

Social and economic benefits of improved adult literacy: Towards a better understanding

Support document

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This document was produced by the authors based on their research for the report, *Social and economic benefits of improved adult literacy: Towards a better understanding*, and is an added resource for further information. The report is available on NCVER's website: <<http://www.ncver.edu.au>>

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Mapping benefits and costs: literature review

Introduction

This support document provides a detailed overview and discussion of the literature on which the report, *Social and economic benefits and costs of adult literacy in Australia: Towards a better understanding*, is based. It is intended to be of interest to all readers but especially to researchers interested in working in any of the specific areas discussed. It includes literature on relevant frameworks and methodologies and the social and economic domains identified in the main report, i.e. business and employers, health literacy, financial literacy, family literacy and crime, together with brief reviews of research related to two specific population groups. For coherence, information about the International Adult Literacy Survey and the Adult Literacy and Lifeskills Survey and their use as data sources is repeated in the main report and the support document.

Frameworks for benefits of (adult) learning

The past couple of decades have seen an increase in research which seeks to identify the benefits of adult learning and to devise and test out various means of measuring both individual outcomes and broader economic and social impacts of adult learning. It is fair to say that internationally, the research has been driven by some common factors, despite variations in national adult education policies and organisational structures. One driving force is the emergence of adult and lifelong learning as crucial in a knowledge-based society. Another impetus is increased requirements for greater accountability in the use of public funds and a much stronger emphasis on evidence-based policy development. The research reported in this review grows out of different theoretical positions and methodological approaches. The primary purpose of the review is to examine how the diverse approaches contribute to providing models and methodologies which are likely to be useful in investigating literacy and numeracy impacts.

Centre for Research on the Wider Benefits of Learning

The Centre for Research on the Wider Benefits of Learning in the UK has developed a framework to investigate benefits of learning which are ‘wider’ in the sense of being ‘non-economic’ (not measured directly by personal income or increased productivity) and which go beyond the individual (Schuller, Bynner, Green, Blackwell, Hammond, Preston & Gough 2001). It is also a useful basis for thinking about the impacts of literacy and numeracy. The framework was developed as a result of in-depth field work, analysis of large existing cohort data sets and development of tools for analysis. As with all such frameworks, there is an acknowledged tension between validity and precision and constant attempts to refine the indicators of learning and presumed outcomes.

The framework employs notions of identity capital, human capital and social capital (Figure 1) and draws on three broad areas—the personal (psychological), the economic and the social—which form the basis of a substantial number of ‘learning outcome’ frameworks and conceptualisations. Learning is conceived as a process through which people build up their assets in each of the three broad areas and then benefit in terms of better health, stronger social networks and enhanced family life. Schuller, Preston, Hammond, Brassett-Grundy & Bynner (2004) note that: “The

further along the lifecourse people are the more their previous life experience comes into play, and learning forms part of the complex patterns of cause and effect with a host of different factors interacting over time' (p.14).

Figure 1: Conceptualisation of the wider benefits of learning (Schuller et al. 2004, p.13)



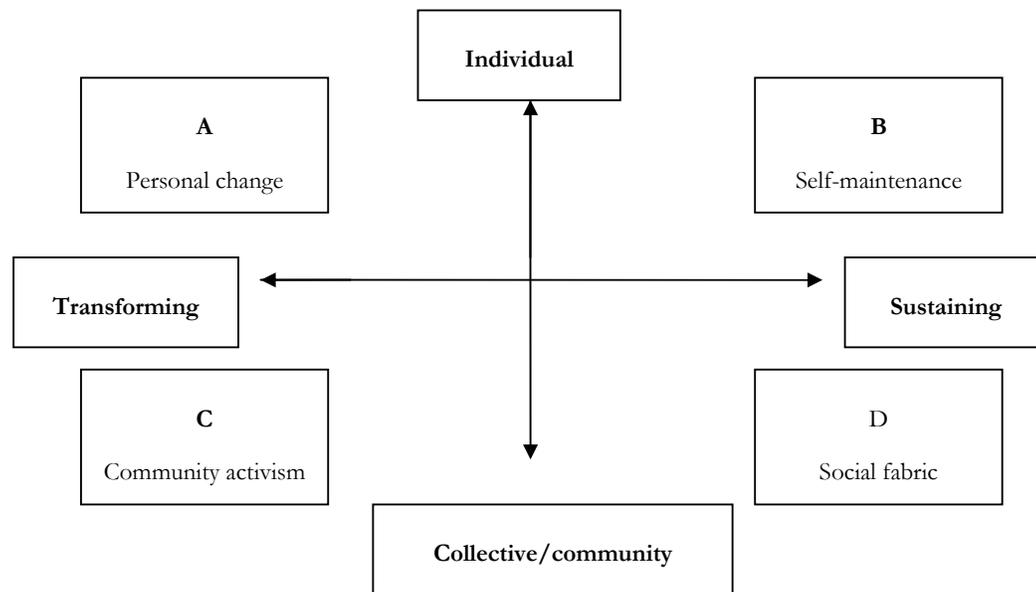
The items in the triangle in Figure 1 are both outcomes of learning and ‘capabilities’ allowing for further development and benefits. While some are more closely related to one of the three forms of capital, e.g. self-concept to identity capital, the outcomes are not conceived as fixed in their distance from the particular pole or their relationship to each other, and the whole framework is essentially dynamic in nature. Learning is likely to have multiple outcomes, it is ongoing, interactions between outcomes are complex and it is possible to explore links between any two or more outcomes.

A further element of the framework is a simple matrix with two dimensions: individual to collective and sustaining to transforming (Figure 2). Both dimensions are continua. The sustaining-transforming axis in Figure 2 was proposed to reflect fieldwork findings that not all learning marks a discrete and direct change or transformation. Rather, the effect of much learning is to enable individuals and communities to sustain what they are doing. This sustaining effect is pervasive, operates at many different levels and is critical to the lives of countless individuals and communities. Often it goes unrecognised but is nevertheless crucial to the health of individuals

and communities and prevents or inhibits decline. The authors note that any estimate of the benefits or general effects of learning, should at least try to come to grips with the way it acts to sustain and nurture some of the most fundamental aspects of social life (Schuller, Brassett-Grundy, Green, Hammond & Preston 2002 p.12). There are clear parallels here with literacy and numeracy.

Benefits of learning can be identified in each of the four quadrants in the matrix. They are cumulative and dynamic; benefits gained in one domain impact on functioning in other domains; and the effects are either 'transformative in the reconstruction of personal and community life or sustain and enrich the status quo' (p.161). Other important aspects of the general theoretical framework include: outcomes of learning can be negative; learning is a collective experience; mediating factors (such as attitudes, values, self-esteem and confidence) link learning experiences to the domains (e.g. health, family, social capital) where impacts are predicted.

Figure 2: Effects of learning:



(Schuller et al. 2004, p.25)

Data sources and methodologies used to investigate the wider benefits of adult learning are diverse. Schuller et al. (2004) stress the importance of triangulation and convergence of findings from different sources and complementary approaches. The sources they used include: results from in-depth interviews with individual learners and group interviews with tutors; a quantitative approach using multivariate statistical analysis, which matched the interview findings to data from large scale longitudinal studies, i.e. the 1958 National Child Development Study and the 1970 British Cohort Study; and some tools for analysis which are intended to be taken up, refined and used in further analyses.

Detailed case study information was used to tease out how different learning experiences at various stages of life sustain and/or change people and have impacts at an individual and community level in the areas of health, family and social capital. The quantitative analysis tested out the hypotheses and found strong evidence that taking courses during adulthood leads to a wide range of benefits.

An earlier quantitative analysis of the 1958 National Child Development Study database (Feinstein, Hammond, Woods, Preston & Bynner 2003) investigated the effects of adults

participating in learning between the ages of 33 and 42 on a range of measures of health, social capital and cohesion. The data base distinguishes between participation in different types of learning, i.e. learning leading to academic and vocational qualifications, work-related training and leisure courses. The outcome variables were changes (rather than measures at one point in time) between ages 33 and 42 in social and political attitudes, civic participation, health behaviours (smoking, alcohol consumption and exercise), self-reported life satisfaction, and onset and recovery from depression. The analysis allowed a detailed investigation of the effects of participation in different types of learning on changes in these areas.

Bringing together social and human capital

The pervasiveness and ongoing interactive effects of learning and literacy on individual lives, personal and social identity and skills and knowledge requires at the very least, a multi-disciplinary approach and the bringing together of human capital and social capital frameworks and perspectives. Falk (2001) describes the significance of bringing human and social capital together as their 'joint capacity to enhance people's learning and response to change' (p.314).

Desjardins' (2004) conceptual framework for the analysis of learning outcomes combines a human capital perspective with a lifelong-lifewide learning perspective and the (multiple) benefits of learning. The importance of multiple learning contexts—formal, non-informal and informal—occurring at different and changing times in an individual's lifetime is also incorporated. Outcomes usually seen as 'human capital', i.e. knowledge, skills, competencies and attributes, are referred to as intermediate outcomes and the ways in which these are translated and 'used' for personal, social and economic wellbeing are referred to as 'final' outcomes. Final learning outcomes include:

- ✧ psychological well being (states of mind, self-esteem, self-respect, happiness, identity, decision-making);
- ✧ economic well being (financial support, productivity, wealth);
- ✧ physical well being (health, nutrition, safety), and
- ✧ social well being (relations, friendships, empathy, civic involvement, democratic empowerment, law and order).

Outcomes of adult literacy programs

The main report, *Social and economic benefits and costs of adult literacy in Australia*, explains why evaluations of adult literacy programs are not included as a major component of the literature review. However, the following study is reported for the following reasons: it critically analyses a range of national, state, welfare and work-based programs; it applies relatively stringent conditions in making 'reasoned inferences' about their effectiveness; and it points to conceptual, design and methodological problems which have implications for investigating benefits and costs associated with literacy (and the impact of adult literacy programs).

Beder (1999) investigated the outcomes (changes in learners) and impacts (wider social changes) associated with adult literacy education in America. Twenty-three studies were selected as most credible from a total of 115 identified studies which examined outcomes and impacts. The evidence was weighed up according to the amount of convergence/divergence of findings and the credibility of the individual studies. Many of the studies were found wanting in some way. Some of the conceptual, design and methodological problems noted were inherent in the design and some were a result of the difficulty of getting good data. Specific difficulties in measuring outcomes from programs included:

- ✧ lack of consensus about what adult literacy is or what its goals should be;

- ✧ the use of standardised tests that are not sensitive enough to pick up personally important goals or to reflect the context specific nature of literacy;
- ✧ difficulties in ascribing causality, and
- ✧ differential outcomes related to the amount of time people spend in programs, the nature and orientation of the program and how closely they match the specific needs of learners.

Despite these difficulties, the overall conclusions based on the studies are positive, although conservatively stated. It needs to be noted that the reported outcomes and impacts are restricted to what was measured and in most programs this is related to reporting requirements of funding bodies.

- ✧ Both human capital objectives and learners' personal goals can be achieved.
- ✧ In general, it is likely that participants in adult literacy education receive gains in employment; they believe that their jobs improve over time, however there is no evidence that participation causes job improvement.
- ✧ In general, it is likely that participation in adult literacy education results in earnings gains and has a positive influence on continued education; has a positive influence on self-image and a positive impact on parents' involvement in their children's education.
- ✧ Learners perceive that their personal goals are achieved through participation in adult literacy education.

Data sources

It should be borne in mind that research which examines the link between literacy and numeracy levels and economic and social outcomes, rather than using related measures such as years of schooling or qualifications, is still relatively new. A number of studies have used the large datasets available as a result of the International Adult Literacy Survey (IALS) to measure the economic and social benefits of improving literacy skills or the costs of poor literacy to individuals and/or the economy and society.

