), which means that today's LLN skills are almost inevitably inadequate for tomorrow's demands.

One solution is to screen workers for their LLN skills when recruiting new staff. This option is certainly more feasible in a tight job market that looks to continue for some time yet. Again however, this solution does nothing for those already employed in companies. Along similar lines, companies can 'strip out' or minimise tasks and processes that require LLN skills, especially above a basic level. Already, as Dixon and Tuya (2010) have shown, over half of those workers with low-level skills operate in work environments where they are not required to use these skills on a regular basis.

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[1] Australia's WELL program catered for 72,000 employees from 2007 to 2012 (Third Horizon 2012, p. 3).

The question arises here, are LLN-related demands in future workplaces likely to increase or decrease? Clearly, this will vary considerably across employment sectors, but if jobs survive automation, it is most likely that they will involve LLN elements of increasing complexity (Gray 2006; Shomos 2010). Being able to perform work tasks that require complex LLN skills is likely to become even more crucial for retaining employment than it is at present.

In terms of provision, the chances of substantial increases in government funding on a sustained basis by parties of any political hue look increasingly dim within the current economic climate. While a small number of employers have funded programs independently of government sources, past experience indicates that this is an unrealistic solution at any significant scale. The most likely solution therefore is to review how current funding is used and in particular look to more innovative uses of funds. Some countries such as Ireland (National Adult Literacy Agency 2013) and Turkey (Durgunoğlu et al. 2003) for example have developed large-scale LLN programs broadcast on TV and radio at peak times. Such programs are particularly useful for supplementing more intensive forms of face-to-face provision and for reaching large numbers of learners. Secondly, computer-based and flexible learning distance programs that can be used as stand-alone tuition for higher-level learners and as supplements for lower-level learners also have potential that is yet to be fully tapped. Pathways Awarua (http://www.pathwaysawarua.com/) in New Zealand and the Irish distance strategy (National Adult Literacy Agency n.d.) are examples of this type of provision. Thirdly, in the best spirit of lifelong learning, there is considerable potential for non-educational sectors to take up the challenge of responding to LLN needs. Prime examples of this type of uptake are the health sector where LLN is now seen as an important consideration of health education materials, the employment sector and corrections, where LLN has become a major focus of many initiatives.

There has been little explicit debate about how to match responses with the identified need at a national level. In New Zealand a coalition of seven groups (Workbase, Literacy Aotearoa, English Language Partners, Business NZ, Industry Training Federation and NZ Council of Trade Unions with support from Ako Aotearoa) with an interest in LLN, the Literacy Alliance, has endeavoured to lobby government over recent years about the mismatch between the degree of need and level of funding. The group's main focus has been to advocate for increased funding along with extending the involvement of non-educational groups to address the issue.

A more detailed analysis has been undertaken by Scott Murray and colleagues in Canada (Murray et al. 2009). Murray was heavily involved in the IALS and ALL studies when working for Statistics Canada and has since done considerable independent work with his Canadian company DataAngel. Murray argued that there needs to be a better match between what he called the literacy market (subdivided into 12 subgroups according to the nature of their LLN skills) and LLN provision. The increase in funding needed for a more accurately matched response is then justified by the economic returns from improved work performance. Like the Literacy Alliance, Murray argued for broadening the involvement of non-educational sectors in addressing the issue.

The Role of Research

One of the significant developments in LLN generally over the past decade has been the increase in the quantity and quality of research that has been undertaken to inform and underpin many of the sector's developments. The emergence of LLN research has been particularly notable in the UK with the National Research and Development Centre (NRDC), a consortium of UK universities and other research bodies, and in the US with the National Center for the Study of Adult Literacy and Learning (NCSALL), based at Harvard University. Both centres enjoyed significant funding for about a decade, but have fallen on hard times over recent years: NRDC has a much-reduced research program while NCSALL has been disbanded altogether due to budget cuts under the last Republican president, with re-establishment now unlikely under the current rounds of funding cuts.

Both of these centres undertook large research programs focusing on a wide array of LLN topics and issues. Their work was of consistently high quality relative to previous studies and they distributed their results widely through print and web-based resources. While their coverage of workplace LLN was not extensive, they did help to create an awareness of the value of research-informed development, especially in a political environment increasingly demanding 'research-based' proposals, both for retaining funding for current provision as well as for new ones.

In smaller countries like Ireland and New Zealand, the work of NRDC and NCSALL has been used extensively to complement smaller local research programs that have focused on specific issues and programs unique to these countries. New Zealand for example enjoyed a decade of unprecedented research funding (predominantly focused on workplace LLN) until this was almost completely withdrawn following a government change and the GEC.

It is noteworthy therefore that the Australian National Strategy mentioned above includes a separate section on the role of research in its planning: 'For adult learners to get the best outcomes from foundation skills education or training, the system that delivers this education and training and the government policy that supports the system should be informed by up-to-date research and a strong evidence base' (Standing Council on Tertiary Education Skills and Employment 2012, p. 16).

