



Results from the Programme for the International Assessment of Adult Competencies (PIAAC):

Everyday skills use among adults in Ireland – literacy, numeracy and problem solving in technology rich environments (PSTRE).

Introduction

In 2012 AONTAS, the National Adult Learning Organisation was invited by the Department of Education and Skills to assume the role of National Co-ordinator for the Implementation of the European Agenda for Adult Learning (EAAL) in Ireland. Key stakeholders in the project include Education and Training Boards Ireland (ETBI) and The National Adult Literacy Agency (NALA). Projects are funded under the Lifelong Learning Programme across 27 European countries to promote adult learning and increase participation by adults, especially those with low or no qualifications. The Irish project is co-financed by the Department of Education and Skills (DES) through SOLAS, the Further Education and Training Authority. One of the objectives of the project was to carry out an analysis of the OECD's Programme for the International Assessment of Adult Competencies (PIAAC) data around specific themes, present the information in a seminar to inform the work of the Further Education and Training (FET) Strategy, and use the data to improve services for those most distanced from education, training and the labour market.

This research work was undertaken by NALA¹ and is presented in a series of Research Bulletins which draw on the rich data from PIAAC which was collected in Ireland between August 2011 and March 2012.

In this Bulletin we look at how adults in Ireland aged between 16 and 65 who scored at or below level 2 in PIAAC use literacy, numeracy and PSTRE skills in their everyday lives, particularly at home when they are not in the workplace. The study sample is divided into two groups: adults who are at or below level 1 (indicating low proficiency) and adults at level 2. The results for each skill domain (literacy, numeracy, PSTRE) are presented separately. This includes activities such as reading magazines and newspapers (literacy), calculating prices (numeracy) and using internet banking (PSTRE). In the following pages we describe the average everyday skills used in reading, writing, numeracy and PSTRE in terms of the gender, age, educational attainment and occupational status of the adults with level 2 and level 1 or less in each domain. These average index skills use scores which are summarised in this bulletin capture a range of skills in each area and the frequency with which they are used.

¹ The research team who worked on this Bulletin are; Dr Sarah Gibney, Adjunct Research Fellow UCD and Tina Byrne, Research Officer, NALA

Policy Context

In 2013, data from PIAAC was published by the Central Statistics Office. The results showed that Ireland had the third highest response rates of participating counties at 72% (5,983 adults) between the ages of 16 and 65 years. PIAAC focuses on adult skills and competencies in the areas of literacy, numeracy and problem solving in technology rich environments (PSTRE). According to the OECD, the Irish PIAAC results show that there is a significant number of adults aged 16 to 65 with low skills proficiency (at or below level 1): 17.5% in literacy, 25.3% in numeracy and 62.5% in PSTRE. Low proficiency levels are often associated with negative outcomes for the individual. These outcomes include poorer economic circumstances through lower wages and a higher probability of unemployment both short and long term.

When the PIAAC results are compared with the results of the 1997 International Adult Literacy Survey (IALS) the literacy trends for Ireland show no statistical change between the average scores in the IALS and PIAAC. However, in IALS 22% of Irish adults were assessed as being at level 1. Current DES policy states that adult literacy programmes should be focused on learning outcomes at Quality and Qualifications Ireland (QQI) Levels 1-3.

In 2013, prior to the publication of the PIAAC results the Government published its Review of adult literacy provision in Ireland. The Review set out 32 recommendations to improve adult literacy provision. Following the publication of the Review the Government enshrined an Adult Literacy and Numeracy Strategy as part of the Further Education and Training (FET) Strategy in the Further Education and Training Act.

In 2014, two major publications were launched that focus on the development of further education and training in Ireland. Further Education and Training in Ireland: Past, Present and Future (ESRI, 2014) sets out the historical evolution of further education and training provision in Ireland. It details patterns of provision in terms of overall distribution of places and the balance between full-time labour market programmes and part-time provision with a more community education and adult literacy focus. The Further Education and Training Strategy 2014-2019, accompanied by implementation plans, aims to develop a high quality integrated system of further education and training in Ireland. The two broad objectives of the FET Strategy are that it will meet the further education and training needs of citizens and promote economic development (SOLAS, 2014).

