

## **THE OECD PROGRAMME FOR THE INTERNATIONAL ASSESSMENT OF ADULT COMPETENCIES (PIAAC)**

### ***Fostering the development and use of human capital is a key priority***

People are the most valuable asset of any nation. What individuals know and can do has a profound impact on the quality of their lives and on future generations. Fostering the effective development and optimal use of competencies is thus vital for ensuring economic growth, well being and social progress.

### ***PIAAC provides a new measure of human capital and a means to generate policy insights on skills***

The OECD Programme for the International Assessment of Adult Competencies (PIAAC) will support countries in their efforts to design and implement policies which foster both the development of skills and the optimal use of existing skills. It will achieve this by assisting governments to assess and monitor the level and distribution of the skills embodied in their adult population as well as the extent of skill use in different contexts.

PIAAC consists of a household survey that will yield comparable information for a wide range of countries. A minimum of 4,500 to 5,000 adults will be surveyed in each country to directly assess their foundation skills, and to collect information on the antecedents, outcomes and contexts of skill development and skill use.

In the context of other work related to skills development, this extensive information base will: (1) enable a more comprehensive assessment of the stock of human capital; (2) reveal the extent to which individuals' skills are actually used at work; (3) identify the role skills play in improving labour market prospects; (4) improve understanding of the labour market and social returns to education and training; (5) help governments to understand better how education and training systems can nurture these skills; (6) help governments to prioritise investment of scarce resources in education and training; and (7) contribute to building strategic partnerships for policy implementation.

### ***Direct measures of skills account for what happens after qualifications are gained and reflect quality differences***

In the past, skills were almost exclusively approximated by the formal qualifications people had attained at some stage in their life. With PIAAC, people's skills are measured directly. Directly measuring what people can do is important because it helps to account for skill gain and skill loss which may occur beyond the stage at which initial qualifications were attained. In other words, PIAAC takes into account what individuals learn at the workplace and informally throughout life and it also takes into account what individuals may forget as they become older. Not least, direct measures of skills take into account differences in the quality of education and training received by adults both within and across countries.

### ***Evidence confirms that qualifications do not accurately reflect foundation skills...***

Results presented in Figure 1 confirm that formal qualifications only partially reflect the actual skills individuals have acquired. These results are based on data from previous adult skills surveys.<sup>1</sup> Looking at the distribution of skills by level of qualification (each bar in Figure 1) for a selection of countries reveals that not everyone without a secondary qualification has low levels of foundation skills and, conversely, that not everyone with upper secondary or university qualifications has high levels of foundation skills. The overlap is significant.

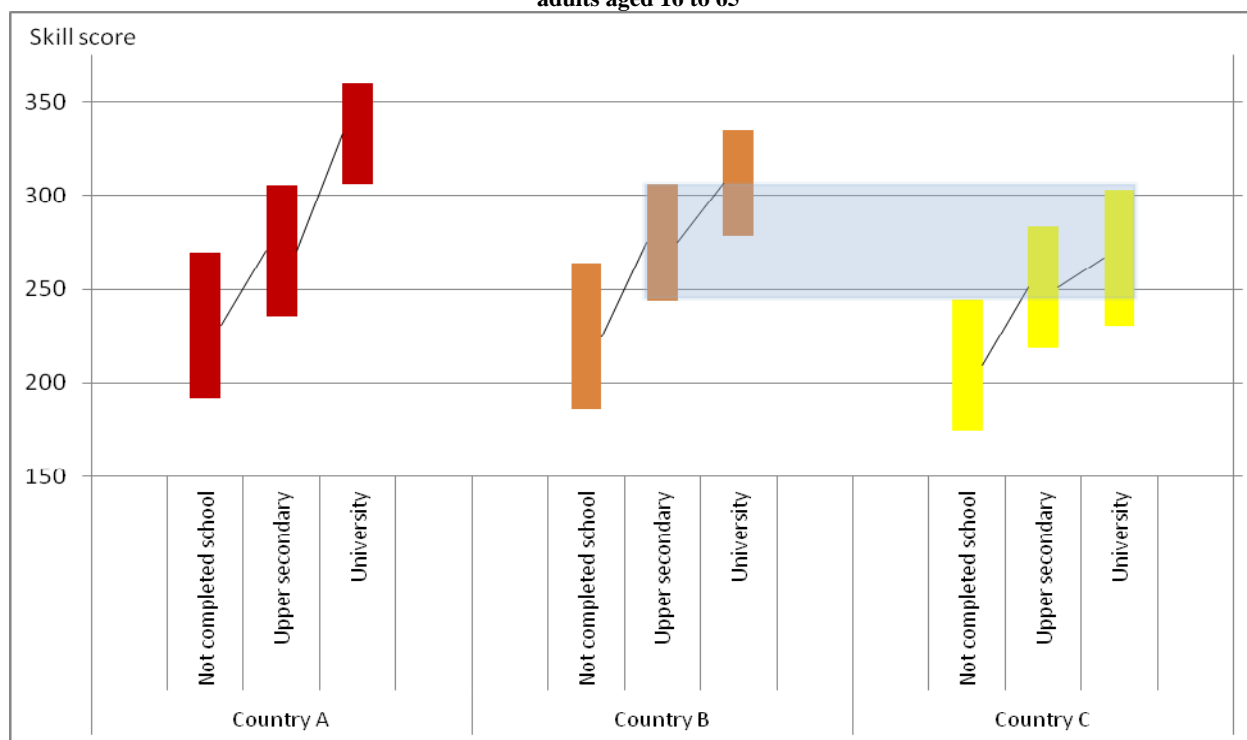
### ***... and shows revealing differences in countries' educational outcomes***