Impact of Workplace LLN Programs

Although there has been growing interest in the role of LLN programs in changing workplace practices, there has been a surprising dearth of rigorous research about this form of provision and in particular about its impact on the workplace until quite recently. Firstly, there are now a number of extensive literature reviews available; these have shown that only a fraction of this writing is based on original research studies (Ananiadou et al. 2003, 2004; Gray 2006; Salomon 2009). Most of the studies (see for example Conference Board of Canada 2005) are based on surveys of opinions about impact (usually employers') or simple post-course evaluations. Over

recent years however, there have been three studies of note that have endeavoured to map the impact of workplace LLN programs with much more extensive research designs.

Wolf and Evans's (2011) UK study of 574 learners across 53 sites assessed changes in both LLN skills and workplace behaviours pre-course and then up to two years after the completion of the courses that were offered to the participating companies. Unfortunately, the great majority of these courses were pre-designed with little reference to the organisational needs of the companies or their workers, virtually none had teaching contextualised and they were predominantly IT-based: 'We expected programs to use sector-specific materials, related to job-specific skills, and proposed to sample on this dimension . . . In fact, use of such materials was almost non-existent' (2011, p. 168). The courses were generally not negotiated with the companies were offered 'cold turkey', and there were no procedures to follow through on their conclusion. It therefore comes as no surprise that the vast majority of the companies did not continue with follow-on courses on their completion.

Overall, the authors reported limited impact on the participating workers and their companies. They found that learners' reading performance showed only small gains a year or two post-course, mainly with ESL learners: 'on balance, there is little to suggest that the Skills for Life courses had any substantial impact on skills' (2011, p. 91). They attributed this lack of impact to their short duration and poor linking to learners' objectives and needs. They were somewhat more optimistic about the courses' impact on the participants' general attitudes to learning (especially for those who took part voluntarily), with most reporting much greater interest in doing courses and many actually following through on this interest. Unfortunately the study had very little to say about the impact on workplace practices: 'there were no major changes in job satisfaction and no significant changes in behaviour which might contribute to productivity, such as willingness to suggest changes in work practices' (Wolf et al. 2010, p. 394). Employers' perspectives were largely restricted to their ratings of the courses: most were very positive about the experience, although no analysis of specific impacts was reported (over half of the managers had changed between pre- and post-course assessments).

A second study of note is the Measures of Success research project in Canada (Palameta et al. in press).[2] This project studied 226 workplace LLN participants in 18 companies in Manitoba and Nova Scotia. At the time of writing, the final report has not been released but will be available on the research coordinator's website (www.centreforliteracy.qc.ca) by mid-2013. Draft results have been much more positive than those reported in the Wolf and Evans study.

A third study involved 491 workers in 18 workplace courses in 15 companies throughout New Zealand.[3] Each of these courses was evaluated and the results cumulated in an overall evaluation report (Department of Labour 2010). The evaluations aimed to answer two broad questions:

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[2] The author was an external advisor for this project.

[3] The author was lead researcher for this project.

1. What do workplace literacy and numeracy programs achieve for the learners and the companies they work for?
2. What is the most effective way to organise and run workplace literacy and numeracy programs?

The courses being evaluated were diverse in terms of the industries involved (although all involved semi-skilled labour forces), company size, geographical location, program formats, duration and types of learners. While the courses varied in approach and length, all had been tailored to the needs of the company. A third of them were block courses and the others were run for one to two hours weekly. There was a mix of small-group and one-to-one tutoring.

A comprehensive, multi-method evaluation program was carried out over a three-year period. The evaluations sought a wide range of both quantitative and qualitative data to identify outcomes for the course participants, their workplace practices, the companies they work for and their lives outside work. Of the 491 course participants interviewed and assessed pre-course, of whom 343 (69.8 %) of these participants were also interviewed and assessed post-course, most (18 % of the pre-course total) of those who missed the post-course interviews had left their companies in the period following the initial interviews.

Findings

Of the 278 participants who were re-tested for reading at the end of their course, 86 % showed an improvement in their reading scores, while the reading scores for 4 % remained the same and they decreased for 10 %. Average reading scaled scores increased by 10.1 points out of 100. There was variation in changes in reading scores across courses from zero to 16 points, with 5 courses achieving an average improvement of less than 8 points, and 5 courses achieving an improvement of 12–16 points. Greater gains in reading scores were made by women, participants with higher qualifications and participants taught by providers with high levels of literacy and workplace training experience.

> Spec[ification] forms—I used to be hesitant and make mistakes as I didn't read the specs right. Now I've got a better understanding of the specs and confidence to ask.
> Oh, reading blueprints is a whole lot easier. I look at it and go ahead with it. It was great when I clicked on to it, it all seemed so obvious.