Methodology

Through intensive testing, the PIAAC survey produced an estimate of the literacy, numeracy and PSTRE skills proficiency of the study participants. These estimates were categorized into meaningful skill levels. We focus on profiling differences in every day skills use between adults who have low proficiency (at or below level 1) and level 2 proficiency. The subsample comprises 55% of the total sample of adults for whom a literacy level was estimated, 58% of the sample for whom a numeracy score was estimated and 95% of the sample for whom a PSTRE score was estimated.

Measures

Low proficiency

Low proficiency is defined as a proficiency score at or below level 1. For the purpose of this analysis, a dichotomous variable with two categories was created whereby low proficiency = 1 and level 2 = 0. Within the low proficiency category below level 1 and level 1 are combined. Levels 3, 4 and 5 are not included in this analysis.

Everyday skills use

Four combined, index, measures of frequency of skills use are presented. These single index measures capture a variety of different activities related to reading, writing, numeracy and PSTRE and the frequency with which these activities are completed.

- Reading skills

Letters, memos or emails; articles in newspapers, magazines or newsletters; bills, invoices, bank statements or other financial statements; books, fiction or non-fiction; directions or instructions; manuals or reference materials; and articles in professional journals or scholarly publications; and diagrams, maps or schematics.

- Writing skills

Letters, memos or emails; fill in forms; write reports; and write articles for newspapers, magazines or newsletters.

- Numeracy skills

Calculate prices, costs or budgets; use a calculator – either hand-held or computer based; use or calculate fractions, decimals or percentages; use simple algebra or formulas; use more advanced maths or statistics such as calculus, complex algebra, trigonometry or use of regression techniques; and prepare charts, graphs or tables.

- PSTRE skills

Use email; use the internet in order to better understand issues related to, for example, your health or illnesses, financial matters, or environmental issues; conduct transactions on the internet, for example, buying or selling products or services, or banking; use a word processor, for example Word; take part in real-time discussions on the internet, for example, online conferences or chat groups; use spreadsheet software, for example Excel; and use a programming language to programme or write computer code.

These indices provide a standard indicator of how often all the skills in one domain are used, such as all writing skills. Index scores range from 0 (infrequent use) to 4 (frequent use).

Occupational classification

Four skills-based occupational classifications are used in this analysis which cover several industry classifications. These are summarised below.

<p>Skilled occupations: Legislators, senior officials and managers; professionals; technicians and associate professionals.</p>
<p>Semi-skilled, white collar occupations: Clerks; service workers, shop and market sales workers.</p>
<p>Semi-skilled, blue-collar occupations: Skilled agricultural and fishery workers, plant and machine operators and assemblers.</p>
<p>Elementary occupations: Sales and service elementary occupations; agricultural and fishery related labour; labourers in mining, construction, manufacturing and transportation.</p>

Unemployment

Unemployment is measured in two ways. Short-term unemployment is measured by whether the respondent has or has not done any paid work in the past 12 months. Long-term unemployment is measured by whether or not the respondent has done any paid work in the past 5 years.

Gender

Gender is categorised as either male or female.

Education

Education is measured as the highest level of formal education obtained using 4 categories derived from the International Standard Classification of Education (ISCED) (UNESCO, 2011). These include 1, lower secondary or less; 2, upper secondary; 3, post-secondary, non-tertiary; and 4, tertiary professional degree. Due to the small numbers of participants at these proficiency levels with tertiary bachelor, masters or research degrees these categories of education are not included in the results.

Age

The age of respondents in the PIAAC survey ranges from 16 to 65 years. In this analysis age is measured in 10 year bands: 24 or less; 25-34; 35-44; 45-54; 55 plus.

PIAAC sample and study subsample(s)

A total of 5,983 adults aged 16 and older participated in the PIAAC survey in Ireland. These participants had varying levels of proficiency in literacy, numeracy and PSTRE. The percentage of the sample at each proficiency level is summarised in the table below. The shaded area indicates the subsample of adults that this study focuses on.

Literacy

- More than half (53.9%) of adults with level 1 or less, and (56.8%) of adults with level 2 literacy are women.
- The average age of the respondents with level 1 or less is 43.7 years and respondents with level 2 is 40.8 years.
- Over half (54.9%) of the sample with level 1 or less has lower secondary education or less.
- Approximately one third (33.6%) of the sample with level 1 or less have had no paid work in the last 5 years.