Further, the distribution of skills and extent of overlap by qualification level vary significantly across countries. For example, in Country A, there is a sharp distinction in the distribution of skills among those who have a university degree. Meanwhile, high school graduates in Country B are about as highly skilled as university graduates in Country C. This illustrates the value of having a direct measure of foundation skills in addition to information regarding formal qualifications when evaluating the human capital stock of nations.

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<sup>1</sup> The 1994-1998 International Adult Literacy Survey contains comparable information on adult skills from surveys administered in 18 OECD countries. Similarly, the 2003-2007 Adult Literacy and Lifeskills Survey contains information on adult skills from surveys administered in 9 OECD countries.

**FIGURE 1. INTERQUARTILE RANGE IN SKILL DISTRIBUTION BY QUALIFICATION LEVELS**  
Skills scores at the 25<sup>th</sup> and 75<sup>th</sup> percentiles on a foundation skill scale ranging from 0 to 500 points, by qualification levels, adults aged 16 to 65



Source: Adult Literacy and Lifeskills survey, 2003-2007.

### **THE IMPACT OF SKILLS**

#### ***The benefits of skills are high...***

It is widely accepted that being skilled is an advantage. Skilled workers are more productive and, therefore, tend to earn more and have better employment prospects. Higher productivity, in turn, is the foundation for higher living standards.

#### ***... but the benefits are not automatic***

However, findings from previous data on adult skills reveal that skills do not automatically translate into higher incomes and higher productivity. A number of factors affect the extent to which skills are effectively utilised including the efficiency of matching people with jobs, job design and workplace organization. Failure to ensure a good skills match has short term consequences such as skills deficits, and becomes a longer term drag on growth and equality of opportunities.

#### ***That is where PIAAC comes in***

PIAAC will help to improve the information base on where the benefits are the greatest and where policy attention should be focused.

#### ***Evidence suggests that foundation skills are a key resource for individuals...***

Evidence from a number of studies reveals that skills are a vital resource that enables individuals to progress in different spheres of life: education, employment, family and citizenship<sup>2</sup>. At the core of these basic protective resources are foundation skills including literacy, numeracy and problem solving, which are measured in the PIAAC study. People with low levels of foundation skills have a heightened risk of experiencing economic and social disadvantage, typified by low paid and precarious employment, higher chances of unemployment and psychological and health problems.

<sup>2</sup> See for example studies based on the British Birth Cohort Studies, American Longitudinal Study of Adult Learning, and Canadian Youth in Transition Survey.

### ...and for nations

Beyond their role in individual life success and their effect on equality of opportunities, foundation skills have also been directly implicated in the prosperity of nations, in terms of both social and economic development.<sup>3</sup> What is particularly striking is that it is not only the level of foundation skills that matters for regional and national economic development, but also how those skills are distributed and used for productive purposes.

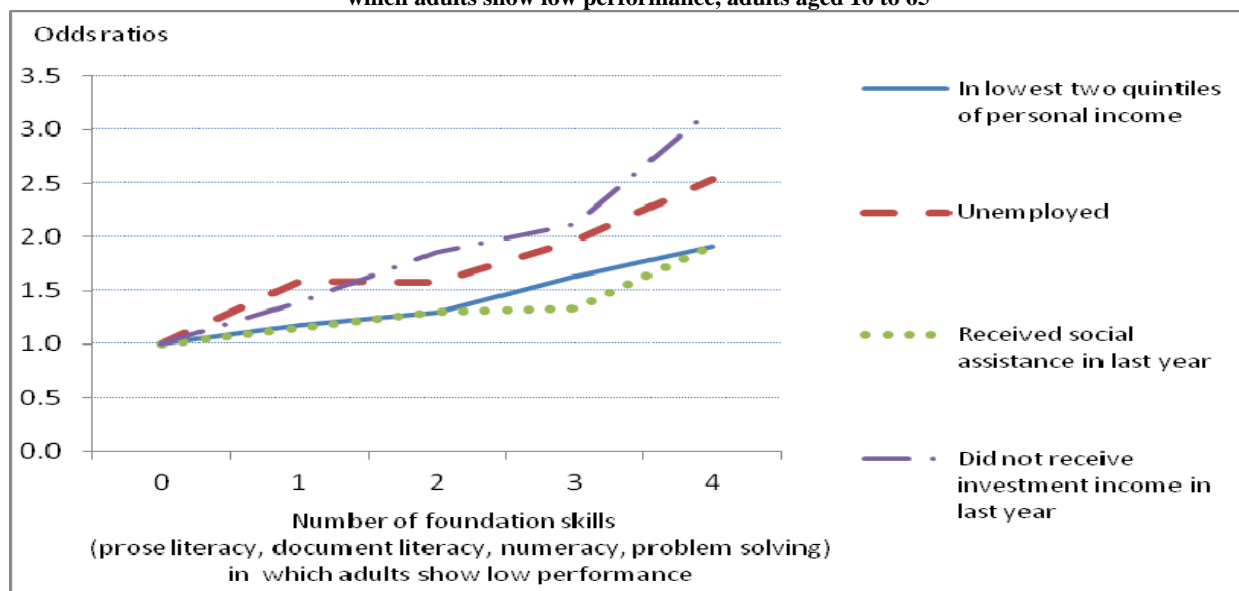
### Findings confirm the link between foundation skills and a range of economic outcomes...