The IALS and the ALLS

During the 1990s, the main data source for international and national information on adult literacy proficiency was the International Adult Literacy Survey (IALS). The survey was coordinated by the OECD and Statistics Canada (OECD & Human Resources Development Canada 1997) and conducted between 1994 and 1998 in some 30 countries. Australia had a sample of over 9000 people, the largest of any participating country. Australian findings are reported in *Aspects of literacy: Assessed literacy skills* (ABS 1997a). A notable analysis of these findings is the Language Australia report (Hagston 2002), which explored the implications of the findings for further research and policy. In terms of statistical analysis, Chiswick, Lee & Miller (2003) used data from the Australian IALS to examine the effects on labour market outcomes of literacy, numeracy and schooling.

The IALS provides measures of three domains of literacy skills: prose literacy, document literacy and quantitative literacy. The quantitative domain measures numeracy, so 'literacy' in the IALS can be regarded as literacy and numeracy where findings from the three domains are reported together. Literacy proficiency is reported according to five levels, level 5 being the highest. Briefly, level 3 is described as a 'suitable minimum for coping with the demands of everyday life and work in a complex advanced society' (OECD & Statistics Canada 2000, p. xi). Around 20% of Australians were at Level 1 on each scale, and around 28% on Level 2. They were not necessarily the same people; about 15% were on Level 1 on all three scales (ABS 1997a).

The IALS was criticised on a number of counts. Sticht (2001) questioned its validity, including the standard used as a measure of competence. Others have argued it is based on an inadequate and outdated understanding of literacy and an individual deficit model (see e.g. the summary of criticisms in Lonsdale & McCurry 2004). Some see it as reflecting the state of technology and understanding at the time and as requiring further development incorporating higher order skills (Desjardins & Murray 2003). Despite the criticisms, it has been used extensively by some participating countries for planning and advocacy and to explore relationships between literacy levels and other social and economic variables. Statistics Canada has produced a substantial number of reports exploring such issues as literacy and labour market outcomes, occupational assignment and the returns to over- and under-education, and immigrant earnings.

Initial findings from the first round of a follow-up international survey, the Adult Literacy and Lifeskills Survey (ALLS) conducted in 2003, were released in 2005. In Australia, the ALLS, conducted by the Australian Bureau of Statistics will take place in the second half of 2006. In addition to prose literacy and document literacy included in the IALS, the survey directly measures numeracy (replacing the quantitative literacy domain of the IALS) and problem solving. It indirectly measures teamwork, the competencies needed for effective participation in a team, and knowledge and skills related to information communication technologies. Information about

participation in adult learning and training after the initial cycle of formal education is also sought.

Using the IALS to map benefits and costs

IALS data has been used to examine the link between literacy and a number of economic variables, including labour market outcomes, earnings and the returns to different levels of education, and immigrant earnings. Analysis of IALS data (Williams 1999, quoted in Hagston 2002) has also shown that receipt of welfare benefits, health, criminal activity, and community participation are linked with literacy skills and educational achievement. Health has been a particularly fruitful area of investigation. Although health outcomes were not directly measured in the IALS, analysis of IALS findings has shown that high levels of literacy are associated with better health outcomes, for example, higher life expectancy and healthier habits and lifestyles (OECD & Statistics Canada 2000). Similarly, Roberts & Fawcett's (1998) analysis of Canadian IALS data found that people with lower literacy levels were more likely to be at higher health risk, with an increased effect on senior citizens.

Within Australia, Chiswick, Lee & Miller (2003) used data from the IALS to examine the effects on labour market outcomes of literacy, numeracy and schooling. They found that approximately half of the total effect of schooling on labour force participation and on unemployment can be attributed to literacy and numeracy skills.

Most recently, data from the IALS has been used by Coulombe, Tremblay & Marchand (2004) to identify a significant relationship between investments in human capital and a country's subsequent economic growth and labour productivity. The study is of particular interest because it was the first to identify a clear and significant association between a country's investment in human capital and its economic growth and because it used a direct measure of skills, i.e. literacy levels, as measured by the IALS, to identify this link. Previous studies which focused on educational qualifications had failed to prove a link between human capital and economic growth. Coulombe, Tremblay & Marchand (2004) concluded that a rise of 1% in a country's literacy score relative to the international average is associated with an eventual 2.5% relative rise in labour productivity and a 1.5% increase in GDP per head.

Use of longitudinal cohort studies

In the UK, Dearden, Reed & van Reenen (2000), Dearden, McIntosh, Mych & Vignoles (2002) and McIntosh & Vignoles (2001) have examined the impact of literacy and numeracy skills on an individual's employment and earnings, using data from both the International Adult Literacy Survey and the National Childhood Development Study. The National Child Development Study, along with the British Cohort Study, are popular data sources for measuring the costs of poor literacy and the benefits to individuals and society of improving literacy (see also specific domain areas). Indeed, the two studies have been used far more frequently than the IALS dataset to measure the economic and non-economic outcomes of literacy and numeracy skills. This is likely to be because the National Child Development Study and the 1970 British Cohort Study contain far richer data on both economic and social outcomes than the IALS, particularly on the latter. Given the importance of these data sources for research purposes, it is worth explaining how the data have been collected.

The National Child Development Study commenced in 1958 and comprised surveys of individuals at birth and at ages 7, 11, 23 and 33 (n=11 400). A comparable follow-up survey of 10% of the sample at age 37 included literacy and numeracy assessments and a range of other information about earnings and employment and other features of adult life. The British Cohort

Study dataset comprised surveys at birth and at ages 5, 10, 16 and 26 (n=9 000). At age 21, a 10% sub-sample survey included literacy and numeracy assessments and details of cohort members' earnings and employment.

Bynner, McIntosh, Vignoles, Dearden, Reed, & van Reenen (2001) used the National Child Development Study and the British Cohort Study, together with data from the UK Family Expenditure Survey and Family Resources Surveys, to measure both the economic and non-economic impacts of improving adult literacy and numeracy skills. Using statistical modelling techniques, they found that individuals who increase their literacy and numeracy levels:

- ✧ improve their chances in the labour market, moving up the occupational status scale and resisting unemployment;
- ✧ suffer less from poor physical and mental health;
- ✧ are less likely to have children experiencing difficulty at school;
- ✧ are more likely to be active citizens, as shown by voting and expressing interest in politics, and
- ✧ are more liberal and less discriminatory in their attitudes.

These effects persist after controlling for earlier family circumstances and educational achievement. Labour market effects were found to be stronger for the younger British Cohort Study cohort and the health and citizenship effects stronger for the older National Child Development Study cohort.

Bynner et al. (2001) also used micro-economic modelling and the Family Expenditure Survey and Family Resources Survey time series, the impact on GDP and government finances of implementing the literacy and numeracy targets set out in the Moser report (Moser 1999). Moser's comprehensive review preceded Skills for Life, the national strategy for improving adult literacy and numeracy skills in the UK (Department for Education and Skills 2001). Bynner et al. (2001) found that meeting the literacy and numeracy targets would generate £0.44 billion and £2.54 billion per annum (2001 prices), respectively, to the taxpayer.

The National Child Development Study was also used by Machin, McIntosh, Vignoles & Vitanen (2001) who found that literacy and numeracy skills were more important in explaining differences in adult earnings than 'soft skills' and attitudes (latter data collected through an add-on survey). Machin et al. (2001) also measured the impact on earnings of adults who increased their literacy and numeracy skills between aged 16 and 37. The effect on earnings for adults who felt that their numeracy skills had improved was approximately 3% for men and 11% for women. However, other measures of improvements in literacy and numeracy, including comparison of test scores at aged 16 and 37, showed no effect on earnings. However, as Ananiadou, Jenkins and Wolf (2003) note, this may be due to the small sample size.

Dearden, Reed & van Reenen (1999) reported in Ananiadou, Jenkins & Wolf (2003), estimated the impact on the UK economy of completely eliminating poor basic skills below level 1 for the whole of the adult population aged 22 to 59. The methodology was based on measured differences in the earnings and employment rates of National Child Development Study and British Cohort Study cohort members who had literacy skills above level 1, as compared to those below level 1 (numeracy was analysed in the same way). The report examined the impact of skill improvement on the assumption that this would provide the same additional wages and hours of work as were evident for the 'skilled' groups in the study two cohorts.

Dearden et al. (1999) estimated that eliminating literacy skills below level 1 would increase overall wages in the UK economy by £4 billion (in 2000–2001) and increase government finances (higher tax receipts and/or lower benefits payments) by around £0.61 billion. Eliminating poor numeracy skills below level 1 was estimated to have a larger impact: an increase in the overall

wage bill of £10 billion; an increase in employment of 1% (approx. 200 000 people); and an increase in government tax receipts of just under £5 billion pounds or £383 per unskilled person per annum. This reflects the larger number of adults in the UK with poor numeracy skills below level 1, as compared to literacy skills. (It should be noted that this study was not a cost-benefit analysis, as the costs of the implementation of a strategy to eliminate poor literacy and numeracy skills below level 1 were not taken into account in the models.)

Within Australia, the impact of low school achievement in literacy and numeracy on unemployment has been measured using the Longitudinal Survey of Australian Youth (LSAY) dataset. Marks & Fleming (1998) found that low school achievement in literacy and numeracy was consistently associated with youth unemployment, with effects continuing through to the age of 33. Similarly, Gleeson (forthcoming) has been using the LSAY dataset to examine the economic returns to training for adults with low levels of literacy and numeracy. (The LSAY dataset is discussed in chapter 4 and appendix C of the main report.)

Individual outcomes and economic and social impacts

Business and employers

There is a general paucity of research internationally into the impact of poor literacy and numeracy skills on businesses and employers. This is despite employers having a vested interest in the level of literacy and numeracy skills amongst their workforce, as it is likely to impact on the productivity, profits, employee turnover and safety of their businesses.

While the emphasis is generally on medium to larger firms, poor literacy (of employers and employees) in small business is likely to have a substantial effect in a range of areas such as business performance, individual opportunities and community confidence. There is a burgeoning literature on developments in small business which raise questions about the individual and social benefits and costs of literacy. Two Australian examples illustrate potential issues.

As farming families seek to remain viable, they are diversifying into many areas of small business. Single or dual commodity farming businesses recognise the need to diversify in an environment where markets are volatile and cannot be relied upon as the sole income source (Campbell White & Associates 2002). Diversification may well require additional literacy and numeracy skills and take farmers beyond their usual environment.

There is a notable trend to self-employment in small business, especially in the service industry and through the taking up of franchise businesses. Franchises include specific training but there is little knowledge of the literacy levels of people who take up franchises, the literacy requirements associated with different areas of small business and whether the franchise training meets individual needs.

Despite the paucity of research relating to the impact of poor literacy on business and employers, it is instructive to examine what does exist in this area in regard to findings and the different approaches to measurement. This section includes research concerned with businesses of various sizes and many of the methodologies used are appropriate across a range of business sizes, from small and medium sized firms to large companies and corporations. Before examining the methodologies used, it is interesting to note employers' attitudes and practice in the area of basic skills.

Employers' attitudes and practice

A survey conducted in the UK in the early 1990s for the Adult Learning and Basic Skills Unit (ALBSU) in the UK found that only 27% of companies had a formal policy which addressed the issue of basic skills difficulties among employees, with 71% of businesses having no policy at all. The reason provided by most employers for not offering literacy and numeracy training was that staff had adequate skills for their jobs. Only 39% of companies offered training in literacy and/or numeracy, with a large percentage of this training being focused on oral communication skills rather than on reading or writing.

Another UK study conducted by Spilsbury (2002, cited in Ananiadou, Jenkins & Wolf 2003) found that the provision of workforce training in literacy and numeracy increased in line with the

size of the business. For example, among establishments with 100 to 199 employees, 22% offered basic literacy training and 22% offered basic numeracy, but this rose to 42% and 44% respectively for companies with 500 or more employees.

Atkin & Marchant's (2004) study of small business employers in rural areas of Lincolnshire and Rutland in the UK is of note. One of the groups targeted by the UK Skills for Life agenda (Department for Education and Skills 2001) is workers in low skilled jobs. Employers are supported to identify literacy and numeracy skill needs; free training provision and the costs of staff attending training for one day a week for thirteen weeks are provided.