Numeracy

- Over half (59.5%) of the sample with level 1 or less and (58.2%) of the sample with level 2 are women.
- The average age of the respondents with level 1 or less is 43 years.
- Almost half (49.1%) of the sample with level 1 or less has lower secondary education or less, whereas almost half (47.8%) of the sample with level 2 has upper secondary education or less.
- Almost one third (31.1%) of the sample with level 1 or less have had no paid work in the last 5 years.

Problem-solving in Technology Rich Environments (PSTRE)

- Over half (57.6%) of the sample with level 1 or less and (51.6%) of the sample with level 2 are women.
- The average age of the respondents with level 1 or less is 39.1 years and respondents with level 2 is 34.4 years.
- Over one quarter (26%) of respondents with level 2 have upper secondary education or less and 22.3%

Table 1: Percentage of adults at each literacy, numeracy and problem solving in technology rich environments level in Ireland

	Below Level 1	At Level 1	At Level 2	At Level 3	At Level 4	At Level 5
Literacy	4.3	13.2	37.7	36.2	8.1	#
Numeracy	7.1	18.2	38.2	29.0	7.0	0.6
PSTRE	18.7	43.8	32.9	4.7		

Source: OECD (PIAAC), 2012. Note: # indicates less than 1% (rounds to zero). Note: The research sample is the shaded area.

have tertiary education bachelor degree. The data shows that (41%) of respondents with level 1 or less have upper secondary education or less, and (21.8%) have post-secondary (non-tertiary) education.

Key points literacy

Reading skills

- Almost twice (30.5%) as many people with level 1 or less use reading skills less frequently compared with respondents with level 2 (17.4%).
- Among adults with level 1 or less, on average, women use skills more often than men.
- At all ages, average everyday reading skills use by adults with level 1 or less is lower than the average for adults with level 2. Everyday reading skills use declines as people get older.
- On average, everyday reading skills use is more frequent among adults with higher levels of education.
- Adults with level 1 or lower in literacy, average everyday reading and writing skills use is significantly lower for those who have not worked in the past five years compared with those who have. This difference is not seen among adult with level 2 literacy.

Writing skills

- Approximately twice (14.7%) as many adults with level 2 frequently use writing skills at home compared with adults who have level 1 or less (7.5%).
- Among adults with level 2 or less, on average, women use writing skills more often than men.
- Compared with reading skills, there is a sharper decline in average writing skills use across age groups for adults at or below level 1 and at level 2.
- Average everyday writing skills use is higher among adults with higher levels of education.
- Adults with level 1 or less average writing skills use is significantly lower for those who have not worked in the past five years compared with those who have. This difference is not seen among adults with level 2 literacy.

Figure 1: Everyday reading and writing skills use by men and women

- Among adults with level 1 or less literacy, on average, women use reading and writing skills more often than men.
- Among adults with level 2 literacy, there is no significant difference in how often men and women use reading skills, but women at level 2 use writing skills more often than men.

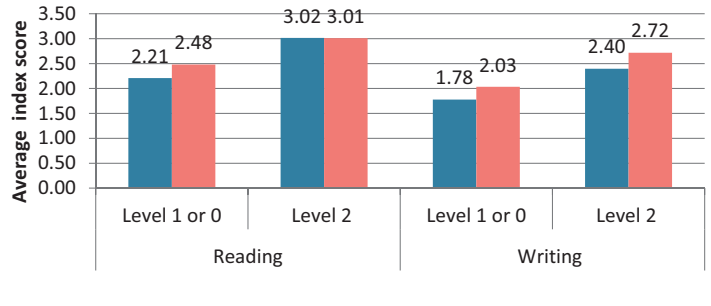


Figure 2: Everyday reading skills use by age groups

- At all ages, average everyday reading skills use among adults at or below level 1 literacy is lower than adults with level 2 literacy.