Figure 2 displays four findings linking foundation skills and economic and labour market outcomes:

- Adults with low proficiency in foundation skills are systematically overrepresented in the bottom end of the income distribution.
- The risk of being unemployed increases consistently with the number of foundation skills in which adults show low performance.
- Low performance in multiple domains is strongly linked to the likelihood of receiving social assistance.
- Adults with good proficiency in foundation skills are much more likely to earn income from investments on financial markets.

**FIGURE 2. FOUNDATION SKILLS AND ECONOMIC DISADVANTAGE**

Adjusted odds ratios<sup>1,2</sup> showing the likelihood of experiencing economic disadvantage, by number of foundation skills in which adults show low performance, adults aged 16 to 65



Notes:

1. Odds ratios reflect the relative likelihood of an event occurring for a particular group compared to a reference group. An odds ratio of 1 represents equal chances of an event occurring for a particular group *vis-à-vis* the reference group. Coefficients with a value below 1 indicate that there is less chance of the event occurring for a particular group compared to the reference group, and coefficients greater than 1 represent increased chances.

2. Odds are adjusted for age, gender, education, parents' education, and labour force, occupational, income, immigrant and language status.

Source: Adult Literacy and Lifeskills survey, 2003-2007.

### ... as well as a range of social outcomes

Skills affect people's lives and the well being of nations in ways that go far beyond what can be measured by labour market earnings and economic growth. For example, the health benefits of skills are potentially large. Rising healthcare costs mean that there is a clear incentive to contain these costs and to understand

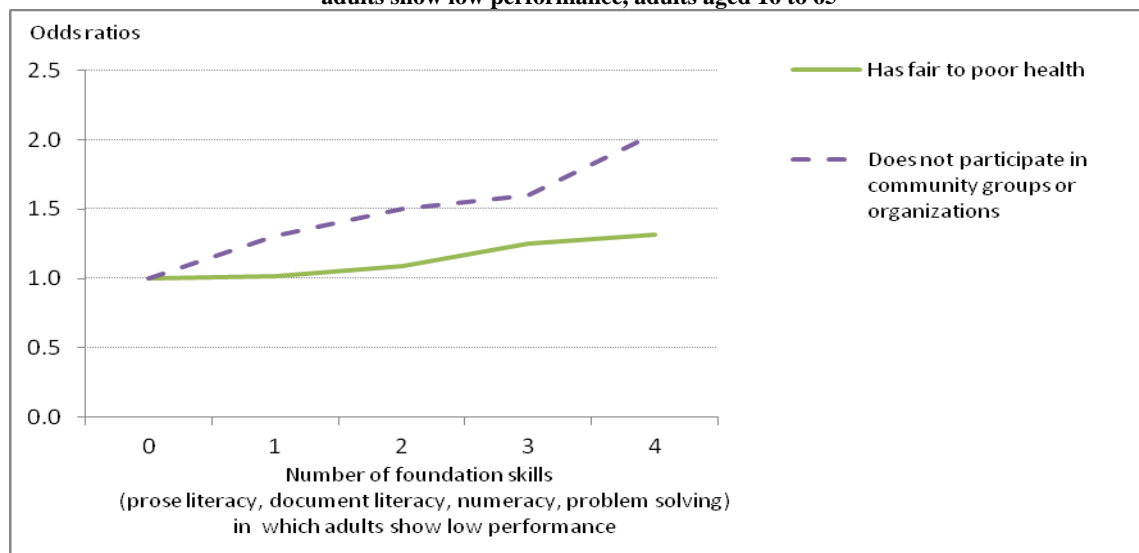
<sup>3</sup> A small number of studies have produced evidence that points to the central role that foundation skills play in generating economic development and high standards of living. See Coulombe, S., Tremblay, J.F., and Marchand, S. (2004). Literacy Scores, Human Capital and growth Across fourteen OECD Countries. Ottawa: Statistics Canada.

how skills may play a role in achieving this end. As another example, skills influence civic and social oriented behaviours in ways that can have important impacts on democratic functioning and business relationships. Figure 3 displays the adjusted correlation between foundation skills and health on the one hand, and foundation skills and civic engagement on the other. Two findings stand out:

- Participation in community groups or organizations is strongly linked to the number of foundation skills in which adults show low performance.
- Adults who perform poorly in three or four foundation skills have an increased likelihood of reporting a poor health status.