In this context, Atkin and Marchant found that small business employers had little interest in adult literacy and numeracy training for their employees. Nor did they appear to have a realistic perception of the literacy levels of their employees. They were largely unaware of the government's Skills for Life agenda or of local initiatives and they did not think that their employees were very concerned about literacy and numeracy. In addition, the study's authors concluded that employers and employees did not appear to place sufficient value on literacy and numeracy, a factor they attributed to deep-seated attitudes in rural communities.

Somewhat contrary to the above studies, Balzary (2004) notes that during employer consultations in Australia for the development of the Employability Skills Framework in 2001, concern about literacy and numeracy skills emerged as a key issue. There was a significant view that such skills should be rated higher than other skills. Literacy and numeracy, while not specifically included in the list of Employability Skills finally adopted (Australian Chamber of Commerce and Industry and Business Council of Australia 2002) are regarded as integral underpinning components of the skills in the framework. There is evidence that industry as a whole strongly supports the requirement that Training Packages outline literacy and numeracy outcomes in specific work competences. However, whilst general employer support for literacy and numeracy is readily apparent, there is not a great deal of evidence in Australia concerning the understanding which individual employers across a range of businesses of different size and type have about employees' literacy and numeracy skills.

Measuring the costs and benefits

Ananiadou, Jenkins & Wolf (2003) examined the UK and international literature on the benefits to employers of raising workforce basic skills levels. Given the lack of evidence on literacy and numeracy skills in the workplace, they also looked at the costs (and benefits) to individuals of (improving) poor literacy and numeracy and at the sizeable literature that demonstrates the returns to employers of investing in workforce training generally (i.e. improvements in firm productivity and in some cases higher levels of innovation and/or better financial performance.) Only the most relevant studies which have focused on literacy and/or numeracy skills are reviewed below.

Costs to employers

Only one study in the UK has examined the costs to employers of poor literacy and numeracy skills (Adult Literacy and Basic Skills Unit 1993). In order to estimate the total cost to industry of poor literacy and numeracy skills among the workforce, a sample of businesses with 51 or more employees was asked a series of questions relating to specific aspects of their company's business. Specifically, they were asked to:

- ✧ Indicate how many customer orders were cancelled per year because of errors/problems, how many orders were despatched/produced incorrectly and the number of customers lost per year through problems or misunderstandings.
- ✧ Estimate what percentage of the above problems could have been avoided by better literacy and/or numeracy skills amongst staff.

- ✧ Indicate the cost of supervisory staff that could be dispensed with if literacy and numeracy skills were better
- ✧ Estimate the cost of recruiting staff externally because poor literacy and numeracy skills limit their own employees' potential for internal promotion

The costs to employers of poor literacy and numeracy skills were estimated by multiplying the average number of costs identified above that could have been avoided by better literacy and numeracy skills by their typical cost in £s. On this basis, it was estimated that in 1992, poor literacy and numeracy skills amongst employees were costing an average of £165 000 per year in companies employing 50+ workers, and up to £500 000 per year for larger companies.

Estimates of the total costs to UK employers of poor literacy and numeracy skills were arrived at by grossing up the costs identified for the sample by the number of UK companies employing over 51 or more employees. A summary of the costs are shown in Table 1:

Table 1: Estimates of the total costs to UK employers of poor literacy and numeracy skills

Costs	<i>£ (1992 prices)</i>
Cost of customer orders cancelled through poor basic skills	911
Cost of rectifying customer orders despatched incorrectly through poor basic skills	2500
Cost of customers lost through errors etc., due to poor basic skills	886
Cost of staff who could be dispensed with if basic skills were better	197
Cost of recruiting employees externally because poor basic skills limits internal promotion	334
Total	4828

Source: ALBSU 1993

It should be noted that the methodology employed in the study has been criticised (e.g. by Robinson, 1997 in Ananiadou, Jenkins & Wolf 2003). Firstly, only 15% of the 400 companies sampled were able to provide an estimate of the costs of poor literacy and/or numeracy. Secondly, most companies did not hold the view that poor literacy and/or numeracy skills had contributed to financial losses; 71% responded that their company had never experienced a financial loss that might be largely attributed to poor literacy and/or numeracy skills and a further 16% responding that this only happened rarely.

Benefits to employers

A number of different methods have been employed to measure the benefits to employers of investing in literacy and numeracy training for their workforce. They are highlighted below.

Krueger and Rouse (1998) studied the impact of federally subsidised workplace literacy programs in America on a variety of employment outcomes for individual employees, such as earnings, staff turnover, and absenteeism. This was undertaken by collecting comparative data for trainees and non-trainees in two mid-sized New Jersey companies, one manufacturing and one service based company. The study was able to measure the following aspects for those employees who participated in literacy programs (compared to non-participants):

- ✧ an increase in wages (applied to participants in the manufacturing company);
- ✧ an increase in applications for and achievement of promotion (trainees at the manufacturing company were 7% more likely to apply for and gain internal promotion);
- ✧ an increase in nominations for performance awards (proxies for increases in productivity at the service company);
- ✧ lower absenteeism rates (during the weeks in which classes were running and for the next two months), and

✧ leaving rates (no impact).

The study was also able to provide some estimates of the rate-of-return to the employer of the training expenditure. On the basis of the actual costs incurred—namely, that the federal subsidy covered approximately half the costs of the training—Kreuger & Rouse (1998) stated that, at least in the manufacturing company, the training paid for itself.

A number of studies have sought indirect or qualitative evidence of the benefit of investments in literacy and/or numeracy skills by surveying employers. Included is Bassi's (1994) survey (cited in Ananiadou, Jenkins & Wolf 2003) of management representatives, which found that around half of the managers in the study thought that training had either had a moderate or significant impact on quality of output and ability to use new technology, whereas 30-40% found it had had a moderate or significant impact on error rates, customer satisfaction, time savings and safety.

Pearson (1996) examined the benefits of workplace language and literacy training in Australia, based on the results of a survey of 30 different Australian workplaces representing 13 industries across five states. Respondents to the survey (n=500) included representatives of senior management, unions, supervisors and workers. The study found that language and literacy training was considered to have had a positive effect on five aspects of the workplace:

- ✧ direct cost savings;
- ✧ access to and acceptability of further training;
- ✧ participation in teams and meetings;
- ✧ promotion and job flexibility; and
- ✧ the value of training (which included issues such as worker morale, confidence to communicate etc.).

Respondents were asked to provide a quantitative estimate of savings to their companies based on the positive impacts identified. An average of 70% of respondents identified that their organisation had made noticeable cost savings as a result of their investment in language and literacy training. The nature of these savings varied by organisation, but the most consistently identified were related to time-saving (both supervisor and worker time) when carrying out language or literacy work tasks. The other most frequently mentioned saving was related to more accurate and fuller completion of workplace documentation. The amount of savings also varied among organisations; however, the estimated savings on 'unproductive' labour costs per participant per week for each skill surveyed were (in 1996 prices): A\$9–A\$77 per training participant per week (average range) or A\$16–A\$28 per training participant per week (median range).

Similarly, Bloom, Burrows, Lafleur & Squires (1997) reported findings of a survey of Canadian companies which sought to explore the benefits of improving literacy skills in the workplace from the perspective of both employers and employees. Twenty one of the 41 employers surveyed stated that they had observed the following benefits amongst their employees following literacy training: Increased ability to handle training on the job (12 respondents), better team performance (11 respondents), improved labour-management relations and increased quality (10 respondents), improved results in job-specific training/quicker training results (nine respondents), reduced time per task and reduced error rate (eight respondents), better health and safety record (seven respondents) and reduced wastage (six respondents). This survey suffers from the problem of a low sample, but is illustrative of the methodologies that can be used.

Moy and McDonald's (2000) research in Australia offers a useful perspective on the issue of appropriate methodologies. Although the study examined enterprise returns on investment in training in general, rather than investment in literacy and numeracy, several of the report's conclusions are relevant to the present discussion.

In the general context of advocating that Australian enterprises themselves undertake evaluation of the benefits of investing in training, the authors first suggest that enterprises use approaches which provide 'timely, useful and accessible' information rather than focusing on traditional notions of rigour, which it is suggested are often not appropriate. Second, they recommend that a number of quantitative and qualitative data sources and both financial and non-financial indicators are used. In addition, the authors outline a comprehensive taxonomy of possible outcome indicators under seven major headings: productivity and efficiency; sales and profitability; quality of products and services; customer service and satisfaction; occupational health and safety; organisational learning and development; and organisational climate, culture and practices. Some of these indicators would also be useful in exploring the costs and benefits of investment in literacy and numeracy in the workplace. More generally, the list reinforces the proposition that a broader, rather than a narrow approach to assessing and measuring returns (benefits) is likely to be most useful.

Health literacy

In Canada and America there have been partnerships between health and literacy organisations for some years. In Canada, Rootman & Ronson (2003) reviewed developments in health literacy and commented favourably on the potential of the area to provide useful solutions for people. The National Institutes of Health (NIH) in the USA have recently included health literacy as a priority area for research. It is worth noting in passing that Pfizer, the international pharmaceutical company, is heavily involved in promoting health literacy through research, project funding and other means, including a substantial compendium of information and resources for health professionals and other interested persons (see www.pfizerhealthliteracy.com).

There is as yet no universal definition of health literacy, reflecting the complexity of 'health' as a construct, as well as the complex nature of literacy and numeracy. The earliest definitions and those commonly used in medical journals employ a narrow definition focused on a person's ability to read and comprehend medical information and instructions. This is commonly termed 'functional health literacy'. The primary concern of health professionals regarding proficiency of reading instructions and general understanding of health information has led to the promotion of many 'plain language' initiatives and the development of several literacy assessment tools for use by health professionals.

Notions of health literacy beyond the purely functional have expanded considerably over the past decade or so. Initiatives have come from both the health profession and adult educators. More broadly, the need for good verbal communication between health professionals and patients has been recognised. There are also initiatives looking at health in the context of community dynamics and group participation and some limited development of 'participatory pedagogy' (Shohet 2004). The aim of participatory pedagogy is empowerment through engaging literacy students in reflection, discussion and action concerning health issues. Health specialists play the role not of experts but of human resources who share knowledge with the group.

Frameworks

Nutbeam's (1999) framework includes 'functional health literacy', 'interactive health literacy' and 'critical health literacy'. Functional health literacy is broadly the ability to read and comprehend medical information and instructions. Interactive health literacy refers to the development of personal skills that improve capacity to act independently and improve motivation and self confidence to act on advice received; critical health literacy involves personal and community empowerment to act on the social and economic determinants of health. Table 2 shows the framework without Nutbeam's examples of educational activity related to the three levels.

Table 2: Nutbeam's (1999) framework for health literacy

Health literacy level and educational goal	Content	Outcome: Individual benefits	Outcome: Community and social benefits
Functional health literacy: Communication of information	Transmission of factual information on health risks and use of health services	Improved knowledge of health risks and health services, compliance with prescribed actions.	Increased participation in population health programs (screening, immunization)
Interactive health literacy: Development of personal skills	As above, including opportunities to develop skills in a supportive environment.	Improved capacity to act independently, improving motivation and self-confidence to act on advice received.	Improved capacity to influence social norms, and interact with social groups.
Critical health literacy: Personal and community empowerment	As above provision of information on social and economic determinants of health, and opportunities to achieve policy and/or organisational change.	Improved individual resilience to social and economic adversity.	Improved capacity to act on social and economic determinants of health, improved community empowerment.

Source: Nutbeam, D (1999) *Literacy and numeracy studies*, vol.9, no.2, pp.47-55.

The framework highlights the role of literacy in enabling individuals to make informed decisions and to exercise a greater degree of autonomy and control over their lives. It embraces the participatory empowerment philosophy identified by Shohet (2004) as a continuing strand in the adult literacy field. The inclusion of interactive and critical health literacy also implies that health literacy has broader social benefits in addition to individual benefits. Higher levels of individual health literacy across a greater number of people will contribute to community action for health, and to social capital (Nutbeam 2000).