— Reading (Level 1 or 0) — Reading (Level 2)

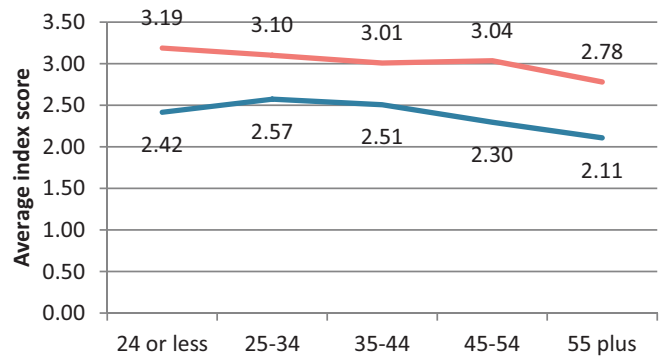


Figure 3: Everyday writing skills use by age groups

- Adults with level 2 literacy use every day writing skills more frequently than adults with level 1 or less.
- Writing skills use declines steadily across age groups and is much lower for people aged 55 and older compared with reading skills use by this age group.

— Writing (Level 1 or 0) — Writing (Level 2)

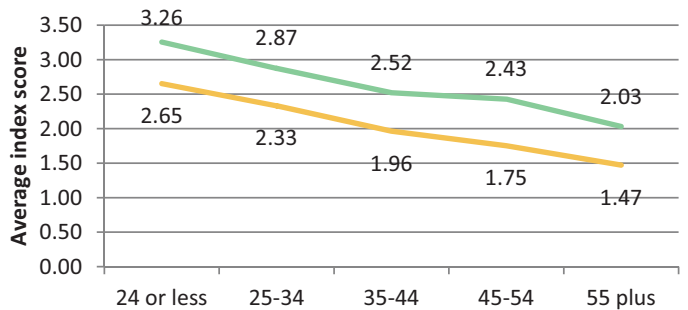


Figure 4: Everyday reading skills use by education level

- The difference in average everyday skills use between adults with level 1 or less and level 2 is greatest amongst adults with lower secondary or less education.
- This difference narrows across each higher level of education.

— Reading (Level 1 or 0) — Reading (Level 2)

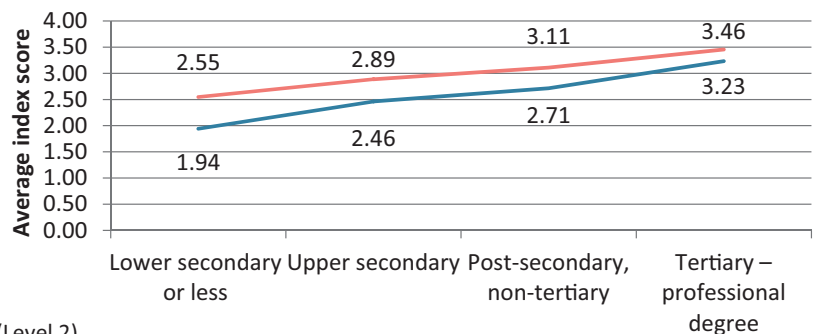
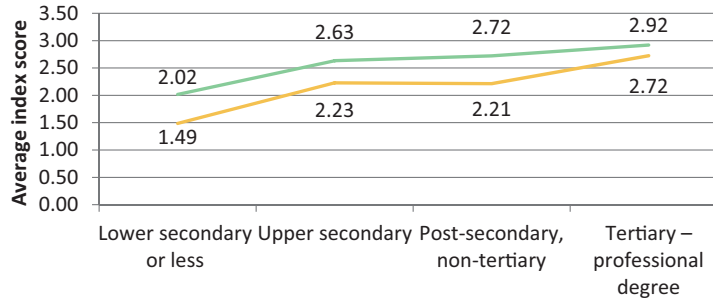


Figure 5: Everyday writing skills use by education level

- Similar to everyday reading skills, the difference in writing skills use is greatest among adults with lower secondary or less education.
- However this difference is also seen among adults with post-secondary, non-tertiary education.

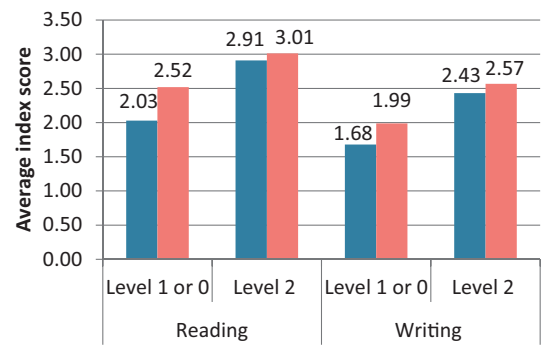
— Writing (Level 1 or 0) — Writing (Level 2)



Note: Due to the small numbers of participants in these proficiency levels who have a tertiary level bachelor degree or masters/research degree, these results are not presented.