**FIGURE 3. FOUNDATION SKILLS AND SOCIAL DISADVANTAGE**

Adjusted odds ratios<sup>1</sup> showing the likelihood of experiencing social disadvantage, by number of foundation skills in which adults show low performance, adults aged 16 to 65



Note: Odds are adjusted for age, gender, education, parents' education, and labour force, occupational, income, immigrant and language status.  
Source: Adult Literacy and Lifeskills survey, 2003-2007.

***The results are consistent across a wide range of countries...***

The results shown in Figures 2 and 3 are consistent across a wide range of countries, confirming that foundation skills have a profound relationship with economic and social outcomes across a wide range of contexts and culturally based institutional frameworks.

***... and the relationship is strong even after adjusting for educational attainment***

The relationships hold even after adjusting for educational attainment and other background variables, confirming that foundation skills are related to a range of outcomes independent of the level of qualifications. One reason for this is that direct measures provide a more up to date picture of an individual's skills because they reflect both the outcomes of skill gain and skill loss over the lifespan as well as learning that occurred in multiple contexts.

***PIAAC will allow for analysis that can improve the design and targeting of policies***

PIAAC will enable a much more detailed look at these relationships, and how they vary by socio-demographic groups, helping to draw out further insights relevant to designing and targeting interventions.

## **SKILLS FOR THE INFORMATION AGE**

### ***Foundation skills are important for dealing effectively with technology***

The role of foundation skills in helping to secure good economic and social outcomes is likely to strengthen as the shift to knowledge based societies intensifies. Information and Communications Technologies (ICTs) continue to transform how people work, access media and public services, interact with friends and family, and how people seek and obtain information to solve problems, both at work and at home. Foundation skills are thus likely to take on added significance as resources necessary for enabling productivity, obtaining a job, exercising rights and duties as citizens, and more generally for ensuring economic, social and personal well being.

### ***PIAAC will allow for an analysis of the preparedness of individuals to use ICTs***

PIAAC will enable a detailed examination of who has access to ICTs and the extent to which different groups of adults use computers and the internet both at home and at work. Most important, for the first time, PIAAC will directly assess adults' abilities to solve problems in the context of technology rich environments.

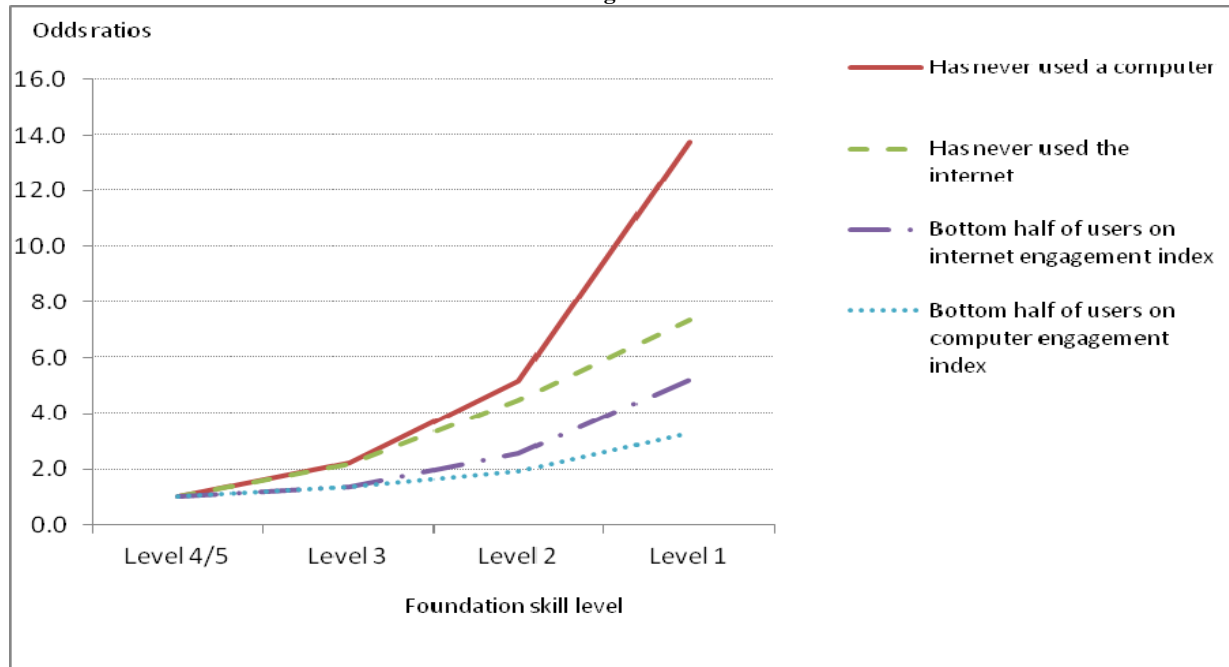
### ***Evidence links foundation skills to access and use of ICTs***

In analyses of previous data on adult skills, foundation skills were found to be strongly correlated with access to and use of computers and the internet – which, in turn, are strongly related to earnings and success in finding a job. Figure 4 highlights two findings:

- Adults who have never used the internet or a computer are much more likely to possess low levels of foundation skill.
- Among adults who have some familiarity with ICTs, those with low levels of foundation skill use the internet and computer much less often than those with higher levels of foundation skills.