Two-thirds (66.1 %) of participants made gains in their writing score. Overall the participants increased their scores from 15.6 to 18.1 out of 29. Changes in reading and writing scores were weakly related, with writing scores tending to increase as reading scores increased.

> How to fill in incident forms. I do them properly now. Rather than just writing 'broke toe', I give them the full details and a photo too! With the incident forms, I fill them in properly and I'm able to help the new guys now.

There was a limited amount of numeracy teaching: 12 of the 18 courses taught no or little numeracy; five taught some and only one a lot of numeracy. The course

with the greatest number of numeracy learners was hit by a major crisis, resulting in most of these participants being laid off and not completing the post-course assessments. The numeracy assessment data is therefore limited and of little value, although participants still reported changes in their work as a result of the numeracy teaching.

> I'm now working out the volume of concrete. The engineers used to come out, now they just double-check it.
> I've got a clearer idea of plans, survey pegs and a whole pile of those sorts of things; it nailed it home really. I use correct terminology now and I'm a whole lot more efficient now.

In terms of speaking and listening, course participants were asked, pre-course and post-course, to rate their confidence on a 1–6 scale (1 = low) in speaking to a workmate or supervisor one-to-one; a small group; a large group; and someone they do not know, such as a new customer. There were small but consistent increases across all four workplace speaking contexts, especially in speaking one-to-one to people they do not know. Around three-quarters of participants (73.1 %) reported that their speaking skills had improved as a result of the course and 77 % said their listening skills had done so.

> Oh, communicating—being able to talk to customers. Knowing what I'm doing fully—not just pretending! Speaking up now and then at [company meetings]. I never used to speak up at all.

Managers identified speaking and reading as the two skills where most progress was made, followed by listening. Providers identified speaking as the area of greatest improvement, followed by reading, writing and listening.

Course Impact on Workplace Practices

Overall, 80 % of course participants reported doing their job better as a result of the course, with most of them providing examples of the sorts of things they were doing better. Examples of these changes included reading blueprints, learning company policies, reading maps and street signs, doing paperwork such as hazard reports and accident reports. Those who said they were more confident about doing their job were more likely to report they were doing their job better and those who said their literacy skills had improved were more likely to report they were doing their job better.

Ninety-seven per cent of the comments made about the course were positive. Participants gave many examples of the positive impact of their course on their workplace practices. Most frequently, they reported that the course had had a favourable impact on work tasks requiring reading and writing. Improved oral communication skills for those with English as an additional language was the second most frequently mentioned theme, and improved communication skills for those with English as their first language was the third most common theme.

> Yes, I look at it a different way. I didn't understand instructions before. I feel a lot easier. I can do maps now and street signs. I can work them out.

In 12 of the 18 courses, supervisors rated the course participants across a range of elements covering their daily work practices (attitude towards work, ability to use initiative and work without supervision, willingness to attempt tasks, ability to work as part of a team, and completion of paperwork) on a 1–10 scale (1 = low) both before and after the course (they were not shown their pre-course assessments). Around 60 % of all supervisor ratings of the participants increased. The greatest increase in average ratings was for completion of paperwork.

Employers' and Course Providers' Perspectives

Employers and course providers were asked to rate the impact of a range of outcomes for the participants from a list of possible outcomes given to them. Providers reported that the most notable outcomes for their course participants were increases in personal and job confidence, improved communication with other workers and a greater interest in training. These four outcomes were also in the top five outcomes reported by managers, most of whom also commented that communication between management and workers had improved. Another important outcome identified by providers was improved speaking skills for those with English as a second language.

When reflecting on the impact of their course on the literacy and numeracy skills of the course participants, both providers and employers judged that their course had had most impact on speaking, listening, reading and writing skills. Providers reported that the greatest impact was on speaking and employers on speaking and reading.

Course providers tended to report more positive outcomes than the employers, with more providers reporting a greater impact on skills than employers did. The discrepancy between their views is most marked for writing and ESL. This is probably because providers had worked closely with participants from the early diagnostic assessments through to end-of-course assessments.

Effective Workplace LLN Courses

Robert Brinkerhoff (2003, 2005) argued that *outliers* (those on whom the program has the most and the least impact) are the most fruitful sources of data in understanding why programs have not worked in some cases and why they have had high impact in others. Brinkerhoff's 'success case method' helps identify why courses have a high impact on some participants, and helps to identify factors that can then be replicated or accentuated in future courses and, conversely, reveals why courses have low impact, which means that these factors can then be avoided or minimised in future courses in order to improve course effectiveness.