Figure 6: Reading and writing skills use by long-term unemployment status

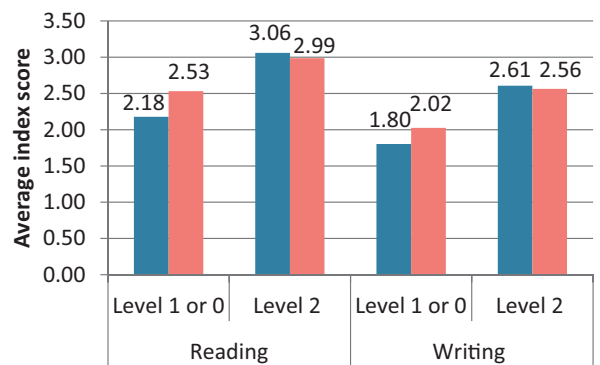
- Among adults with level 1 or less average reading and writing skills use is significantly lower for those who have not worked in the past five years compared with those who have.
- Among adults with level 2, there is no significant difference in average reading or writing skills between those who have not worked in the past five years compared with those who have.



■ Has not had paid work in past 5 years ■ Has had paid work in past 5 years

Figure 7: Reading and writing skills use by short-term unemployment status

- Among adults with level 1 or less, average reading and writing skills use is significantly lower for those who have not worked in the past 12 months compared with those who have.
- Among adults with level 2, there is no significant difference in average reading or writing skills between those who have not worked in the past 12 months compared with those who have.



■ Has not had paid work in past 12 months ■ Has had paid work in past 12 months

Key points numeracy and PSTRE

Numeracy

- Compared with literacy, the pattern of everyday numeracy skills use is very different.
- At both level 2 and level 1 or less the proportion of people who infrequently use numeracy skills at home is high; over one-quarter of people with level 2 and over one-third of people with level 1 or less (36.1%).
- Average everyday numeracy skills use is higher among people with level 2 compared with level 1 or less.
- At both proficiency levels, women use numeracy skills more often.
- At all ages, adults with level 2 numeracy on average use every day numeracy skills more often than adults with level 1 or less.
- For both groups, everyday numeracy skills use declines across each age group in a similar pattern.
- Average numeracy skills use among adults aged 55 and older who have level 1 or less is particularly low, compared with reading, writing or PSTRE skills use for this age group.
- The difference in average everyday numeracy skills use between adults with level 1 or less and level 2 is greatest among adults with lower secondary or less education.
- Among adults with level 1 or less numeracy, there is no significant difference in average everyday numeracy skills use between those who have not worked in the past five years compared with those who have.
- Among adults with level 2 numeracy, average everyday numeracy skills use is significantly higher for those who have not worked in the past five years compared with those who have.
- Among adults with level 1 or less numeracy there is no significant difference in average everyday numeracy skills use between those who have not worked in the past 12 months compared with those who have.
- Among adults with level 2 numeracy, average everyday numeracy or skills use is significantly higher for those who have not worked in the past 12 months compared with those who have.

PSTRE

- The percentage of people with level 1 or less who use PSTRE skills at home infrequently is more than double the percentage of people at level 2 ; 23% compared with 9.1%.
- There is no difference in average everyday PSTRE skills use between men and women at either proficiency level.
- Compared with writing and numeracy skills use, there is less of a difference in average PSTRE skills use for adults in different age groups at these proficiency levels.
- For adults with level 1 or less average PSTRE skills use declines across the age groups but there is little change after age 45.
- There is a steady increase in everyday PSTRE use by adult with level 1 or less across each level of educational attainment.
- Among adults with level 1 or less PSTRE, there is no significant difference in average everyday skills use between those who have not worked in the past five years compared with those who have.
- Among adults with level 2 PSTRE, average everyday numeracy or PSTRE skills use is significantly higher for those who have not worked in the past five years compared with those who have.
- Among adults with level 1 or less PSTRE, there is no significant difference in average everyday PSTRE skills use between those who have not worked in the past 12 months compared with those who have.
- Among adults with level 2 PSTRE, average everyday skills use is significantly higher for those who have not worked in the past 12 months compared with those who have.