**FIGURE 4. FOUNDATION SKILLS AND ICT ACCESS/USE**

Adjusted odds ratios<sup>1</sup> showing the likelihood of experiencing disadvantage in ICT access and use, by foundation skill level, adults aged 16 to 65



Note: Odds are adjusted for age, gender, education, parents' education, and labour force, occupational, income, immigrant and language status.

Source: Adult Literacy and Lifeskills survey, 2003-2007.

### **IMPLEMENTING EFFECTIVE SKILL FORMATION POLICIES**

#### ***Education and foundation skills are closely intertwined making the relationship difficult to decipher***

Education is a key factor that can add to foundation skills but the relationship is interactive and mutually reinforcing. Foundation skills are a key component of human capital, which can be developed through education or training. They also facilitate further learning and skill development. At the same time, having a low level of foundation skills can act as a barrier to further learning, both in terms of the willingness of individuals to participate and in the willingness of employers to extend their support and invest in their employees, even if there are benefits to be realized by all. Interpreting the observed relationship must take account of this complexity.

#### ***PIAAC will help to address some of these complex issues***

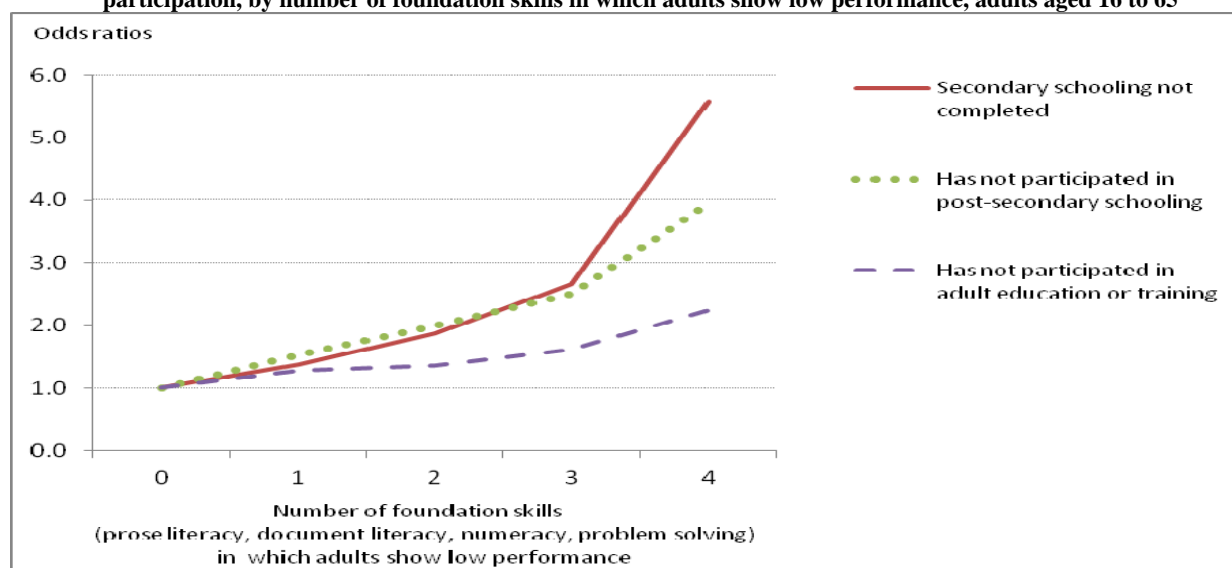
PIAAC will provide an information base that will help to understand better the complex processes involved in the development and maintenance of skills. This will support governments in their efforts to implement more effective skill formation policies.

#### ***The relationship between foundation skills and education is strong***

Results from previous data on adult skills reveal a strong link between foundation skills and education and training. Figure 5 highlights three observations:

- Adults who have not completed upper secondary schooling are much more likely to have a low level of foundation skills.
- Similarly, adults who have never participated in post-secondary education are much more likely to demonstrate a low level of foundation skills.
- Adults who have lower levels of foundation skills are less likely to participate in adult education and training.

**FIGURE 5. FOUNDATION SKILLS AND EDUCATION/TRAINING ATTAINMENT AND PARTICIPATION**  
Adjusted odds ratios<sup>1</sup> showing the likelihood of experiencing disadvantage in education and training attainment and participation, by number of foundation skills in which adults show low performance, adults aged 16 to 65



Note: Odds are adjusted for age, gender, education, parents' education, and labour force, occupational, income, immigrant and language status.  
Source: Adult Literacy and Lifeskills survey, 2003-2007.