The 18 courses were classified as 'high', 'medium' or 'low' impact on the basis of the following data sources:

- the impact on learners' LLN skills and their workplace practices;
- the impact on participants individually and outside work;

- the degree to which obstacles had been successfully overcome when planning and delivering the course[4];
- the spread of LLN initiatives in the company beyond the initial course;
- the sustainability of the course over the longer term;
- the degree of buy-in and ongoing commitment from managers and supervisors at the company;
- course attendance; and
- general feedback from learners.

Using these results, four courses were classified as high impact (79 learners), five courses as low impact (50 learners) and the remaining nine courses as medium impact (214 learners). Having classified the courses by level of impact, the distinctive features of each category of courses were then identified. While no single course had all these features, the most successful ones had a high proportion of the features in the list below.

The Company

- All key stakeholders within the company had a clear understanding of the purpose and processes of the course.
- Managers from senior level through to supervisors demonstrated high levels of support for, and awareness of, the courses; they actively demonstrated their support rather than simply verbalising it.
- Course participants had relief workers while attending teaching sessions or alternative arrangements were made to minimise intrusion on company production.
- Teaching spaces were on-site, consistently available and removed from outside distractions.
- LLN provision was integrated into long-term training and company planning.

Providers/Tutors

- Providers supported their tutors in terms of professional support and strong planning and logistics.
- Providers had a high level of experience of running workplace LLN programs.
- Tutors were experienced in both LLN teaching and workplace programs and had LLN-related qualifications.
- Tutors had high levels of commitment and were prepared to be flexible in their teaching schedules.

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[4] Courses that ran smoothly tended to have greater impact on participants and their work.

Logistics

- Employers or providers recruited participants who closely matched the purpose of the course (e.g. clearly had LLN needs or whose work matched the teaching content).
- Course purpose and content were explained clearly to participants at the start of the course.
- Tutors 'hit the ground running' from the first teaching session to ensure learner motivation and retention.
- Where particular teaching content was promised to learners, this content was delivered.
- There were clear and ongoing communications between providers, tutors and company personnel.

The Courses

- The courses were run in work time.[5]
- Teaching content that was closely related to companies' issues was identified in learning needs analyses and the course tutor used company documentation and processes in their teaching.
- Teaching content was simultaneously related to learners' specific learning needs based on learning needs analyses and their personal interests.

The Learners

- Participants with high motivation and sense of commitment were selected.
- They consistently attended teaching sessions.

Less frequent features of the high-impact courses included the following.

The Company

- Companies had a strong learning culture, evidenced in diverse training programs that involved workers at all levels of the company.
- Companies publicly acknowledged the courses and learner achievements.

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[5] All participants in the project were paid, and a majority attended classes during work time.

Provider/Tutors

- Providers were closely involved in all pre-course processes, especially course planning, publicity and recruitment.
- There were minimal changes in tutoring personnel.

Logistics

- Participants were grouped homogeneously according to LLN skills.
- If applicable, courses were held in the low-demand season.
- There was ongoing contact between tutors and supervisors, including updates on learner progress in relation to work tasks.

Transfer of Learning

One important area that warrants greater research attention is the area of learning transfer. Based on his evaluations of general workplace training programs, Brinkerhoff (2005) has concluded that much of the potential for program impact is lost because of the lack of follow through after courses are run. He argued that a disproportionate amount of resources and time is spent on the courses, while scant attention is paid to pre-course (e.g. careful selection of participants and explanation of the course intent) and post-course (e.g. gaining support from supervisors and managers to incorporate changes in practice) activities. The studies quoted above provide some indication of what happens during and after LLN courses are run, but research specifically focused on this important element of achieving program impact would help round out our understanding of how changes in workplace practices do or do not occur.

While there is a strong body of research on learning transfer in general training programs, there is little specifically on transfer from LLN programs (Cameron et al. 2011). One small study (Benseman 2010) of a company's course for eight factory workers followed these participants over a six-month period to monitor how they transferred the LLN skills they were learning back into their jobs. The study showed that the timing and degree of impact varied considerably with the nature and level of the LLN skills being taught; for example learning to calculate area could be implemented immediately while improving low-level language skills took much longer to achieve. Other factors to influence transfer were the degree of contextualisation in the teaching content, the relationship between the teaching and the learner's specific needs, the degree of support from the learner's supervisors and workmates (ideally involving on-going contact with the course tutor) and the personal commitment of the learners themselves.

Conclusion

LLN issues are a relatively new entrant to the mix of workplace training factors. LLN skills are not only important skills in their own right; they are also a prerequisite for all other forms of training. Training workers to use state-of-the-art machinery and technology can only succeed if they have the requisite LLN skills in the first place. While there are any number of initiatives underway in our education system to improve LLN skills, they are unlikely to 'solve' the LLN problem any time soon. The reality is that post-school education, and especially those sectors where there are disproportionately high numbers of adults for whom schools failed, will need to grapple with these issues certainly for the foreseeable future. The question is not whether or not to respond to LLN issues, but how.

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