What are literacy and numeracy skills?

The EU High Level Group of Experts on Literacy classifies reading literacy and numeracy into three distinct categories: baseline, functional and multiple. This categorisation means literacy and numeracy are part of a continuum which allows policy makers and practitioners to define the level ‘required by society’ or to ‘participate in society’. A similar continuum approach has been used in the Programme for the International Assessment of Adult Competencies (PIACC).

Literacy and numeracy skills across Europe

PIACC data shows considerable variation in the literacy scores achieved by adults across Europe. Figure 2 shows that Finland and the Netherlands scored highest and Spain and Italy scored the lowest. More EU-28 participating countries were below the OECD average score of 273 (10 countries) than were above it (7 countries).

**Focus on Literacy and Numeracy Skills**

- Low levels of literacy and numeracy among the existing and the future workforce are likely to be a major barrier to labour market integration and future growth.
- One in five 15-year-olds are not achieving baseline standards in reading, literacy and mathematics.
- The EU 2020 benchmark for literacy will be a challenge to achieve.

**Figure 1 – Categories of literacy and numeracy**

<table>
<thead>
<tr>
<th>Multiple Literacy</th>
<th>The ability to use reading and writing skills in order to produce, understand, interpret and critically evaluate written information. It is a basis for digital participation and making informed choices pertaining to finances, health, etc.</th>
</tr>
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<tbody>
<tr>
<td>Multiple Numeracy</td>
<td>The ability and willingness to use mathematical modes of thought (logical and spatial thinking) and presentation (formulae, models, graphs, charts) that enable a person to fully function in a modern society.</td>
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<tr>
<td>Functional Literacy</td>
<td>The ability to read and write at a level that enables someone to develop and function in society, at home, at school and at work.</td>
</tr>
<tr>
<td>Functional Numeracy</td>
<td>The ability to apply basic mathematical principles and processes in everyday contexts at home, school and work (as needed for banking, payments, reading timetables, etc.).</td>
</tr>
<tr>
<td>Baseline Literacy</td>
<td>Having the knowledge of letters, words and text structures that is needed to read and write at a level that enables self-confidence and motivation to further development.</td>
</tr>
<tr>
<td>Baseline Numeracy</td>
<td>Having a sound knowledge of numbers, measures and structures, basic operations, basic mathematical presentations and the ability to use appropriate aids that enable further development.</td>
</tr>
</tbody>
</table>

Source: EU High Level Group of Experts on Literacy (2012).
Adult numeracy skills also vary considerably. Figure 2 shows that the mean numeracy score ranges from 282 in Finland to 246 in Spain. More EU-28 participating countries are above the OECD average score (269) than are below it. There is a high correlation between mean scores and rank position on the numeracy and literacy tests. Countries which score high on literacy tests also score highly on numeracy tests, and vice versa.

In addition, adult literacy and numeracy skills are unevenly distributed among individuals according to various socio-demographic characteristics, including socio-economic background, educational attainment, immigrant and/or foreign-language background, age, gender and type of occupation.

Across the EU-28 countries which participated in the survey, one in five 15 year olds are not achieving baseline standards in reading literacy and mathematics, for adults the figures are one in five and one in four respectively. According to the OECD’s PISA survey, more than one in five pupils did not achieve the baseline target of Level 2 proficiency in mathematics (see Figure 3). This is slightly below the OECD average. More EU-28 countries are below the OECD average for mathematics.

As with the other pan European measures, there is a wide range of achievement across EU-28 countries. At one extreme are Estonia, Finland, Poland and the Netherlands, where fewer than 15% of pupils fail to meet Level 2 proficiency. At the other end of the scale are Romania, Cyprus and Bulgaria where more than two out of five pupils are below the Level 2 baseline measure.

On reading, the PISA survey found that just under one in five did not achieve the baseline target of Level 2 proficiency in reading. This is slightly higher than the OECD average.

As with the PIACC scores, reading and mathematics scores are correlated. Countries performing well on the mathematics scores also perform well on reading. As they did in mathematics, Estonia, Finland, Poland and the Netherlands all perform well on reading, whereas Romania, Cyprus and Bulgaria have a large percentage of pupils below the Level 2 baseline measure.