#### ***Part of the relationship may be attributed to the fact that additional schooling after the age of 15 adds to foundation skills***

A key question is whether additional education and training adds to foundation skills. This is difficult to address but PIAAC will permit some analysis of this question. Figure 1 and 5 highlight the fact that there is a positive correlation between qualification levels and foundation skills. Adults with more education are generally found to have higher proficiency on average than those with less schooling. It is possible that this relationship is observed only because those people who are already highly proficient go on to take

additional schooling. However, complementary analysis reveals that adults who have recently attained a particular qualification have higher proficiency on average than those of a similar profile who are nearing completion of a similar qualification.

***But there is a very high variability in performance for a given level of educational attainment...***

While additional schooling can add to proficiency in foundation skills, the evidence suggests that there are other factors that matter as well. Only 30% of the total variability in skills proficiency among the population aged 16 to 65 can be explained by levels of educational attainment. There are a variety of potential reasons for these observations.

***The effectiveness of educational systems in imparting foundation skills is uneven...***

Chief among them are quality differences in the education and training received by adults. Results from PISA for example, which provides information on similar skills, have helped to confirm that some educational systems consistently feature less overall variability and consistently enable students aged 15 to perform better on average.

***... and adults' life experiences beyond schooling vary in ways that affect foundation skills***

Furthermore, skills are not fixed after leaving school. As young people move from compulsory schooling into further education and work, they go on to either maintain, gain or lose skills depending on the nature of their trajectories and individual life experiences. The net result depends in part on the extent of effective learning opportunities made available and taken up by individuals.

**POLICY LEVERS TO OPTIMISE USE OF SKILLS**

***Skill underutilisation and the potential for skill loss is threat to the value of educational investments***

Producing the best skills in the world is not much use if economies do not deploy those skills optimally. Underutilisation of skills – whether it is because of mismatch between workers' skills and those demanded by the job or because individuals are out of the labour market altogether – represents a waste of the resources that were invested in nurturing these skills. In addition, failure to make active use of skills may lead to depreciation of existing skills. PIAAC will provide an information base that will help to understand better the wider processes implicated in skill gain and skill loss.

***Proficiency in foundation skills tend to decline with age***

Findings from previous data on adult skills have helped to reveal a consistently negative relationship between foundation skills and age. As shown in Figure 6, older cohorts are found to perform consistently lower on average than younger cohorts. This holds even after adjusting for average increases in the educational attainment of younger cohorts. Understanding this pattern is an important question for policy.

***Some countries seem to be more successful than others at mitigating skill loss that may be linked to ageing***

However it is a complex relationship involving mechanisms that are linked to skill gain and skill loss over the lifespan. For example, it can be seen from the Figure 6, that Country A displays a different pattern than Country B which may be linked to differences in policies that promote the development and maintenance of skills. PIAAC will provide an opportunity to address this issue in more detail especially for countries with trend data. Some countries participating in PIAAC will have two or three observations of the measured skills spanning a 9 to 18 year period.

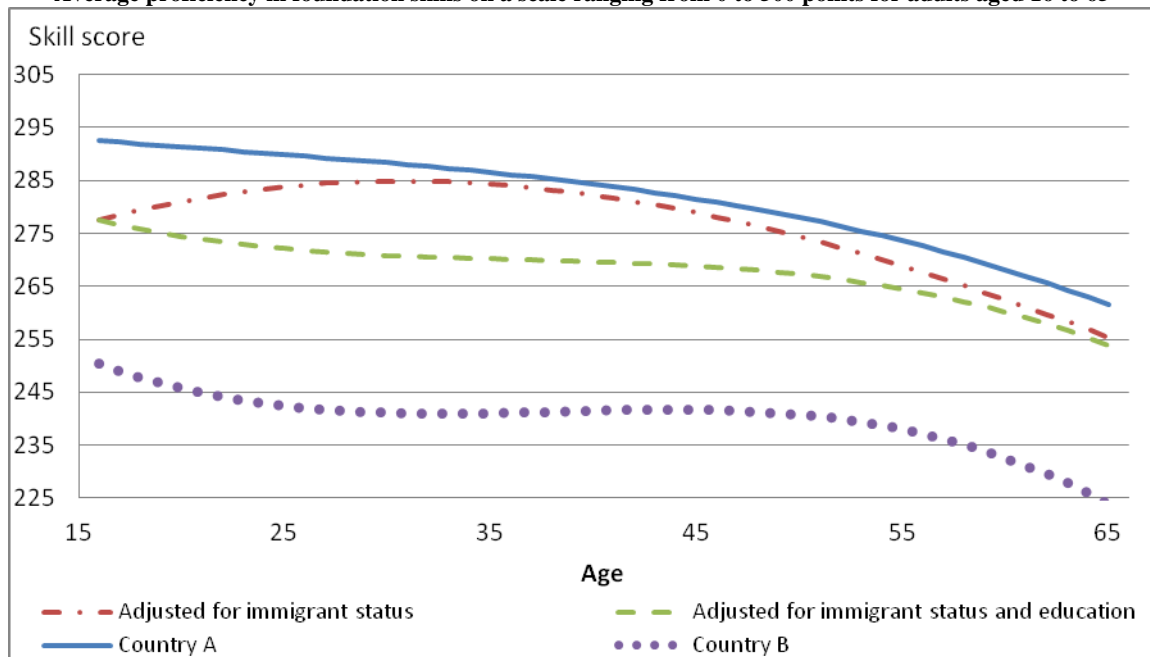
***Policy learning in this area takes on added significance in the context of population ageing***

