

PIAAC results 2013

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Earlier this year some preliminary results from the Programme for International Assessment of Adult Competencies (PIAAC) were released (ABS, 2013). In October a full report will be released which will include the data from countries that have already administered PIAAC, and will include the comprehensive analysis of the Australian results and comparisons with the international data.

What is PIAAC?

PIAAC, the Programme for International Assessment of Adult Competencies, is an international survey of adult skills in the areas of literacy, numeracy and problem solving.

PIAAC builds on the foundations of over 30 years of national and international surveys of adult skills, and has been designed on the basis of prior assessments and lessons learned from the Adult Literacy and Lifeskills survey (ALLS), the International Adult Literacy Survey (IALS) (Statistics Canada and OECD, 1996; 2005), and earlier studies (e.g. Kirsch & Jungeblut, 1986; Kirsch et al, 1993; Wickert & Kevin, 1995).

A few details about PIAAC:

- like IALS (1996) and ALLS (2006), PIAAC is an international survey of adults aged 16-64 years of age (Australia oversamples and covers 15-74 years of age)
- in Australia, over 16,000 people undertook the survey
- PIAAC measures
 - literacy (reading and the components of reading - word meaning, sentence processing and passage comprehension. Writing is not assessed. In both IALS and ALLS, literacy was broken into Document and Prose literacy and data on each produced. PIAAC has only one literacy scale
 - numeracy
 - problem solving in technology-rich environments
- participants answer a significant number of background questions which, together with the survey data, provide the potential for rich analysis
- participants can do the survey by
 - paper and pen, or
 - computer and, at least in part, the survey is computer adaptive
- the results are shown as a score on a scale which is grouped into five levels with level 1 being the lowest level
- twenty four countries administered the survey in 2011 and a second group of ten countries are following
- the methodology allows comparison between the PIAAC results of those of ALLS (and IALS).

What do the preliminary results tell us?

The table below shows that approximately 7.3 million (44.4%) Australians aged 15 to 74 years had literacy skills at Levels 1 or 2 and 8.9 million (54.6%) had numeracy skills at Levels 1 and 2. ALLS (2006) showed 46.4% of the adult Australian population were at Levels 1 and 2 in Prose literacy and 46.8% at the same levels for Document literacy. In 2006 52.5% of the adult population were at Levels 1 and 2 in numeracy.

PIAAC results for Australian adults (15 – 74 years)

Level	Literacy		Numeracy	
	%	Millions	%	Millions
1	14.1	2.3	21.7	3.5
2	30.3	5.0	32.9	5.4
3	39.0	6.4	32.4	5.3
4 & 5	16.6	2.7	13.1	2.1

Some of the initial results reported by ABS are, perhaps, not surprising. For example, those who are employed are more likely to have higher levels of literacy and numeracy than those that are unemployed or out of the workforce. Those out of the workforce had the highest proportion of people at Level 1.

Other results published by ABS (2013) showed:

- little difference between the literacy levels of males and females
- a higher proportion of males at levels 4/5 than females
- a higher proportion of people aged 60 and over at Level 1 in literacy and numeracy than at any other age
- the proportion of those at Level 1 starts to rise from approx 50 years.

Further results by sex, age, state/territory and labour force status can be found on the [ABS website](#).

What don't the results tell us?

Surveys such as PIAAC provide empirical data of the performance and abilities of the adult population in relation to the skills being assessed. However, although empirical, it is only a 'snapshot' of the skills of the population being tested.

The assessment items imitate real life literacy and numeracy tasks but the stimuli used are often shorter and simplified versions of the real texts (documents or web pages) adults meet in their life.

The items also cannot be genuinely socially situated. Dependence on reading and on information processing via reading rather than allowing for oral transactions and responses, or for accessing support, places limitations on the interpretation of the results. There is no assessment of writing skills per se and no writing scale has, as yet, been developed. As such PIAAC is a survey of 'aspects' of literacy and numeracy, not the whole range of ways literacy and numeracy can be part of today's modern society.

But even given these limitations, it is not unreasonable to expect that a broad set of questions based on simplified stimuli given to a representative sample of the adult population will provide valid and valuable insights and information about the general literacy

and numeracy abilities and skills of the Australian population, especially given the exhaustive quality assurance process the questions and stimuli go through prior to their use (Tout, 2013).

Why take part in surveys like PIAAC?

In over 30 years of national and international surveys of adult skills, especially emanating from the International Adult Literacy Survey (IALS) and earlier studies, the components of task and text complexity and the variables that interact to determine the level of difficulty of information-processing tasks have been researched and schemes developed (see Kirsch & Mosenthal 1990, Kirsch 2001). PIAAC has built on such work to take into account changing literacy demands, including the skills required for reading in digital environments (Jones et al, 2009). This work which has been instrumental in the understanding about teaching and learning of literacy skills.

Parallel work has been undertaken in numeracy leading to a complexity scheme to predict the difficulty or complexity of a numeracy assessment task. This was empirically validated in the ALLS work. A unique scheme of five factors was researched and written that attempted to account for the difficulty of different tasks, enabling an explanation of observed performance in terms of underlying cognitive processes or factors (Gal et al, 2005, Gal et al 2009).

Extensive research which has shown the value of higher L&N skills has been possible using the data from the background questionnaire combined with that of skill performance. A good example of such research is the Health Literacy Scale created as a by-product of ALLS. Based on such international data considerable research related to health literacy has been undertaken:

“The international research on ‘health literacy’ is considerable. Studies have found links between lower literacy and a higher risk of hospitalisation, higher rates of depression and an inability to understand and comply with the use of prescription drugs.” (Hartley & Horne, 2006)

However, compared to Canada and the US, Australia has not acted strongly in this area, and more could be done.