If this trend continues, the revised benchmark target, set for 2020 to reduce the share of low achieving 15 year-olds in literacy, mathematics and science to less than 15% of the cohort by 2020, would be difficult to meet. Only four EU countries have reached the 2020 benchmark of 15% already (Finland, Estonia the Netherlands and Poland). Furthermore, there are significant gender gaps in achieving basic reading literacy skills at the age of 15. There is a significantly higher share of low-achieving boys than girls across the EU, although the gaps are less pronounced in mathematics.
National intelligence supports EU level trends

National level studies provide further intelligence on the developments in literacy and numeracy skills within the Member States and point to a significant share of young people and adults who do not have sufficient literacy and numeracy skills to function successfully in today’s societies. Examples include recent PIAAC linked OECD studies in Denmark and Poland. The Danish research highlights literacy proficiency difficulties (with respect to the OECD average) among Danish adults, including young people aged 16-24 years old. In the case of Poland, there are clear differences between the performances of younger adults (aged 16-24) who have higher average scores than those aged 25-65 years. Almost one-fifth of the adult population is estimated at level 1 or below in understanding text while almost one quarter are at level 1 or below in mathematical reasoning. Research in the UK links low literacy and numeracy skills to impacts on labour market and wider social outcomes including unemployment, disadvantage and health.

Of further concern is the relationship between parental adult literacy and numeracy skills and those of their children. Children of parents with low literacy skills are also more likely to have low literacy skills, even when controlling for level of education.

The impact of literacy and numeracy skills

High literacy and numeracy skills are associated with personal, social and economic wellbeing. People with higher literacy skills are more likely to be mentally and physically healthy, live longer, be more productive at work, more satisfied at work, and less likely to live in poverty, be unemployed or economically inactive, and commit fewer crimes.

Literacy and numeracy skills are increasingly significant in the labour market. They are among the skills which are considered to constitute “key” information processing skills in that they provide a foundation for the development of other, higher-order cognitive skills and are prerequisites for gaining access to and understanding of specific domains of knowledge. These skills are necessary in a broad range of contexts, from education through work to everyday life.

The impact, therefore, of literacy and numeracy skill mismatches is likely to be substantial as these skills underpin a much wider set of work-related competences. Now that more jobs require at least a functional level of literacy and/or numeracy, what has been something of a hidden problem is likely to grow in significance.

There is an interplay between low level literacy and numeracy skills, qualification levels, skill levels, occupation and skills development. Individuals with low level literacy and numeracy skills also tend to have low level vocational skills and work in low-skilled jobs. They are expected to find it increasingly difficult to compete in the labour market. The number of jobs and occupations requiring low-level skills and qualifications is shrinking: the percentage of low-skilled jobs in EU-28 fell by 22% from 2003 to 2013 and is expected to fall by the same amount from 2013...
and 2025\textsuperscript{29}. Individuals with low literacy skills are also more than twice as likely to be unemployed as those with higher level skills\textsuperscript{30}.

These findings suggest that raising literacy and numeracy skills needs to be developed across all levels and types of education with the potential to deliver individual, social and economic rewards.

Please quote this Analytical Highlight as:
EU Skills Panorama (2014) Literacy and numeracy Analytical Highlight, prepared by ICF and Cedefop for the European Commission

\textsuperscript{1} EU High Level Group of Experts on Literacy (2012), Final report
\textsuperscript{2} DG EAC (2013), The survey of adult skills (PIAAC): Implications for education and training policies in Europe
\textsuperscript{3} DG EAC (2013), The survey of adult skills (PIAAC): Implications for education and training policies in Europe
\textsuperscript{4} OECD (2013), PISA 2012 Results: What students know and can do student performance in mathematics, reading and science, Volume I
\textsuperscript{5} Scoring at Level 2 in the PISA assessments is defined as baseline proficiency for both reading literacy and numeracy. Those who do not attain this level are described as lacking the essential skills needed to participate effectively and productively in society.
\textsuperscript{6} EU average refers to data from 27 Member States (excludes Malta for which data is not available).
\textsuperscript{7} Scoring at Level 2 in the PISA assessments is defined as baseline proficiency for both reading literacy and numeracy. Those who do not attain this level are described as lacking the essential skills needed to participate effectively and productively in society.
\textsuperscript{8} EU average refers to data from 27 Member States (excludes Malta for which data is not available).
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