There is a large body of literature on health literacy, much of it from America and Canada. Canada has a relatively long history of government and community interest in literacy and health which dates back to the late 1980s. A National Literacy and Health Program (NLHP), begun in 1991, has worked to raise awareness, explore issues, develop resource materials and build partnerships in the field. There has, however, been a paucity of broad-scale research according to Rootman & Ronson (2003) and in 2002, a three-year project was launched to develop a national program for literacy and health research. The initial framework for the program distinguished between general literacy, health literacy and a range of other literacies. It also identified a number of determinants linked to literacy in general (not just health literacy). They included education, early child development, ageing, personal capacity, living and working conditions, gender, age and culture. Rootman & Ronson (2003) note that research to date supports a concept of direct and indirect effects of literacy.

Measurement of levels of health literacy

In America, Rudd, Kirsch & Yamamoto (2004) developed a Health Activities Literacy Scale (HALS) to measure health related literacy skills. The HALS has been constructed using data from the National Adult Literacy Survey and the International Adult Literacy Survey. Results for 191 health-related tasks included in the surveys were used to construct the HALS, a 0-500 scale that

reflects a progression of health-related literacy skills from low (level 1) to high (level 5). Rudd, Kirsch & Yamamoto (2004) found that there were marked differences in health literacy scores based on adults' educational attainment, race/ethnicity, age, health status, income/poverty status, and levels of civic engagement. Given that the Health Activities Literacy Scale was constructed from existing data not primarily designed to measure health literacy, it should perhaps be regarded as a first attempt to construct an index which measures health related literacy, rather than health literacy *per se*.

Measurement of costs and benefits

Articles in medical journals that have quantified the impact of health literacy focus predominantly on functional health literacy. Studies to date have examined the relationship between health literacy levels and aspects of health and health care, including knowledge and comprehension of health care and health care services, health promotion and disease prevention, health outcomes and hospital costs. Table 3 gives an overview of the studies and findings. The Table is derived from a report by Berkman et al. (2004) for The Agency for Healthcare Research and Quality (AHRQ) in the United States.

The summaries illustrate a fair amount of depth and breadth in the studies undertaken to date, at least in assessing the impact of poor functional health literacy. Nevertheless, many of the identified impacts are based on the knowledge and behaviour of individuals in the research sample rather than on actual health outcomes. Only one study sought to measure the costs of literacy in monetary terms and found no association between literacy and health care costs amongst patients enrolled for Medicaid services largely because of pregnancy. This does not mean that there is no relationship between levels of literacy and health care costs. Many of the behavioural impacts identified by the literature such as rates of smoking and breastfeeding, and knowledge of preventative health care, will have costs implications. However, they are difficult to capture and to quantify.

Table 3: Summary of health literacy studies

Broad Measure	Findings
Knowledge and comprehension of health care and health care services	Five separate studies found a statistically significant association between higher literacy levels and knowledge or comprehension of matters relating to mammography, cervical cancer screening, emergency department discharge instructions, 'Heart Health Knowledge' and informed consent. One study found no statistically significant relationship between childhood health maintenance procedures and parental understanding of child diagnosis and medication.
Use of health care services	Two studies found that inadequate literacy was significantly associated with increased risk of hospitalisation. In one of these studies (Baker, Parker & Williams 1998) the probability of hospitalisation was nearly doubled. Another study found no significant relationship between literacy and the number of self-reported health care visits.
Health promotion and disease prevention	Ten separate studies found an association (most statistically significant) between literacy level and patients' knowledge of smoking, contraception, human immunodeficiency virus (HIV), hypertension, diabetes, asthma and post-operative care. Three studies found a statistically significant association between inadequate literacy and the probability of not having had a Pap smear or mammogram in the past two years, needing a gonorrhoea test in the past year, and not having had either an influenza or pneumococcal immunization, compared to patients with adequate literacy.
Health behaviour	Two of three studies found a significant relationship between low literacy and smoking in adolescent males and females and among adults waiting for child related services in private and public clinics. Another study found that rates of smoking amongst pregnant

	<p>woman did not differ by literacy status.</p> <p>Two studies found a positive, significant relationship between higher literacy and rates of breastfeeding.</p> <p>One study found that the odds of having misused alcohol were significantly higher among boys, but not girls, with lower literacy levels.</p> <p>Two of four studies found a significant relationship between literacy and adherence to medical regimes or clinical trial protocols.</p>
Health outcomes	<p>Two of three studies found a statistically significant association between literacy and diabetes outcomes.</p> <p>Four of five studies found statistically significant relationships between lower literacy and higher rates of depression in various populations (persons in a cardiovascular dietary education program, mothers, HIV-infected patients, and persons with rheumatoid arthritis). Adjusted analyses in the fifth and largest study did not find a significant relationship between literacy and depression among Medicare managed care patients.</p> <p>Three separate studies found no association between literacy and the functional status of patients with rheumatoid arthritis, presence of migraine headaches amongst children, or presentation with late-stage prostate cancer.</p> <p>Two of four studies found a statistically significant relationship between lower literacy and worse health status in adjusted analyses of adult patients, and one found a similar association in unadjusted analyses of elderly patients.</p>
Costs of health care	<p>One study found no relationship between literacy and overall or component charges for Medicaid services among patients enrolled largely because of pregnancy rather than medical need or indigence.</p>

Source: Derived from Berkman et al. (2004)

The importance of adequate health literacy is underlined by a Cochrane Review of research on the impact of ‘decision aids’ (O’Connor, Stacey, Rovner, Holmes-Rovner, Tetroe, Llewellyn-Thomas, Entwistle, Tait, Rostom, Fiset, Barry, & Jones 2002). Cochrane reviews adhere to rigorous standards of evaluation of studies. Decision aids are interventions designed to help people make specific deliberated choices among options (including the status quo) by providing information about the options and outcomes (e.g. benefits and harms) relevant to a person’s health status. They have been developed as adjuncts to counselling offered by practitioners when patients are faced with a decision, e.g. about treatment or screening. The study found that:

- ✧ Decision aids reduce rates of major elective surgery by 23% without affecting health outcomes or patient satisfaction.
- ✧ With decision aids, patient choices are more likely to be based on realistic perceptions of the chances of benefits and harms and personal values for the benefit/harm ratio.
- ✧ Decision aids are better at helping the undecided to make a decision.

Most decision aids to date assume adequate to high levels of literacy and their positive effects are much less likely to be available to people with poor literacy.

Methodologies

In order to measure the impact of health literacy, all of the studies reviewed collected original data on a sample of individuals’ literacy levels and the outcome in question, e.g. rates of smoking, rates of hospitalisation in the past year, costs of health care. Background data on socio-economic status and other characteristics, such as age and education, was sometimes collected and used in statistical analysis in order to control for other variables that might impact on the outcome in question. The inclusion of other factors (‘covariates’) that are likely to influence the outcome

under examination provides a more robust and defensible way of measuring the impact of low levels of health literacy.

The number of people enrolled in the studies varied from 34 to 3 260 individuals. The most common sample sizes were in the hundreds, if not thousands. The most common study design was cross-sectional, followed by cohort, case-control, and retrospective case series.

In order to make an assessment of the levels of functional health literacy of the individuals in the research sample, the studies employed one of three established measures in a face-to-face setting: Rapid Estimate of Adult Literacy in Medicine (REALM), Test of Functional Health Literacy in Adults (TOHFLA) or S-TOHFLA (shortened version of TOHFLA), or Wide Range Achievement Test (WRAT) subtest

The WRAT and REALM are word recognition tests that assess whether a person can correctly pronounce a series of words listed in order of increasing difficulty. The TOHFLA and S-TOHFLA are structured differently and facilitate assessment of reading comprehension and numerical comprehension (rather than just word recognition). In the studies reviewed as part of The Agency for Healthcare Research and Quality report, the REALM test was the most commonly used instrument to measure functional health literacy, followed by the TOHFLA or S-TOHFLA and then WRAT. Nevertheless, to date, no current instrument adequately assesses the more global concept of health literacy (Berkman et al. 2004).

Literacy levels used to compare study participants varied widely. Studies employed differing definitions and cut off points to identify 'inadequate' and 'high' levels of literacy or reading ability, with some studies incorporating 'marginal' rates of literacy as well. The levels of literacy used in many of the studies varied from an ability to read at the level of third grade school pupils in the United States through to the ninth grade. Furthermore, a few studies did not state what they meant by low or high levels of literacy.

Assessment of the outcome in question in each study, such as smoking rates or take-up of Pap smears or mammograms, was commonly based on self-reports by the individuals in the sample, again collected through face-to-face interviews and surveys. Analysis of hospital records or test results was used in some studies.

Financial literacy

'Improved consumer and financial literacy has the potential to save Australia and Australians millions of dollars each year' (Senator Helen Coonan, *Australian Consumers and Money: A Discussion Paper* by the Consumer and Financial Literacy Taskforce, 2004, p.1).

Financial literacy has become an issue of increasing interest in Australia, the United States and the UK. Technology and market innovation in the financial services sector, alongside demographic and labour market changes, have led to an increasingly complex economic environment in which people have to conduct their daily lives and make financial decisions. Rising levels of household debt and poor savings rates have also added to Governments' interest in this area.

In the United States, the Department of the Treasury has established an Office of Financial Education to oversee policy and resources on financial education. Some American banks and some employers run financial education programs. In the UK, the government created an Adult Financial Literacy Advisory Group in 2000 (ADFLAG 2000) to consider how to promote better access to financial education to young people and adults. Various UK organisations such as the Financial Services Authority (FSA) and the National Association of Citizens Advice Bureaux (NACAB) have published reports on the issue and the related problem of financial exclusion.

In Australia, the Commonwealth Government commissioned a Consumer and Financial Literacy Taskforce to examine the issue of financial literacy and to make recommendations to the Government. The Taskforce published preliminary recommendations in 2004, chief of which was the establishment of a national financial literacy body to take forward a national strategy for improving consumer and financial literacy. The body was established in 2005. Its functions include:

- ✧ facilitation and integration of consumer and financial literacy into the school system, including support for professional development of teachers in teaching consumer and financial education;
- ✧ working towards adoption and integration of consumer and financial literacy into the workplace through vocational education programs and employer information channels, and encouraging appropriate adult education through existing adult education networks;
- ✧ commissioning and conducting an ongoing national research program on the factors leading to key consumer and financial decision-making; the research would use an agreed framework such as the Consumer Behaviour Model as a basis and would seek to set benchmarks that could be measured over time;
- ✧ providing a clearinghouse website to assist consumers and consumer intermediaries with better access to existing information, ultimately to be developed as a hub for the latest consumer and financial information and research.

Other recommendations include facilitating an ongoing social marketing campaign to embed a key consumer financial literacy message within the Australian culture, providing awards for excellence and fostering industry/government/community collaboration.

Responses to the Taskforce's report were somewhat mixed. The response from financial institutions has been generally positive and many have taken up the issues with enthusiasm, partially at least because there is considerable potential benefit for them in having a more informed client group. However, some commentators argued that the report focused too much on the shortcomings of consumers (e.g. consumer ignorance and inappropriate behaviour) and not enough on a detailed examination identifying issues which contributed to the problems which individuals faced, a discussion of their causes and solutions to address the problems. Marketing practices of financial institutions, the standards for professional financial planners and advisors, the plethora of financial organisations and the overall regulatory environment, were all seen as fundamental to the overall picture of consumer and financial literacy (see for example the response of COTA National Seniors (2004), a key advocacy and research body for older people). It should also be noted that, although the Taskforce report referred to adults and to workplace-based financial literacy initiatives, there is a substantial emphasis on school-based programs.