Figure 8: Everyday numeracy skills use by men and women and PSTRE skills use by men and women

- Average numeracy skills use at home is higher among people with level 2 numeracy compared with level 1 or less. At both proficiency levels, women use numeracy skills more often.
- The average PSTRE skills use at home for people with level 2 is higher than level 1 or less.
- There is no difference in average PSTRE skills use between men and women within each proficiency level.

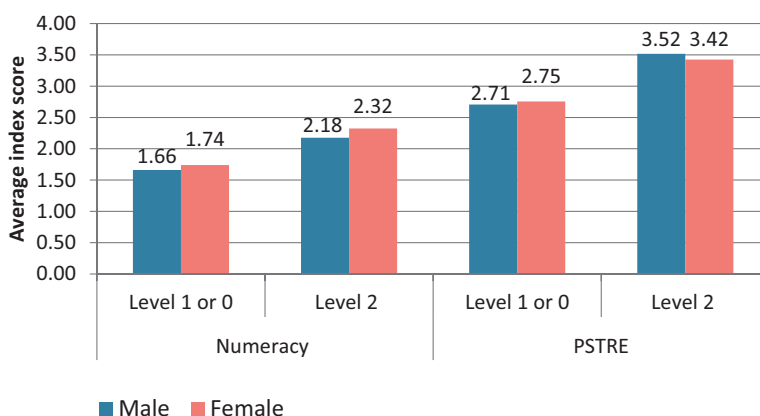


Figure 9: Everyday numeracy skills use by age groups

- At all ages, adults with level 2 numeracy on average use every day numeracy skills more often than adults with level 1 or less.
- For both groups, everyday skills use declines across each age group in a similar pattern.
- Average numeracy skills use among adults aged 55 and older who have level 1 or less numeracy is particularly low, compared with reading, writing or PSTRE skills use for this age group.

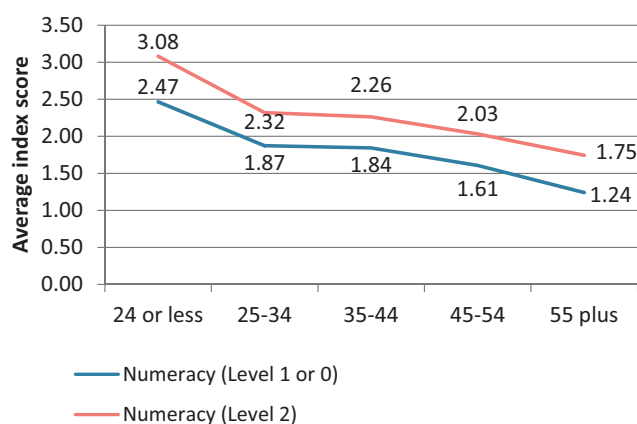


Figure 10: Everyday PSTRE skills use by age groups

- For adults with level 1 or less average skills use declines across the age groups but there is little change after age 45.
- For adults with level 2 average skills use declines until age 35-44 and then increases slightly for adults aged 45 and older. (Note the oldest participants in the sample are aged 65).

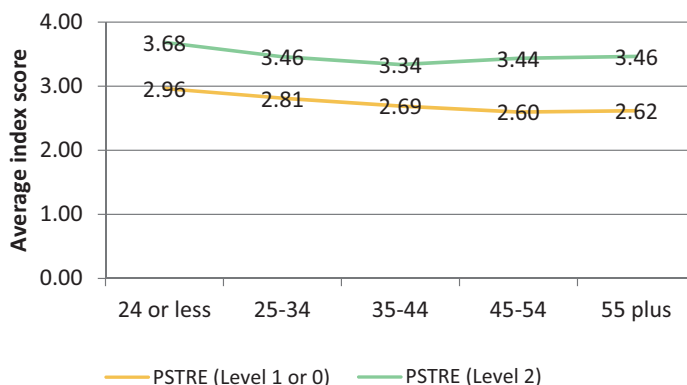


Figure 11: Everyday numeracy skills use by education level

- The difference in average everyday numeracy skills use between adults with level 1 or less and level 2 is greatest among adults with lower secondary or less education followed by adults with upper secondary education only.