A number of forces are leading to increases in the age of exit from the workforce. These include policy action to delay retirement, both to finance retirement incomes and other age related expenditures<sup>4</sup>, the deferral of entry to the labour market due to educational participation and better health at older ages. This makes understanding the extent of skills loss at older ages and possible remedies even more important.

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<sup>4</sup> The ratio of older and inactive persons per worker is expected to almost double from around 38% in the OECD area in 2000 to just over 70% in 2050. See OECD (2006). *Live Longer, Work Longer*, Paris.

**FIGURE 6. THE RELATIONSHIP BETWEEN AGE AND FOUNDATION SKILLS**  
Average proficiency in foundation skills on a scale ranging from 0 to 500 points for adults aged 16 to 65

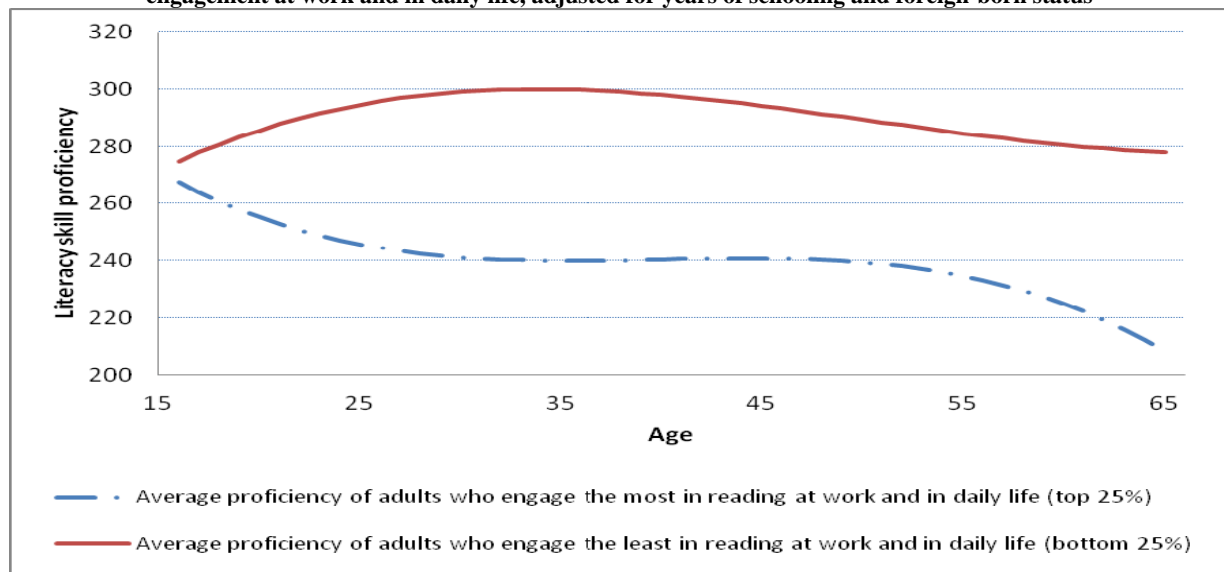


Note: Results for Country A and B are adjusted for immigrant status and education./  
Source: International Adult Literacy Survey, 1994-1998.

***Lifestyles involving frequent processing of text based information may offset the age related decline of skills***

The depreciation of skills may be offset by what people do at work and in their daily lives. For example, evidence from previous data on adult skills suggests that frequent engagement in reading at work and at home may help to mitigate the proficiency declines associated with ageing (see Figure 7).

**FIGURE 7. READING ENGAGEMENT AND FOUNDATION SKILLS**  
Average proficiency in foundation skills on a scale ranging from 0 to 500 points for adults aged 16 to 65, by reading engagement at work and in daily life, adjusted for years of schooling and foreign-born status



Source: International Adult Literacy Survey, 1994-1998.