Definitions of financial literacy

Financial literacy is a broad concept. It fits with broader notions of literacy than the purely functional skills needed to read and understand financial information. An unpublished UK study (Adult Financial Literacy Advisory Group 2000) based on data from the 1958 National Child Development Study indicated a link between poor literacy and numeracy and financial difficulties. The study found that people with the poorest literacy and numeracy skills were least likely to have savings or investments and were more likely to admit to having debt. However, as the Advisory Group noted, 'financial literacy is a common issue for all and many people recognise they lack financial awareness...' Similarly, the National Association of Citizens' Advice Bureaux (2001) stated that many Citizens Advice Bureau (CAB) enquirers have well developed numeracy and literacy skills but are unable to identify the optimum financial decision or strategy based on the information available to them. There is also a link between poor financial literacy levels and low income.

Of those reports that have formally defined financial literacy, Jacob, Hudson and Bush (2000) refer to:

personal financial knowledge and skills...Financial literacy involves the ability to understand financial terms and concepts and to translate that knowledge skillfully into behaviour (p15)...Literacy implies knowledge of the terms, practices, laws, rights, social norms, and attitudes needed to understand and perform...vital financial tasks. It also includes the fact that being able to read and apply basic math skills is essential to making wise financial choices (p.8).

The ANZ Survey of Adult Financial Literacy in Australia (Roy Morgan Research 2003) defines financial literacy as: 'the ability to make informed judgements and to take effective decisions regarding the use and management of money' (p.2). This definition was adopted from Schagen's (1997) UK report for the National Foundation for Education Research with a view to international consistency.

Some argue for placing financial literacy in the broader context of the development of life skills and lifelong education. A (UK) National Institute of Adult and Community Education (NIACE) briefing sheet on financial literacy and older people suggests that the term 'financial literacy' is not very helpful. It argues that in most discussions financial literacy is seen as an amalgam of skills issues related to both numeracy and literacy.

This can suggest that the issue is simply one of basic skills, to be addressed through basic skills provision and appropriate curriculum. However, the disempowering nature of many of life's transition phases, and the need to embrace the understanding of financial processes and decision-making, indicates that it could be an issue for mainstream adult education and all those involved in information giving, advice and guidance. The terms 'financial competency', 'capability', 'understanding' and 'confidence' are therefore emerging as new descriptive terms (NIACE 2002)

Other commentators suggest that the development of consumer and financial literacy should be seen in the larger context of information literacy, as well as lifelong education (COTA National Seniors 2004). 'Information literacy' is variously defined but it generally includes the capacity to identify, locate, evaluate, and effectively use and communicate information to address an issue or problem. It is seen as a basic requirement for participative citizenship, social inclusion, empowerment and lifelong learning.

Measurement of levels of financial literacy

Two Australian studies, both auspiced by major banks, have surveyed people's financial literacy levels. The ANZ Survey of Adult Financial Literacy in Australia (Roy Morgan Research 2003) measured aspects of financial literacy across a sample of the Australian population. The UK framework for the measurement of financial literacy was used as the starting point and then modified substantially after interviewing 33 experts in financial literacy, in order to reflect the Australian environment. The survey itself consisted of telephone interviews with around 3 500 adults, based on 145 financial and 25 demographic questions. This was complemented by in-depth surveys (1 to 1.5 hours each) with around 200 people, including a self-completion component.

The assessment of financial literacy in the ANZ survey was based on each person's circumstances and requirements, rather than against the entire array of financial products and services available in the marketplace. Nevertheless, the survey as a whole measured a wide variety of different aspects of financial literacy, including mathematical ability, understanding of investment fundamentals such as risk and return, planning for retirement, understanding of financial records, consumer awareness (payment methods, fees and charges, resolving disputes), behavioural issues (budgeting, saving and investing and shopping around) and consumer perceptions. The 'ability to read and understand basic English' was also measured, albeit rather simply. The report found that

over 90% of respondents correctly answered simple questions based on a paragraph they had just read.

One of the major findings from the study was ‘...the strong correlation between financial literacy and socio-economic status’. The lowest levels of financial literacy were found amongst people with the lowest levels of education (Year 10 or less), income (gross annual household incomes under \$20,000) and savings levels (under \$5000), but were at both extremes of the age groupings (i.e. 18-24 year olds and those aged 70 years and over).

A major objective of the ANZ survey was to establish benchmark measures of financial literacy across various groups within the Australian population. Whilst not directly contained within the report, it is clear that considerable data on the financial literacy levels of different socio-economic groups exists as a result of this study.

A more recent Australian study by the Commonwealth Bank Foundation (2005) used a telephone survey of 5 000 people aged between 16 and 65 years to measure levels of financial literacy. The survey included 20 multiple choice questions regarding respondents’ ability to make financial decisions (rather than testing knowledge of financial information). The questions included choosing the best way to minimise credit card interest, choosing the cheapest way to borrow (unsecured loan and secured loan), choosing the cheapest way to draw money, understanding the benefits of a savings account, understanding how to control mobile phone bills, and a number of questions about investments and superannuation. Each question was scored 1 for a correct answer. Background demographic information about participants included personal finances, whether the individual had ever owned a business, their personal and health history and their sources of financial knowledge.

Detailed findings regarding the proportion of people with different scores were not reported in the main research report. The main reported analysis was focused on the 10% of participants with the lowest financial literacy scores. The study found a clear link between financial literacy and employment, in that the higher an individual’s level of financial literacy as measured by the study, the lower the probability that they were unemployed. The study found that the 10% of participants with the lowest levels of financial literacy were more likely to be: younger (in the 16-20 year old age bracket); male; unemployed or students; to have lower education levels, annual personal income and annual household income, and to have never worked in paid employment.

Measurement of the costs of poor financial literacy

Most reports regarding financial literacy describe the costs associated with poor financial literacy. The costs to the individual include poor borrowing decisions on loans and credit cards that incur excessive interest and charges, not having a bank account or access to affordable credit, and paying more for key services such as electricity, gas and water. The costs to communities can include the withdrawal of reputable financial institutions and the entry of unscrupulous lenders. A significant body of literature from the United States also outlines the costs of individuals’ poor financial literacy and financial management to employers, as well as to employees’ health and psychological wellbeing and that of their families. These inefficiencies also result in costs to the economy and to society, as well as to individuals and families.

However, in terms of measurement, very few reports actually quantify the costs of poor financial literacy. When costs have been quoted, some studies fail to provide any detail on how the figures were estimated. A further complicating factor in the measurement of the costs of poor financial literacy is the relationship between low income and financial literacy and attitudinal factors. This is illustrated in the following studies.

- ✧ Research for the Office for Gas and Electricity Markets (OFGEM) in the UK, quoted in ADFLAG (2000), found that while most people knew that prepayment meters were not the

cheapest way to pay for fuel, over 50% of meter users said they chose them because they were easy/ convenient and the best way of budgeting.

- ✧ Kempson and Whyley (1998) found that people in the UK unable to pay their gas bill by direct debit could add up to £46 a year to an average gas bill.
- ✧ A study by the Woodstock Institute (1997), reported by Jacob, Hudson and Bush (2000), found that the annual cost of using cheque-cashing outlets, commonly used in the United States in urban neighbourhoods as an alternative to traditional banks, was found to be anywhere between 24 to 305% higher, depending on family income level and service use profile. However, Jacob, Hudson and Bush (2000) showed that the reasons why people did not use banks were varied. Aside from not having enough money to make it worthwhile or perceiving the fees to be too high, often people disliked the intimidating atmosphere at banks, did not trust banks or lived miles from the nearest bank branch.

Within Australia, the Consumer and Financial Literacy Taskforce (Commonwealth of Australia 2004) modelled the effects of 'bad' decision making over the course of a person's life. It was estimated that a person on a salary of \$36 000 per annum stood to lose \$790 000 in lost wealth over the course of their life as a result of 'bad' decision making. (<http://cfltaskforce.treasury.gov.au/content/home.asp>). It has not been possible to ascertain how this figure was derived. A personal communication from a Treasury officer indicated that the results of the research will be released by the newly formed Consumer and Financial Literacy Foundation (CFLF) when it is fully operational.

The Commonwealth Bank Foundation's (2005) Australian study of financial literacy found that low levels of financial literacy were associated with a higher incidence of persistent sleeplessness and higher propensity to smoke. As stated above, those individuals with low levels of financial literacy were also more likely to face the costs of being unemployed and to have low income levels.

A number of studies from the United States have examined the costs to employers of employees' inadequate financial literacy and poor financial behaviours and associated financial stress. It should be noted that employees' stress related to personal financial matters has been linked with lower levels of job productivity and higher rates of absenteeism (Garman, Leech & Grable 1996, Garman, Kim, Kratzer, Brunson & Joo 1999, Joo & Garman 1998) and to negative impacts on employees' health (Garman et al. 1999). It stands to reason that financial stress is related to financial literacy, as one of the reasons for personal financial problems and associated poor financial behaviours is a lack of understanding of how to manage personal finances (Joo & Garman 1998). However, to date there has been no research to illustrate how financial literacy and financial stress are linked and to tease out the relationship with low levels of income.

Only one study has looked specifically at the costs to an employer of employees' inadequate financial literacy and poor financial behaviours. The United States Military Family Institute estimated that the direct cost to the Navy for poor personal financial behaviours of workers (service members) was \$35.8 million (Luther, Leech & Garman, 1998). This was based on the following direct costs to the Navy: processing bad cheques at commissaries and exchanges, handling letters from creditors, processing wage garnishments and bankruptcies. Adding in the various costs of lost productivity and the cost of recruiting and training new members due to financial difficulties, the total cost was estimated to be between \$172 and \$258 million annually, or a yearly cost of between \$483 and \$683 per worker for the Navy's 430 000 service members. This research reflects the specific costs to the United States Navy of poor financial management by its employees. However, it also reflects the findings highlighted in the next section of research that has examined the savings to civilian employers of investing in financial education.

It is worth noting that whilst Australia is likely to share many of the issues related to the costs of poor financial literacy in the United Kingdom and the United States, other factors specific to

Australia, such as its geography and indigenous population, should be taken into account when assessing the costs of poor financial literacy.

Measurement of benefits of improving financial literacy

Most, if not all, of the literature that has measured the benefits of improving financial literacy has emanated from the United States. These research studies have either focused on estimating the benefits of workplace financial education programs or the benefits of programs provided by banks and lenders. It should be noted that many companies in the United States provide some form of financial education, with nearly all large employers offering these types of programs (Bernheim and Garrett 1996). A number of US studies have also measured the benefits of financial literacy more generally within the adult population and related this back to levels of financial education received in high school. A representative sample of research reports for which it was possible to ascertain the methodologies used are summarised in Table 4. The Table excludes studies that measured the impact of financial education on high school and college students and does not include all studies that sought to measure the benefits of financial education.

Within Australia, the Commonwealth Bank Foundation study (2005) modeled the effects of improving financial literacy levels on individuals and the economy. The modeling was carried out using the MONASH model. This is a computable general equilibrium model of the Australian economy which has been used to analyse many economic policies, scenarios and changes, e.g. in taxes and environmental regulation. The increase modeled was a relatively modest target, i.e. improving the scores of the 10% of the population with the lowest levels of financial literacy on the financial literacy questionnaire over a period of ten years.

The study concluded that achievement of this scenario would increase the average annual income of people with the lowest 10% of scores by \$3 204. The same improvements in the financial literacy of the lowest 10% of people would lead to an increase of \$6 billion in Australia's GDP and 16 000 new jobs would be created. It was also estimated that improving the financial literacy of this group would reduce the incidence of persistent sleeping difficulty amongst the Australian population by 2% and the incidence of regular smoking by 2%.