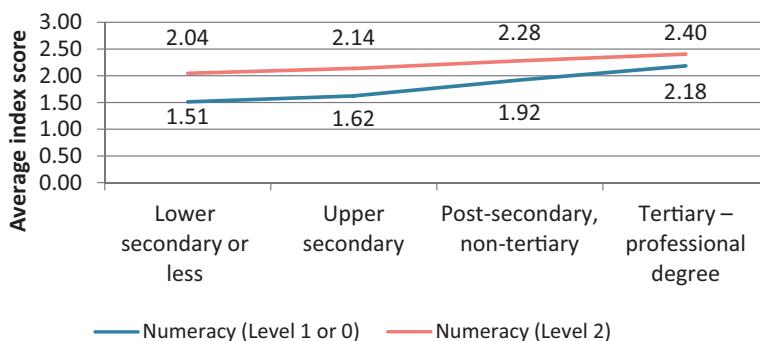


Figure 12: Everyday PSTRE skills use by education level

- There is a steady increase in everyday PSTRE by adult with level 1 or less across each level of educational attainment.
- Among adult with level 1 or less PSTRE the difference in average everyday skills use for adults with lower secondary education or less and tertiary level (professional degree) is 0.95 whereas this difference is only 0.24 among adults with level 2.

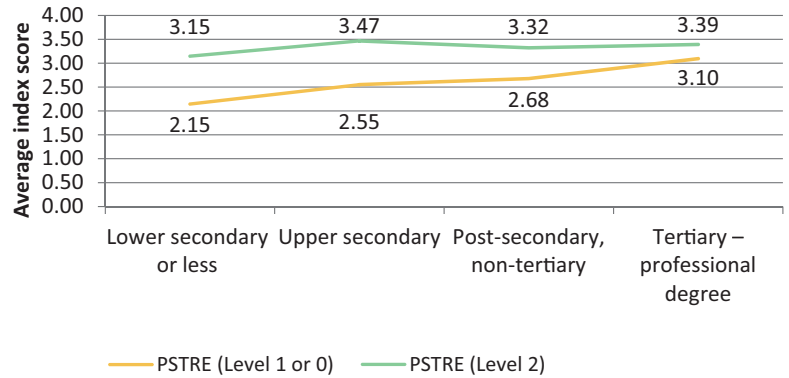


Figure 13: Everyday numeracy skills use and PSTRE skills use by long-term unemployment status

- Among adults with level 1 or less numeracy and PSTRE, there is no significant difference in average everyday numeracy or PSTRE skills use between those who have not worked in the past five years compared with those who have.
- Among adults with level 2 numeracy and PSTRE, average everyday numeracy or PSTRE skills use is significantly higher for those who have not worked in the past five years compared with those who have.

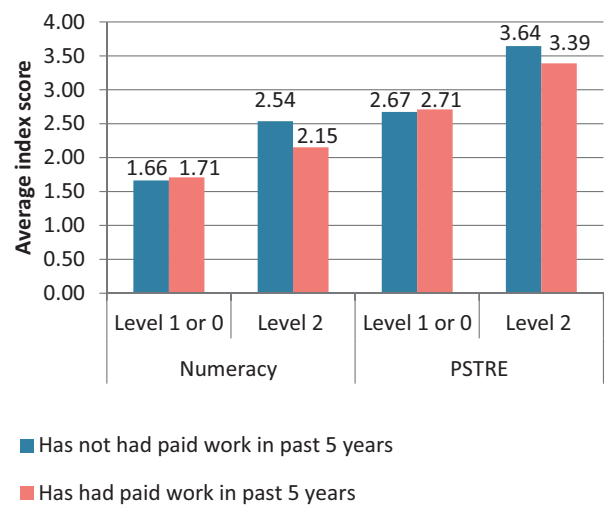
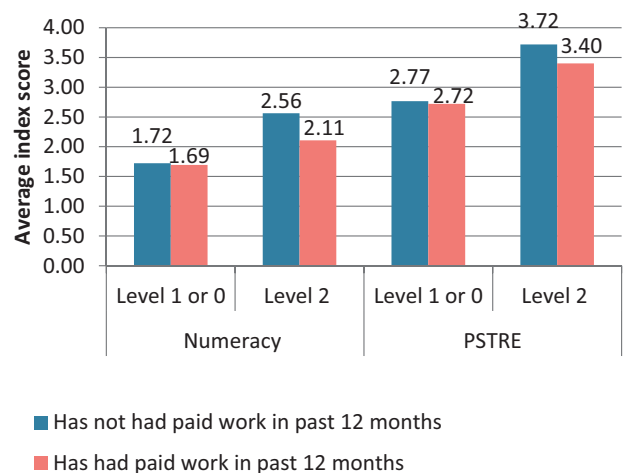