Internationally, based on these international surveys, there has also been considerable research about the impact of low literacy and numeracy on the economy and productivity and on a country’s GDP. No matter the stories about the unique (and extremely rare) successful individuals who say they have made it without being able to read, write or do arithmetic, this research and other related research demonstrates that for the vast majority of individuals low levels of L&N skills has a negative impact on both their social and economic future. It is therefore of value to support and enhance an individual’s L&N skills—from all viewpoints—individual, societal or economic. Access to higher levels of literacy and numeracy, no matter the starting point, no matter the age and background, is crucial and has many benefits.

The data from the earlier surveys, particularly ALLS, has been significant in bringing L&N skills to the attention of the government, industry bodies and, to some extent, the broader community and saw the beginning of a set of significant responses and investments in adult

L&N. Both Government and Industry have begun to argue for and acknowledge that the core skills of language, literacy and numeracy are important and need to be addressed and supported on a national basis. For example, the last few years have seen outcomes such as:

- the Industry Skills Councils report, *No More Excuses-An Industry Response to the Language, Literacy and Numeracy Challenge*
- the Language, Literacy and Numeracy Practitioner Scholarships Program
- the release of a National Foundation Skills Strategy for Adults by the Federal Government
- the development and release of a set of new higher level L&N qualifications for VET trainers
- the development and release of a new Foundation Skills Training Package (FSTP).

And, importantly for those who are passionate about the L&N skills of Australians, funding has followed some of the initiatives allowing for a broader base of provision with LLN being an integral aspect of all VET courses.

What next?

The full report of PIAAC will soon be available. While data from the ALLS survey has been used in research and has resulted in L&N program development, it has been underutilised in Australia in comparison to other countries. Hartley and Horne noted in 2006 (p. 5) that “Assessing the social and economic costs of poor adult literacy and numeracy is largely uncharted territory in Australia. The benefits of investing in adult literacy and numeracy skills have also been under-researched.” Six years on, while the economic costs of poor L&N may have been recognised, there has been little research drilling down into how this impacts on Australia and research into the social costs remains relatively uncharted ground as does the relationship between the two (economic and social costs).

Survey results about performance levels alone don't tell us why problems exist or how to overcome them. Based on the quantitative data and qualitative background information, there needs to be a range of issues and questions posed, researched and answered.

References

- Australian Bureau of Statistics, 2007, *Adult Literacy and Life Skills Survey: Summary results, Australia* (cat. no. 4228.0), Australian Bureau of Statistics, Canberra
- Australian Bureau of Statistics, 2013, *Programme for the International Assessment of Adult Competencies, Australia, 2011-2012* (cat. no. 4228.0). Australian Bureau of Statistics, Canberra
- Gal I, Alatorre S, Close S, Evans J, Johansen L, Maguire T, Manly M & Tout D. 2009. *PIAAC Numeracy: A Conceptual Framework*, OECD Education Working Papers, No. 35, OECD Publishing. <http://dx.doi.org/10.1787/220337421165>
- Gal, I., van Groenestijn, M., Manly, M., Schmitt, M. J., & Tout, D. 2005. Adult numeracy and its assessment in the ALL survey: A conceptual framework and pilot results. In Murray, S. T., Clermont, Y., & Binkley, M. (Eds), *Measuring adult literacy and life skills: New frameworks for assessment* (pp. 137-191). Ottawa: Statistics Canada.
- Hartley, Robyn & Horne, Jackie, 2006. *Social and economic benefits of improved adult literacy: Towards a better understanding*, National Centre for Vocational Education Research (NCVER), Adelaide
- Industry Skills Councils (Australia) 2011, *No more excuses: an industry response to the language, literacy and numeracy challenge*, Industry Skills Councils, Australia

- Jones S, Gabrielsen E, Hagston J, Linnakylä P, Megherbi H, Sabatini J, Deutsches Tröster, M & Vidal-Abarca E. 2009. *PIAAC Literacy: A Conceptual Framework*, OECD Education Working Papers, No. 34, OECD Publishing.
[http://www.oecd.org/officialdocuments/displaydocumentpdf?cote=edu/wkp\(2009\)13&doclanguage=en](http://www.oecd.org/officialdocuments/displaydocumentpdf?cote=edu/wkp(2009)13&doclanguage=en)
- Kirsch, I. Jungeblut, A. Jenkins, L & Kolstad, A. 1993. *Adult Literacy in America: A first look at the national survey*, National Centre for Educational Statistics, Washington D.C.
- Kirsch, I. & Jungeblut, A. 1986. *Literacy, Profiles of Americas's Young Adults. Final Report*, Educational Testing Service. Princeton NJ
- Kirsch IS & Mosenthal PB., 1990. Exploring document literacy: Variables underlying the performance of young adults. *Reading Research Quarterly*; 25: 5–30.
- Kirsch IS., 2001. *The International Adult Literacy Survey (IALS): Understanding What Was Measured*. Princeton, NJ: Education Testing Service.
- OECD & Statistics Canada (2000). *Literacy in the information age: Final report of the International Adult Literacy Survey*. Paris and Ottawa: Author.
- Skinner, T.J. 1997 *Aspects of literacy: profiles and perceptions, Australia 1996*. Australian Bureau of Statistics (ABS), Canberra
- Statistics Canada and OECD (1996). *Literacy, economy, and society: First results from the International Adult Literacy Survey*. Ottawa: Author.
- Statistics Canada and OECD (1997). *Literacy skills for the knowledge society: Further results from the International Adult Literacy Survey*. Ottawa: Author.
- Tout D, 2013, "Lessons learnt from international assessments: reflections part 1" *Fine Print*, 36:2
- Wickert, Rosie; Kevin, Maria, 1995, *No single measure: the final report*. Dept of Employment, Education and Training, Canberra