Table 4: Representative sample of research reports on financial literacy

Methodology	Findings
Pre-payment mortgage counselling/financial advice	
Hirad & Zorn (2001) compared payment performance, ('sixty day delinquency rates'), on home loans for borrowers who had received pre-purchase counselling versus those who had received none. Based on information in a database containing details of 40 000 mortgages granted by Freddie Mac (one of US's largest home loan lenders).	Borrowers receiving counselling had on average a 19% lower sixty-day delinquency rate than borrowers with 'equivalent observable characteristics' who had not received counselling. Those who had received individual counselling had a 34% lower delinquency rate than those who received no counselling; those who received classroom and home study training had lower delinquency rates of 26% and 21%, respectively. Telephone counselling did not lower delinquency rates.
Workbased financial education	
Garman et al. 1999; also Kratzer et al. 1998: Post-participation postal survey of employees who took part in a financial education program offered by a chemical production company. The questionnaire sought information on financial wellbeing, financial behaviour and attitudes,	Compared to non-participants, workshop participants reported: higher levels of financial wellness (i.e. greater levels of satisfaction with their present financial situation); higher satisfaction with personal savings and savings for retirement; better health; positive performance ratings from their

financial stress, and self-reported measures of workplace productivity from both participants and non-participants in the financial education program. Supervisors' performance ratings of workers and absentee records were also collected. Statistical analysis was employed to explore relationships and analyse the results.	employer; an improvement in their financial situation over time; increased confidence about having a financially secure retirement; and a greater number initiated or enhanced their contributions to their retirement plans. Financial wellness was positively correlated with worker productivity (as measured by supervisors' performance ratings) and worker health (as a function of absentee records).
Bernheim and Garrett (1996): telephone survey of a national sample of individuals (around 2000) aged 30-48 years. Questions on participation in workbased financial education were added to an existing household survey designed to measure personal savings. Regression analysis was used to elicit findings.	Accumulation for retirement was found to be significantly higher for respondents whose employers offered financial education, as were rates of participation in 401(k) (pension) plans for both respondents and spouses. The study found a significant relationship between financial education and the rate of total saving; however, there was no relationship between financial education and total wealth accumulation.
Kim (2004): Pre and post assessment of various outcomes related to employees' views and experience of personal finance, together with an assessment of work related outcomes. This followed a 1.5 hr work-based workshop on financial education. The data was collected through postal surveys and subject to statistical analysis.	No statistically significant effects of work-based financial education on personal finance and work outcomes.
Thaler & Benartzi (2001): Analysis of data from the Save More Tomorrow program. Employees commit a portion of their future salary increases towards their pension/retirement plan. Participants are offered ongoing counselling by an investment adviser.	78% of eligible employees elected to participate. Savings rates of participants tripled in 28 months. The vast majority of participants remained in the program through two or three pay increases (98% and 80%, respectively).
General population	
Bernheim, Garrett & Maki (1997): Telephone survey of a nationally representative sample of 30-49 year olds to measure the long-term effects of financial education in US high schools. Statistical analysis of savings rates and asset accumulation of those who lived in states that mandated financial education versus those who did not.	Those who attended high school in states with mandates saved significantly more than those who did not. The median net worth of those who attended school in states with mandates was higher by about an entire year of (their) earnings than the median net worth of those who attended school in non-mandate states.
Bradley et al. (2001) in Braunstein & Welch, 2002: Based on data from the 1999 Freddie Mac Consumer Credit Survey. Data from more than 12 000 individuals (aged 20-40) across the United States with household incomes of less than \$75 000	Specific and detailed knowledge of financial affairs had little effect on behaviours and outcomes. Confidence and a broad understanding were more important predictors of successful financial outcomes.

A few studies have gone further than the research reports highlighted above and have measured the benefits of investing in financial education in monetary terms. Joo and Garman (1998) examined the relationship between 'personal financial wellness' and worker job productivity. 'Personal financial wellness' was not defined but can be best described as satisfaction with the health of one's personal finances. Based on a survey of around 500 clerical workers, regression analysis was used to estimate the amount of work time spent on personal financial matters and how it related to various measures of personal financial wellness. (The personal financial wellness measures consisted of four different scales: a subjective perception of personal finance, a behavioural assessment of personal finance, objective scales, and overall financial wellness scales.)

Using the results from the regression analysis and an assumption informed from existing research that employees would spend less work time sorting out personal financial matters if they participated in financial education, it was estimated that an employer could save anywhere

between \$171.47 and \$405.94 per employee per year due to savings in lost work time, including reduced absenteeism due to financial worries, and increased productivity.

Based on research that financial education impacts on workers with no money problems as well as those experiencing financial difficulties, Joo and Garman (1998) argued that 30% or more of workers would improve their financial behaviours and wellness after receiving comprehensive financial education. On this basis, it was estimated that an employer of 1000 workers would realise savings of \$116 550 in one year. Further extrapolations based on this study, but focused on reducing absenteeism among United States clerical workers, estimated that the potential savings for employers who provided financial education to approximately 18 million clerical workers was \$440 million per year (Garman 1998).

Garman (1998) also estimated the return on investment for employers who invested in comprehensive financial education for employees. This was based on a number of assumptions which may have been informed by research but which were not directly linked back to specific studies. Garman (1998) himself noted that further research is required to fully substantiate all of the different elements of the estimates. (This study is highlighted because, despite the use of assumptions, it illustrates a potentially useful methodology for the future.) The following savings to employers were envisaged: savings in employees' time dealing with financial problems at work, fewer absences per year dealing with financial matters, and administrative time saved processing advances on pay cheques and loans. Garman (1998) also assumed additional benefits from comprehensive financial education for the remaining workers. This included savings on reduced social security taxes, reduced stress and stress-related illnesses, reduced premiums for health care, savings in personnel costs arising from reduced employee turnover, etc. Taking into account all of these elements, the money saved to an employer from investing in financial education was estimated to be \$624 250, or a return on investment of 300%.

Garman (2004) has developed a conceptual model of the return on investment of workplace financial education (see www.ethomasgarman.net). This highlights that fewer personal financial worries, as a result of participation in financial education and improving financial literacy, leads to less stress and personal finance/work conflict, better health and a better family life. In turn, this improves work outcomes including less employee time wasted on money problems, less absenteeism and tardiness, reduced employee turnover and human resource costs, fewer wage garnishments, reduced health care demand, less substance abuse, less workplace violence and thefts, fewer accident and disability claims and fewer workers' compensation claims. Ultimately this increases employees' job commitment and productivity and employers' profits. Another benefit of participation in workplace financial education is a greater level of participation by employees in employer provided benefits, including pension plans and health care insurance, and choice of the most beneficial plans and levels of contributions. This leaves employees with more after-tax money to spend, save or invest which in turn leads to improved employee financial wellbeing and performance at work.

In terms of the research to date, aside from the unsubstantiated assumptions which require to be linked to actual research findings, there are other limitations to the Garman (1998) and Joo and Garman (1998) studies, including whether savings in workers' time and absences are actually realised by employers or whether they are distracted by other personal problems or other matters and do not invest (all of) the saved time productively. Garman (1998) noted that additional research was needed to build a more persuasive and convincing case of the benefits to employers and other providers of investing in financial education. More recently, Kim (2004) noted the limitations of the research carried out to date. She argued that further research which utilises pre and post-test designs (i.e. measuring employees' financial attitudes, financial management and financial well-being, both before and after the intervention of financial education) is required, together with the use of control groups who do not receive financial education. More rigorous experimental designs would improve the measurement of the benefits of investing in financial education and improving financial literacy.

The Australian Financial Wellbeing Scale

The Australian Financial Wellbeing Scale is a survey instrument being developed by Money Solutions, an Australian provider of money education and guidance programs. The scale is based on research by Garman and seeks to:

- ✧ explore the relationship between the financial wellbeing of employees and their attitudes, behaviours, and productivity at work,
- ✧ explore the positive effects workplace financial education can have on personal finances and work outcomes, and
- ✧ test the effectiveness of workplace financial education programs on work outcomes in terms of a return on investment.

The research will provide the conceptual model that explains how effective workplace financial education can positively change personal financial management and personal financial wellbeing. It will also develop an empirical model to explain the relationships between workplace financial education, financial wellbeing, personal finance-work conflict, and work outcomes. In addition, the empirical model will be used to measure, quantify, and benchmark the effectiveness of workplace education programs.

Family literacy

A report by the US Department of Education (1999) cited in ProLiteracy America (2003) states that the single most significant predictor of children's literacy is their mother's literacy level. The link between parents' literacy levels and that of their children is not in dispute. However, literacy within families is more complex than the above statement suggests. Factors aside from parental literacy and educational levels, such as schooling, family and parent characteristics, and socio-economic variables such as parental employment, family income and neighbourhood environment, all influence the literacy levels of both children and adults. This complexity extends to measuring costs of poor literacy within families and benefits of improving family literacy.

Development of family literacy programs

The fact that poor literacy and educational achievement runs within families has encouraged governments in the developed world to become interested in both pre-school child development and family learning programs targeted at both children and adults. The United States government funds two programs, Head Start, a program targeted at pre-school age children in the most disadvantaged areas, and Even Start, a family literacy program that has been in operation since 1988. (It should be noted that in 2005 the Bush administration sought to end funding for Even Start, prompting a vigorous response from the adult literacy field that the available evidence for the success of the program has been misused or ignored.) Head Start incorporates elements of family literacy, such as parents reading to children, but is much wider as it includes other targeted services including comprehensive health services. This is similar to the Sure Start scheme in the UK.

The UK Government has funded a small number of family literacy and family numeracy programs since the mid-1990s. The review of adult literacy and numeracy by Moser (1999) recommended the expansion of family literacy and family numeracy programs. These programs are seen as a key way of engaging parents in their children's education and encouraging parents to address their own literacy and numeracy needs.

There are numerous programs in Australia which have attempted to involve parents in their children's schooling but it is probably true to say that as a concept 'family literacy' does not have such a systematic emphasis as in the UK and the US. The Australian programs are very diverse in

their content and their practices and in the ways in which they are described (e.g. parental involvement, parent participation, ‘home-school partnerships’ etc.) Cairney, Ruge, Buchanan, Rowe & Munsie (1995) carried out a national review of such programs and concluded that there was evidence that family and community literacy programs contributed to improved literacy outcomes for large numbers of children, and that parental involvement in children’s education contributes substantially to effective schooling.

There are, however, debates about various aspects of family literacy programs. Hutchinson (2000) summarises them as follows: a theoretical vacuum about the most effective ways parents can help children; simplistic notions of ‘family’ and of ‘literacy’ implicit in some programs; concerns about assumptions that low-income families are necessarily deficient in parenting skills, literacy and knowledge to support their children’s learning; and the need for a more detailed examination of home and school community relationships in developing effective collaborations between parents and teachers. In addition, the gendered nature of family literacy—the great majority of parents involved in programs are women—calls for further analysis (Hutchinson 2000). Smythe and Isserlis (2004) also call for a more critical examination of the ways in which mothering discourses underpin many family literacy programs and shape the conditions for access to equality of educational opportunities. It should be noted, however, that the importance of the role of fathers in influencing children’s learning and development has received an increasing amount of attention in the UK over the past few years. There are now numerous examples of family literacy programs in the UK that are targeted at men (Goldman 2004).

There are definitional issues related to family literacy which also need to be clarified. Family literacy programs vary in their content and in the degree to which the focus is on the literacy development of the parents, the children or both. This issue causes considerable debate in the UK, particularly as it is not fully understood to what extent these different programs encourage everyday family literacy activities between parents and children. However, such issues are beyond the scope of this report, except to note that definitional issues should be borne in mind when measuring costs and benefits.

Frameworks

Given the complexity of evaluating and measuring literacy within families, it is useful to look at Feinstein, Duckworth & Sabate’s (2004) model that examines the role of parental education on children’s development and the intergenerational transmission of educational success. Whilst it does not look directly at literacy or numeracy, it is useful in understanding the role that parents’ literacy levels may have on children’s literacy and wider educational achievements. Drawing on a significant review of the literature from developmental psychology, economics and other social sciences, Feinstein, Duckworth & Sabate (2004) propose that a number of factors influence the outcome of child development. They include:

- ✧ distal family factors, i.e. family structure, family size, teenage motherhood, income and poverty, and maternal employment;
- ✧ characteristics of the family, i.e. parental cognitions, mental health and well-being, resources and parental physical health;
- ✧ proximal family processes, i.e. parenting style, educational behaviours, which mediate distal family factors and family characteristics; and
- ✧ contexts, i.e. neighbourhoods, schools and pre-schools.