Figure 14: Everyday numeracy skills use and PSTRE skills use by short-term unemployment status

- Among adults with level 1 or less, there is no significant difference in average everyday numeracy or PSTRE skills use between those who have not worked in the past 12 months compared with those who have.
- Among adults with level 2, average everyday numeracy or PSTRE skills use is significantly higher for those who have not worked in the past 12 months compared with those who have.



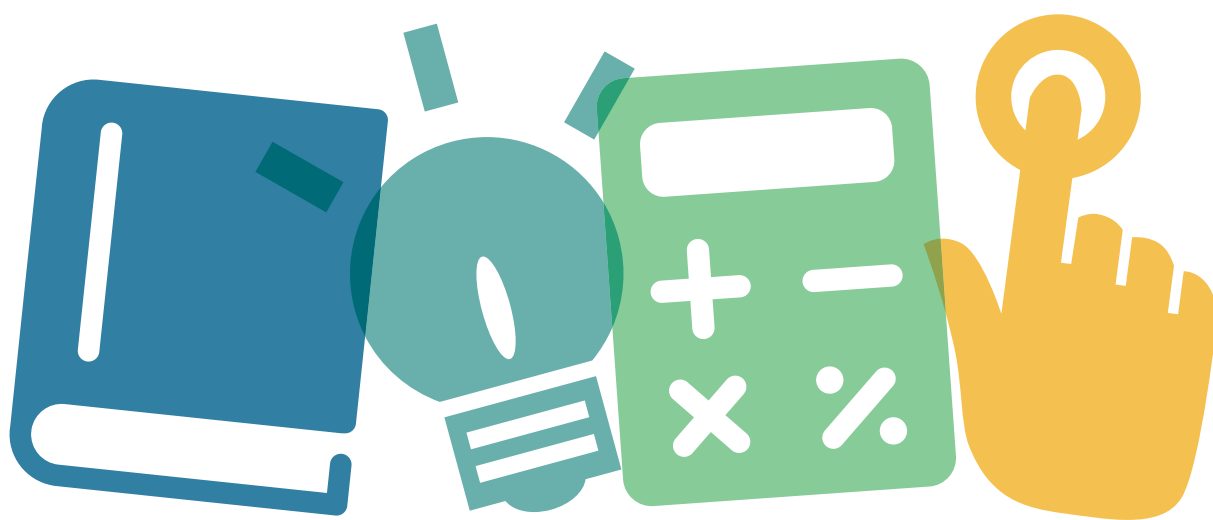
In summary

The PIAAC data shows that in Ireland there are a significant number of adults who experience literacy, numeracy and PSTRE difficulties.

These needs can act as substantial barriers to the individuals' potential to fully engage in society and also impacts on all areas of their lives including health, employment status and financial wellbeing. In order to understand the education and training requirements of any cohort of the population it is necessary to first identify who they are. This research has gone some way in this regard. We have identified the age, gender, educational attainments and employment status of the proportion of the population at level 2 and at level 1 or less. We have also compared the difference in skills use between those at level 1 or less and those at level 2.

Overall, the data shows that across all proficiencies people at level 1 or less use their skills to a lesser extent than those at level 2. Adults who have not worked in the last five years use their skills less when compared to those who have worked and younger adults tend to have higher proficiency levels than older adults. According to the data skills use declines as people get older and women tend to use their everyday reading and writing skills more often than men.

These findings have implications at both a policy and practice level, specifically in terms of the age of the sample, the decline in skills use as people get older and the lack of skills use by the long term unemployed. These findings will prove useful and informative, particularly when considering responses to the further education and training needs of this cohort of the population.



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