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## Findings — What does the PIAAC numeracy assessment purport to measure?

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Findings—Publically available items

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- 0
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Findings—Publically available items

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- $29.50
- $34.20

Findings—Publically available items

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- Wind power stations produce about 40-50% of electrical energy per year.
- Work continues to involve testing and ensuring wind data using wind power meters.
- Each wind power station produces about 40-50% of electrical energy per year.
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Policy recommendations

Recommendation 1: Take concerted action to improve basic skills and tackle inequities affecting sub-populations with weak skills.

Action is needed, for in its absence the skills of US adults will fall further behind those of other countries. As young cohorts replace older ones, the base skills of their
Summary of findings, with implications

- The PIAAC numeracy assessment measures a narrow version of numeracy that the test-makers do not adequately qualify in any existing reports.

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- What distinguishes the PIAAC numeracy assessment from other assessments of traditional mathematical literacy?
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DOESN'T ADD UP

Americans are spectacularly bad at answering even the most basic math questions

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The Skills Gap: America's Young Workers Are Lagging Behind

New findings suggest that U.S. millennials are far less competent than their peers in Europe and Asia.
Why are so many adults unable to do basic mathematical tasks?

New research shows that many adults are unable to complete even basic mathematical calculations.

High number of adults unable to do basic mathematical tasks

March 18, 2016 7:20am EDT
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1. What does the PIAAC numeracy assessment purport to measure?
2. To what extent is the assessment a valid measure of that construct?

**Approach**

- A focus on construct validity, response processes, and interpretations of scores

**Data Sources**

- Several OECD documents that describe the PIAAC generally and its numeracy assessment specifically
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Findings—Publically available items

**Education & Skills Online**

**Unit 1 - Question 1/1**

Look at the information about workplace injuries at Beauchamp Manufacturing. Click on the graph to answer the question below.

The factory manager checked this graph that had been prepared using the data in the table for 2011. He noticed that two bars were incorrect.

Click on the two incorrect bars on the graph.

---

**Beauchamp Manufacturing**

**Number of workers injured per month in 2011**

<table>
<thead>
<tr>
<th>Month</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>Feb</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>Mar</td>
<td>34</td>
<td>31</td>
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<td>Apr</td>
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<td>May</td>
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<td>Jun</td>
<td>28</td>
<td>23</td>
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<td>Jul</td>
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<td>21</td>
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<td>Aug</td>
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<td>Sep</td>
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<td>14</td>
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<td>Oct</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td>Nov</td>
<td>22</td>
<td>19</td>
</tr>
<tr>
<td>Dec</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>300</td>
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The Beauchamp Manufacturing company records its workplace accidents each year. The table above shows the number of workers injured during each month for 2010 and 2011.
Findings—Publically available items

Education & Skills Online

Unit 1 - Question 1/1

Look at the shoe sale advertisement. Using the number keys, type your answer to the question below.

How much would you pay during the sale if you purchase the two pairs of shoes shown?

$ __________

Running Shoes

SALE! Buy one pair - get the second (of equal or lesser value) for half price!

$29.50

$34.20
Findings—Publically available items

Look at the thermometer. Using the number keys, type your answer to the question below.

If the temperature shown decreases by 30 degrees Celsius, what would the temperature be in degrees Celsius (°C)?

°C
Findings—Publically available items

Wind Power Stations

In 2005, the Swedish government closed the last nuclear reactor at the Barsebäck power plant. The reactor had been generating an average energy output of 3,572 GWh of electrical energy per year.

Work continues in Sweden on installing large offshore wind farms using wind power stations. Each wind power station produces about 6,000 MWh of electrical energy per year.

For your information:

Electrical energy is measured in Watt hours (Wh)

- 1 kWh = 1 kilo Wh = 1,000 Wh
- 1 MWh = 1 Mega Wh = 1,000,000 Wh
- 1 GWh = 1 Giga Wh = 1,000,000,000 Wh
Findings—Publically available items

Look at the graph about the number of births. Click to answer the question below.

During which period(s) was there a decline in the number of births? Click all that apply.

- [ ] 1957 - 1967
- [ ] 1967 - 1977
- [ ] 1977 - 1987
- [ ] 1987 - 1997
- [ ] 1997 - 2007

The following graph shows the number of births in the United States from 1957 to 2007. Data are presented every 10 years.
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Construct/content alignment
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What is assessed

The Survey of Adult Skills (PIAAC) assesses the proficiency of adults from age 16 onwards in literacy, numeracy and problem solving in technology-rich environments. These skills are “key information-processing competencies” that are relevant to adults in many social contexts and work situations, and necessary for fully integrating and participating in the labour market, education and training, and social and civic life.

In addition, the survey collects a range of information on the reading- and numeracy-related activities of respondents, the use of information and communication technologies at work and in everyday life, and on a range of generic skills, such as collaborating with others and organising one’s time, required of individuals in their work. Respondents are also asked whether their skills and qualifications match their work requirements and whether they have autonomy over key aspects of their work.
Summary of findings, with implications

- The PIAAC numeracy assessment measures a narrow version of numeracy that the test-makers do not adequately qualify in any existing reports.

- The interpretation and uses of numeracy assessment scores go beyond what the test actually measures.

- The validity argument for the PIAAC numeracy assessment is internally absent; from external review, its validity is questionable.
New questions, future work

● What distinguishes the PIAAC numeracy assessment from other assessments of traditional mathematical literacy?

● What purpose *could* the PIAAC numeracy assessment, as operationalized today, serve?

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