The main point to note from the model is that there are two channels for the effects of parents’ education. Firstly, parents’ education impacts directly on many of the distal family factors and characteristics of the family. It also influences parenting style, and of course, the other mediating factor, educational behaviours. Secondly, parents’ education moderates the effects of other important factors, such as the quality of schools and the community in which a child grows up.

Feinstein, Duckworth & Sabate (2004) concluded: 'We find strong theoretical and empirical support for the view that education influences most of the factors that have been found to affect children's attainments. Thus, the role of education is extremely substantial.' In so far as an individual's level of literacy is linked to their educational achievement, it is likely that parents' literacy levels have a similar influence on children's development. In any event, it is a useful framework in which to consider how adults' literacy levels impact on that of their children.

Measuring costs and benefits

Research that has measured the benefits of improving literacy within families is far more prevalent than studies that have estimated the costs of poor literacy and its transmission from adults to children. Nevertheless, a number of studies have examined the issue of poor literacy in children and teenagers and linked it with a number of adverse outcomes as adults.

The following study indicates the impact of poor reading and 'at risk' family background characteristics on future social exclusion. Parsons and Bynner (2002) explored the relationship between reading test results at age 10 from the British Cohort Study and measures of social exclusion at ages 16 and 30. They identified poor readers (those in the bottom 20% of performance) and risk and protective factors associated with poor reading and social exclusion. This allowed them to make two comparisons—between poor readers with a high number of risk factors and those with a low number of risk factors, and between poor readers and good readers. Overall, they found that poor reading is an important element of social exclusion, with early risk factors operating to confound the process. Results were analysed separately for boys and girls.

At age 16, 79% of male high risk poor readers wanted to leave school at age 16, compared with 60% of low risk poor readers and 41% of all boys. Boys who were high risk poor readers were less likely than low risk poor readers and all boys to have parents who had been to their school to discuss their progress. They were also much more likely to think they would be 'working with their hands' at age 21. Similar patterns were found for girls aged 16.

Only early school leavers were included in the analysis at age 30. For males aged 30:

- ✧ 26% of high risk male poor readers had experienced continuous unemployment for more than one year, compared with 15% of low risk readers and 12% of all men;
- ✧ high risk poor readers in full-time work earned on average less per hour than low risk readers and all men;
- ✧ 19% of high risk poor readers felt 'whatever I do has no real effect on what happens in my life' compared with 11% of low risk poor readers and 10% of all men.

The overall findings concerning women suggested that compared with men, social exclusion tended to be more strongly related to poor reading itself, regardless of their experience of social exclusion risk in childhood.

Hobcraft (1998) found that the odds of becoming a young parent—either a father before the age of 22 or a teenage mother—were more than three times higher for children who attained the lowest reading and maths test scores than children with the highest test scores. (See also Davis, Byrd, Arnold, Auinger & Bocchini 1999 in crime section.)

The benefits of family literacy

The benefits of improving literacy within families have been measured primarily through examining the benefits to adults and children of participation in family learning programs. It should be noted that many of these studies have focused on measuring 'soft outcomes', i.e. assessing changes in the thoughts and feelings of parents' towards their own education and that of their children, rather than a more robust measurement of actual benefits for adults, children

and wider society. Given the large number of the former types of studies, the discussion of methodologies used to estimate the benefits of participation in family literacy programs is limited to the key larger-scale research studies from the United States and the United Kingdom.

There are also a number of programs in the UK which support parents with their children's learning and development and which also aim to support parents in their own education. Given the more rigorous methodologies adopted by these studies, a summary of these research reports and how they have measured benefits is also provided.

A number of evaluations, both national and local, of the Even Start family literacy program have been carried out, with the most recent by St Pierre, Ricciuti, Tao, Creps, Swartz, Lee & Pasad (2003). The evaluation employed a pre-test post-test control group design with random allocation of families to either the Even Start group (treatment group) or the control group. Data was collected from 463 families in eighteen projects in both urban and rural areas. The study found that Even Start children and parents made small gains on literacy measures (Peabody Individual Achievement Test (PIAT)), but no more than the control group (about one-third of the control group received early childhood education or adult education services). It should be noted that the findings of the St Pierre et al. study have been the subject of intense debate (see above).

In the UK a number of studies have been undertaken to measure the impact of adults and children's participation in family literacy programs. Through reading tests, surveys and interviews with parents, Brooks, Gorman, Harman, Hutchison & Wilkin (1996) and Brooks, Gorman, Harman, Hutchison, Kinder, Moor & Wilkin (1997), reported in Brooks (2002) collected data for around 360 parents and 390 children on the outcomes of participating in the Basic Skills Agency (BSA) demonstration programs. Children's reading scores were assessed at 12 weeks (end of course), nine months and between two and three years later using the Reading Recognition Subtest of the PIAT. By the end of the course, children had made an average gain of over four standardised score points on the PIAT reading test. At nine month and subsequent follows ups, children had on average sustained their reading gains. In terms of outcomes for adults, Brooks et al. (1996 and 1997) found that parents improved their average reading score and that 95% of parents achieved partial or full accreditation. Over half of parents reported a growth in confidence and over 80% reported their intention to continue with studying. Twelve weeks after the courses finished, 70% of parents were actually doing so.

Many of the proclaimed benefits for family literacy, i.e. improved educational attainment for children and educational and employment gains for parents, can only be measured reliably over time, once the benefits of participating in family literacy have had time to take effect. Ideally, therefore, longitudinal studies should be employed, in order to accurately and fully measure the benefits of participation. Such studies should also ideally use a comparator or control group in order to accurately measure the impact of the intervention and avoid bias.

Longitudinal type studies have been carried out on programs that share many of the aims of family literacy, i.e. supporting parents in helping their children to learn and also to address their own educational needs, but that have wider objectives than family literacy programs.

Reynolds, Temple, Robertson and Mann (2001) carried out a study of children who had participated in Chicago's Child-Parent Center (CPC) Program. Approximately 1000 children who had attended 20 Centers either in pre-school or kindergarten were tracked until the age of 21. Data were collected from family surveys and educational and justice system records. An alternative-program, quasi-experimental design was used in which the main sample of Child-Parent Center participants was compared to a random sample of 550 eligible children who did not participate in the program but only enrolled in an all-day kindergarten program and/or preschool program.

Using statistical analysis, Reynolds et al. (2001) found that relative to comparison groups and controlling for socio-economic factors, pre-school Child-Parent Center participants had a 29%

higher rate of high school completion, a 33% lower rate of juvenile arrest, a 42% lower arrest rate for a violent offence, a 41% reduction in special education placement, a 40% reduction in the rate of grade retention, and a 51% reduction in child maltreatment. The other interesting aspect of the study is that Reynolds et al. (2001) conducted a cost-benefit analysis of the program. Based on the findings above and using standard economic procedures, the following benefits were measured in monetary terms:

- ✧ reductions in expenditures for the school remedial services of grade retention and special education;
- ✧ reductions in criminal justice system expenditures for both juvenile and adult arrest and treatment;
- ✧ reductions in child welfare system expenditures associated with child abuse and neglect;
- ✧ averted tangible costs to crime victims; and
- ✧ increases in adult earnings and tax revenues projected for increases in educational attainment.

The results of the cost-benefit analysis indicated that each component of the Child-Parent Center program had economic benefits that exceeded costs. Reynolds et al (2001) found that with an average cost per child of \$6730 (1998 dollars) for 1.5 years of participation, the preschool program generated a total return to society of \$47 759 per participant. The largest component of benefits was program participants' increased earnings capacity projected from higher educational attainment. Economic benefits of the preschool program to the general public (taxpayers and crime victims), exclusive of increased earnings capacity, were \$25 771 per participant. The present value of public benefits of the preschool program for the 1000 study children was estimated at \$26 million. Reynolds et al (2001) calculated that since 100 000 children had been served by the program, these benefits translated to as much as \$2.6 billion in public savings since the program opened (1998 dollars).

In the UK, a number of longitudinal studies have been employed to evaluate the impact of intervention programs that are aimed at improving children's development in the early years, including their learning. The Peers Early Education Partnership (PEEP) is an early learning intervention which aims to improve the life chances of children aged from birth to five years living in disadvantaged areas. The Peers Early Education Partnership supports parents and carers as their children's first and most important educators, as well as promoting their own learning. A number of research studies, all of which compare a group of children who participated in Peers Early Education Partnership matched to children who lived in a similar disadvantaged community in which the program was not available, have been carried out to estimate the benefits of parents and children's participation in the program.

Evangelou & Sylva (2003) followed three and four year olds participating in the Partnership program between 1998 and 2001. The study showed that children from families engaged with Peers Early Education Partnership made greater progress than other children in vocabulary, language comprehension, understanding about books and print and number concepts, and also benefited in self-esteem. The Birth to School Study is currently following over 500 children and is comparing the development of those who are involved in Peers Early Education Partnership with those who are not. It began in 1998 and its final report is due in 2005.

A third study (Sylva, Evangelou & Brooks 2004) measured the benefits to parents/carers of participating in Peers Early Education Partnership. The study found that 'Partnership' parents, compared to a similar group of non-'Partnership' parents, reported significantly greater awareness about how to help their child's literacy development, had improved their socio-economic status (as measured by their job), and had taken more courses, particularly in literacy and numeracy, though had not changed their formal qualifications.

The Department for Education and Skills (DfES) in the UK has also funded the Effective Pre-School and Primary Education project. This longitudinal study assessed the attainment and development of children between the ages of 3 and 11 years. Three thousand children were recruited nationally to the study from 141 pre-school centres. The study is based on a 'school effectiveness' research design which measures the contribution of child, family and school factors, including learning at home with parents, on children's developmental progress up to the age of 11 years. The DfES is now funding a further study, Effective Pre-School and Primary Education 3-11, which will build on the original study.

Crime

An extensive search for literature which investigated the relationships between poor literacy and crime was not carried out as part of this project, chiefly because of time constraints and the fact that the research was always intended to be selective in its areas of focus. However, some relevant studies were found and given the importance of this largely under-researched area, the studies are reported below.

The link between poor education and crime is well established (see for example the studies quoted in Parsons 2002). In the UK, The Basic Skills Agency has surveyed prison inmates and offers an initial assessment to all new prisoners. The surveys indicate a higher percentage of inmates with poor basic skills (literacy and numeracy) than in the general population. There is however considerable variation in basic skill levels amongst prison inmates, indicating the need for caution in drawing conclusions about prisoners' literacy levels. Black, Rouse & Wickert (1990) found that prisoners in two New South Wales prisons performed better on some document tasks than the general public and worse on others. There were differences too between male and female prisoners.

Methodologies

A number of conceptual and methodological issues should be taken into account in investigating the relationships between crime and poor literacy and numeracy and the costs and benefits associated with the relationship. There are very complex interactions between gender, socio-economic background, culture, race and age which often lead people to engage in criminal activity. This makes it difficult to measure the effects of literacy. What constitutes illegal activities can have a strong cultural component. Police activity, community attitudes and government policies may all have an impact on whether people committing illegal activities are caught, charged and go to prison. The amount of 'hidden' crime is largely unknown but may well be quite substantial. Finally, a statistical correlation between poor literacy and committing a crime does not indicate a causal relationship.

The usefulness of large longitudinal cohort studies is again illustrated in the study by Parsons (2002) in the UK. In 1999 and 2000, when participants in the 1958 National Child Development Study and the 1970 British cohort Study were re-interviewed, they also provided additional information in a self-completion questionnaire. Six questions concerning contact with and questioning by police and self-reported experiences of being arrested, charged and found guilty of an offence were included. Respondents were also asked to indicate the number of times such experiences had occurred during their lifetime.

The results were analysed against the literacy and numeracy skills of a 10% sample of participants whose skills were assessed at an earlier time. The British Cohort Study data provided a wide range of demographic, family background and socio-economic information. Using multiple regression, this was analysed together with literacy and numeracy to determine the relative contribution of factors to self-reported offending. It was found that poor literacy or numeracy skills significantly increased the risk of being stopped and questioned by police on a repeated basis (Parsons 2002,

p.29), i.e. literacy and numeracy had an independent impact on being stopped and questioned even after the effect of other risk factors such as poor educational qualifications and disadvantaged family background were taken into account.