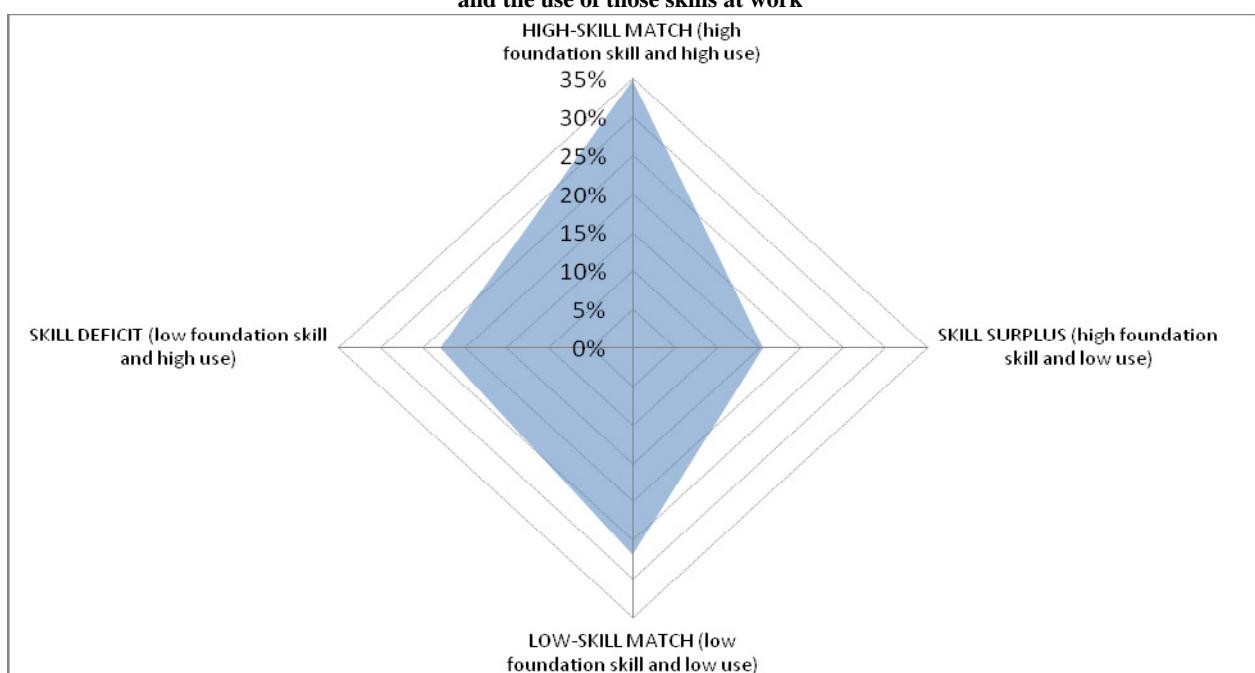
***PIAAC will collect information on skill use at work and at home...***

In collecting information on the types of tasks that people do at work and the kinds of skills they are required to use, PIAAC will enable up to date and in depth analysis of skill use at work and skill mismatch. As an example, some workers might have a lower level of skill than that required in their jobs.

***...enabling a closer look at skills mismatch***

Indeed, the match is not always perfect. Figure 8 shows that on average across countries, approximately 15 percent of the workforce was found to be in a skill surplus situation – a situation where workers are deemed to have a high level of foundation skills relative to the demands of their jobs; and about 23 percent were found to be in a deficit situation – a situation where workers are deemed to have a low level of foundation skills relative to the demands of their jobs.

**FIGURE 8. MATCH-MISMATCH BETWEEN SKILL PROFICIENCY AND SKILL USE**  
Percent of workers aged 16 to 65 in each category reflecting match or mismatch between proficiency in foundation skills and the use of those skills at work



Source: Adult Literacy and Lifeskills survey, 2003-2007.

***Adults who have high levels of foundation skills but are employed in jobs that do not require those skills may be at risk of losing their skills***

Skills mismatch is a widespread phenomenon that may have negative consequences for productivity as well as for skill loss. For example, many highly qualified workers may lose their skills due to a lack of use. The potential for skill loss is a real threat to the value of educational investments. It may arise in situations of skill mismatch where workers are skilled but work in jobs involving routine tasks. Alternatively, skills may be rendered obsolete due to technological and organisational change.

***Further analysis is needed to understand the full scope of the mechanisms that are operating to support skill gain and those that are offsetting and lead to skill loss***

PIAAC will provide an opportunity to explore in more depth the issues discussed here as well as a range of others. For example, why it is some adults who have low levels of education go on to perform well in the measured skills and why others with higher levels of education go on to perform poorly. It will also allow for up to date and in depth analysis of skill use at work and skill mismatch. In this way, PIAAC will help to generate insights that will assist governments in assessing and monitoring where they stand in terms of the

level and distribution of skills embodied in their adult population, the extent to which these skills are used, and where they might focus their attention to make improvements to the skill base of their respective populations and in optimising the use of existing skills.

The goal is to help countries develop and implement policies that make investing in skills cost-effective for individuals and their employers. And investments here are not just about public money but also include the role of tax systems and other measures to encourage individuals and firms to invest in skills. By looking at the bottom line of available skills, wherever and however they have been developed, PIAAC facilitates a whole-of-government approach to skills policies.

PIAAC will help to provide the information base necessary for designing and implementing policies that make the most of each country's human capital by nurturing – and using – the skills of its citizens to foster economic growth and social inclusion.