A study by Davis et al. (1999) in the US investigated the relationship between poor literacy and violent behaviour among nearly 400 adolescents participating in a summer sports and literacy program in a low-income neighbourhood. Participants with below-grade reading skills (two grades or more) had higher rates of self-reported violent behaviours compared with those reading at grade level. When gender, race, and age were controlled for, adolescents reading below grade level were significantly more likely to report carrying weapons, to have been in a physical fight at school, and to have been in a physical fight resulting in injuries requiring treatment. In addition, youths reading below grade level were significantly more likely to be threatened at school with a weapon.

Feinstein (2002) examined studies which investigated quantitative estimates of the crime reduction benefits of academic and vocational training. The author notes a number of caveats regarding the research. A great many assumptions are required for the study and it is regarded as a first step only in exploring the measurement of education and crime reduction. Data to do what is required are not available, so the study links disparate results from different data sets, being as careful as possible about the process of linking. The importance of estimation techniques that deal with confounding factors and other sources of bias is emphasised in the report. Several studies are examined in detail. The key findings and the methodologies are summarised below.

- ◇ A US study, which investigated the effect of high school graduation on incarceration, concluded that a ten percentage point rise in the rate of high school graduation would cut the murder (arrest) rate by between 14-17%. A one percentage point increase in the graduation rate would lead to a reduction in crime of between 34 000 and 68 000 offences, with a social benefit of between \$0.9 billion to \$1.9 billion. The econometric techniques used to deal with selection and other biases were considered robust.
- ◇ A UK study used area level crime data to consider the effect of wages on crime. It used a fixed effects method which was considered sufficiently robust to avoid criticism of bias. The study found that a 10% rise in the average pay of those on low pay in an area reduces the overall property crime rate by between 0.7 and 1.0%. The author estimates the benefit would be between 1.3 and 1.8 billion pounds in an average year over the period 1975-1996 which was the focus of the investigation.
- ◇ There is evidence of a link between learning, wage effects and the reduction of crime. The link is the incentives available to those choosing between crime and legitimate labour market activity and the inhibitive effect of time out of the labour market if caught (Feinstein 2002, p. 27). Feinstein examined the relation between year to year changes in wages and the crime rate using the area data of the UK study above. Estimates were made of the financial savings in regard to property crime if 1% of the working age population who had no, or low qualifications, were to achieve one O level. They are of the order of between 10 and 320 million pounds per year. The estimated savings are considerably greater if the same people were to achieve A level or equivalent.
- ◇ Evidence from Canada (Porporino & Robinson 1992) supports the importance of basic education in reducing recidivism. The final point links to work, which shows that the provision of employment opportunities for people leaving prison is one of the most effective means of reducing recidivism and reducing crime. Poor literacy and numeracy make it less likely that people leaving prison will find employment; however there are many other factors which compound the difficulties ex-prisoners face, including the attitude of employers.

A number of US studies have shown the benefits of educating prisoners, most of whom are known to have low levels of literacy. Most education in US prisons is targeted at low literacy students (see ProLiteracy America 2003), so while the studies have measured participation in

education rather than literacy classes, one can apply the methodologies and the findings to the benefits of improving prisoners' literacy levels.

Hull, Forrester, Brown, Jobe & McCullen (2000) investigated the records of a sample of 3000 people who had been released from prison. Of those who had participated in prison education programs, 20% were reincarcerated, compared to 49% of those who had not been in education programs. A similar study by Steurer, Smith and Tracy (2001) based on prison records from Ohio, Minnesota, and Maryland found a 21% re-incarceration rate for education participants and a 31% rate for non-participants. Steurer, Smith and Tracy (2001) also examined wage rates reported to state labour departments by former prisoners one year after release from prison. It was found that inmates who had participated in prison education programs earned nearly 30% more than inmates who had not participated. The same study looked at data for Maryland and, taking into account recidivism reductions related to prison education, concluded, '...last year's \$11 700 000 annual state budget for correctional education returned at least \$23 280 000 to the state'.

Selected population groups

Older people

There are costs and benefits associated with literacy and numeracy for adults of all ages. However, the demographic shift towards an ageing population, together with the following cohort effects, make many of the literacy-related domains discussed above especially relevant for older people. Older people are more likely to have a range of health related issues. Overall, the age group has had less schooling than younger people and they are less likely than younger people to take part in adult education. With expectations of a longer working life, and governments pursuing policies which encourage people to both work for longer and take responsibility for their financial future, there is a need for higher levels of work-related literacy skills and financial literacy. Technological developments also require an increasing level of literacy skills in daily life.

Literacy proficiency

There is a relationship between low literacy skills and ageing. The general contributing factors are parental education, country of birth, occupational status, socio-economic status, social and cultural participation, reading habits, participation in adult education and some physical and mental handicaps (Sticht 1989).

An analysis of the International Adult Literacy Survey showed that over 50 year olds scored significantly lower on all of the three measured literacy scales (prose, document and quantitative) than adults under 50 years. The quantitative scale is less sensitive to age differences than the other two scales. Within this general trend however, the literacy proficiency of older adults varies significantly, especially in regard to their level of education, gender and labour market participation (Van der Kamp & Boudard 2003). An earlier study found that, for Dutch adults, older men and women did not differ on the prose scale but women had significantly lower scores on the document and quantitative scales (Van der Kamp & Scheeren 1996, quoted in Van der Kamp & Boudard 2003).

The Australian findings from the International Adult Literacy Survey show that 41-46% of 65-74 year-olds were assessed as having level 1 literacy skills and three-quarters of them level 1 or 2. This was around twice the proportion of 35-44 year-olds assessed as level 1 (38%) (Crombie 1999). Educational attainment, being poor, being unemployed or not in the labour force and having a first language other than English were factors associated with low levels of literacy and numeracy.

Impacts of poor literacy for older people

Roberts and Fawcett (1998) used Canadian data from the International Adult Literacy Survey to examine variations in literacy skills and practices and in patterns of information acquisition among seniors (e.g. their use of books, television, newspapers etc.) by selected socio-economic variables. The authors point out that this is not a direct test of the linkage between literacy and health status. Rather they correlate and compare the health-related characteristics of seniors with their literacy skills and practices.

They found that it is not only the frequency of various activities such as reading books, newspapers and viewing television, but also the variety of literacy sources that is important for maintaining literacy proficiency. 'High literacy seniors ... are more likely than low-literacy seniors to be exposed to a wider variety of literacy sources and to view these on a more frequent, daily basis.' This has implications for their exposure to health-related information. Low-literacy seniors also require more assistance with literacy tasks (as measured by the International Adult Literacy Survey), and they tend to over-estimate their literacy skills. Again, this has implications for access to information in a range of areas.

Van der Kamp & Boudard (2003) undertook a qualitative study to explore some of the questions about benefits and costs that the IALS was not designed to answer. They found that over 60% of their sample of older adults with poor literacy do not experience difficulties related to literacy; however more than 50% were keen to avoid situations in which literacy is needed. They coped by avoidance, by relying on relatives and acquaintances; seeking information in other ways, and looking for alternatives e.g. going to a bank counter rather than using an ATM. They seek to learn new skills if they are of interest or relevant to their daily life. Though many cope well, some are vulnerable especially those at risk of losing their job or being socially excluded because of their low level of literacy skills. This is especially the case for older women. The study also found that older people tend to see literacy in gender related ways, ascribing different literacy tasks to men and to women.

Poor literacy is identified as one of the barriers to re-entering employment for older disadvantaged workers in Australia wanting to return to the workforce after unemployment, redundancy or industry re-adjustment (Business, Work and Ageing, Swinburne University of Technology, 2004).

Grandparents are the biggest providers of child care for pre-school aged children in Australia; the younger the child, the more likely they are to be cared for by their grandparents; and grandparents, especially grandmothers, are the *preferred* carers of young (Greenblatt 1993). Older people are therefore a significant potential resource for nurturing the literacy and numeracy skills of young children, a role whose potential is reduced for those with poor skills.

Indigenous Australians

We found very little literature which attempted to directly estimate the benefits of improved literacy and the impact of poor literacy on Aboriginal populations in Australia. There is however, a wealth of information about the educational disadvantages experienced by the Aboriginal population as a whole and by particular groups within it, e.g. those living in remote areas and in some urban areas. Key areas of focus are education and health, areas very relevant for the present project. There are also many descriptions of community programs that have an element of learning, including literacy and numeracy learning, and are shown to have some benefit for Indigenous individuals, families and communities.

Information sources which may be relevant for exploring the benefits and costs of literacy for Indigenous populations at a population level include publications coming out of the National Centre for Aboriginal and Torres Strait Islander Statistics, located within the ABS. There is an

Indigenous HealthInfoNet website, which provides a wide variety of information about Indigenous health and other statistics, research and program information.

Benefits and costs

Junankar and Liu (2003) estimated the social rate of return from greater investment in education (clearly broader than literacy and numeracy) for Indigenous Australians. The social rate of return is a measure of the net benefits to society of educating its citizens. The authors compared estimates of the social rate of return for investing in the education of Indigenous Australians and non-Indigenous Australians. They found that the social rate of return is greater for non-Indigenous Australians than for non-Indigenous Australians.

In addition to the economic benefits likely through higher employment and the benefits to individuals (which are likely to be substantial), increasing education has an important social benefit for Indigenous Australians and for society in general. The authors argue that improved education would lead to better nutrition, better living conditions, better access to health services and hence to a longer and healthier life. In turn, this would lead to higher productivity and higher incomes over a longer period of time. They also argue that rates of imprisonment would be greatly reduced, which further enhances the greater social rate of return on investment for Indigenous Australians.

Junankar and Lui (2003) estimated the private and social rates of return from education. They used data from the 1991 Australian Census to estimate the likely earnings of a person with differing levels of education and work experience at different ages. They then projected into the future the additional earnings people might expect if they had spent more time in education. They estimated the social rates of return by using gross earnings, allowing for total expenditure on education by the individual and by society. For Indigenous persons, they allowed education to extend the working life and reduce the possibility of being imprisoned.

Amongst many other environmental and social factors contributing to learning difficulties and poor literacy of Aboriginal children, the impact of parents' poor English literacy levels on their children's learning and literacy is thought to be particularly important. The National Indigenous English and Numeracy Strategy 2000-2004 (Commonwealth of Australia 2000) reported that the skilling up of parents could play a crucial role in improving skills. The report recommended 'development of training programs to assist parents to support their child's learning through refocussing the Aboriginal Student Support and Parent Awareness (ASSPA) program on issues such as adult literacy and home-based support'.

Other considerations

For some sections of the Aboriginal population, other considerations need to be taken into account in any attempts to measure the benefits and costs of literacy and numeracy.

- ✧ There is growing acknowledgment of the careful balance that needs to be maintained between Indigenous cultural values and community control and the development of literate and skilled adults in local communities. Kral and Falk's (2004) case study of a community controlled health service in a remote Indigenous community concludes that literacy is only relevant if it is linked in a useful way to the prescribed roles and responsibilities in the community. This has wide implications for training and employment models and for the place of adult literacy learning within them.
- ✧ Even within communities that are not so remote, it has been noted in relation to various learning situations and for people of all ages that to be successful, the learning environment and content must be culturally affirming of Aboriginal students, and appropriate to their interests, learning style, perspectives, values and identity. If this is not the case, there are likely to be benefit and cost implications.

- ✧ Standard Australian English should be viewed as a second language for some Indigenous adults (Aboriginal and Torres Strait Islander Commission 2002). This has implications for the effectiveness of standard teaching and learning of literacy; benefits and costs may not directly reflect those for non-Indigenous Australians.

Literacy skills often interact in complex ways with other factors. Aboriginal health workers note that it is important to strike the right balance between community-based experience and understanding on the one hand and literacy skills on the other for Aboriginal health workers working in remote communities where family and community validation of the worker is important (Abbott & Fry 1998).

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