PIAAC: A New Strategy to Assess Adult Competencies and their Social and Economic Impact in the United States and Internationally

U.S. government agencies, public and private employers, and adult and workforce education and training programs have a new resource to understand the skills of the U.S. adult working-age population—the **Program for the International Assessment of Adult Competencies (PIAAC)**. PIAAC is coordinated internationally by the Organization for Economic Cooperation and Development (OECD). Within the United States, PIAAC is sponsored by the U.S. Department of Education's National Center for Education Statistics (NCES). The first release of PIAAC results will take place on October 8, 2013.

What is PIAAC?

PIAAC is a study that assesses key cognitive and workplace skills. Twenty-four participating countries and regions, the majority of which are OECD members, including the United States, assessed adults in 2011–2012 and will release results in October 2013. Nine countries will administer an additional round of PIAAC in 2014. PIAAC provides a new and rich international comparison of the adult workforce (ages 16–65) that will enable the United States to better understand its global competitiveness and benchmark how well education and training systems are meeting emerging skill demands.[1]

A companion online assessment tool, called **Education & Skills Online,** allows individuals and organizations to assess these key competencies in real time, on demand (available December 2013).

What does PIAAC measure?

PIAAC is an assessment of literacy in the information age. It uses a broad definition of literacy that focuses on the "interest, attitude and ability of individuals to appropriately use socio-cultural tools, including digital technology and communication tools, to access, manage, integrate and evaluate information, construct new knowledge, and communicate with others."

PIAAC directly assesses four sets of skills:

> » Literacy
> » Reading components (for assessing low literacy levels)
> » Numeracy
> » Problem-solving in Technology Rich Environments

The cognitive skills that are directly assessed in PIAAC reflect a broader range of skills proficiencies—at both the low and high ends of the skills spectrum—than previous adult assessments.

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[1] PIAAC has been developed and administered for the OECD and its member countries by a team of international experts, coordinated by ETS.

The **Background Questionnaire** administered to every participating adult also includes questions about a range of additional skills and competencies needed in the workplace. These include:

» Communication skills
» Interpersonal skills needed for collaborative teamwork
» Planning and self-management skills
» Problem-solving skills
» Personal traits important for success in work and learning

> *Taken together, the information provided through the cognitive assessment and background questionnaire provide a conceptually holistic, research-based picture of the strengths and weaknesses of the U.S. adult workforce.*

What is unique about PIAAC's approach to assessment?

PIAAC is the first large-scale assessment that is computer-based.

PIAAC is the first large-scale assessment of adults in their homes made available in two modes of administration—laptop computer and paper-and-pencil. While respondents with little or no familiarity with computers took a paper-and-pencil version of the assessment, most adults completed PIAAC on computer.

Because PIAAC is computer-based,

1. participants respond to items that are specifically targeted to their performance levels,
2. an individual's ability to manage information and solve problems on a computer can be assessed,
3. and information on how long it takes individuals to complete items (and the strategies they use to solve problems) can be collected.

> *PIAAC collects information on strategies and processes that adults use when navigating computer-based environments to conduct day-to-day tasks.*

PIAAC contextualizes information about skills proficiencies with a rich background questionnaire.

PIAAC's Background Questionnaire is much more extensive than those used in earlier adult assessments. In addition to collecting information about the usual range of demographic characteristics, PIAAC also collects detailed information about:

» workforce status
» the kind of work individuals perform
» the salary paid for that work
» the skills required to carry out a particular job, and how frequently and extensively they are used
» the education level of the individual
» the kind of ongoing education and training the individual has participated in

» who sponsored that training and

» the extent to which that training is work-related

Besides information on these topics collected in every country and region, the U.S. background questionnaire collected information on health status, to better understand the relationships between skill level, other demographic information, and health.

> *Having information on the distribution of proficiency skills across the adult population enables national, state, and local governments to make better decisions about how to target resources for education and training.*

How PIAAC can inform decision-making in the United States

Information in the Background Questionnaire helps policymakers and workforce leaders better understand questions such as these:

> *PIAAC enables businesses to make decisions about what kind of training they need to offer to foster a globally competitive workforce.*

Skills and education

» How does the U.S. adult population compare to other countries and regions in terms of average levels of skills proficiency and skill use?

» What proportion of the adult population has low skills proficiencies?

» How are skills distributed among subgroups defined by sex, age group, or region? Are certain subgroups characterized by low skills proficiencies?

» How are skills proficiencies distributed across different levels of schooling?

» What is the range of skills at particular levels of education?

Skills and employment

» How are skills related to earnings and other indicators of labor market success?

» Is information about proficiency a better predictor of employment status than educational level or credentials?

Skills and industry sectors

» How are skills proficiencies distributed across sectors of industry?

» Are there certain sectors of industry that are characterized by particularly low levels of skills proficiency?

» How do the skills levels within these sectors in the United States compare to those in other countries and regions?

Skills and learning

» Are there differences, across subgroups of the U.S. adult population, in their participation in lifelong learning opportunities? What factors account for these differences?

» Are there differences, across subgroups of the U.S. adult population, in their reported strategies for learning? Do these differences affect their participation in learning?

» What factors contribute to the skills levels observed across various subgroups within the adult population? For example, what is the relationship between age and skills levels?

How PIAAC can help streamline instruction and training

Data from PIAAC can provide **profiles** of the skills adults display working in different occupations and industry sectors. Adult education and workforce training programs can use this information to assess the effectiveness of their curricula in meeting labor market needs and to develop customized learning plans for adults—including dislocated workers—to prepare them for employment in growing sectors and occupations.

Adult education and workforce training programs can also use **Education & Skills (E&S) Online**—a new online assessment tool aligned with PIAAC—to assess in real time the skills of individual adults on the PIAAC measures of literacy, numeracy, reading components, and problem-solving in technology rich environments. Individuals can compare their results with the skills profiles of workers in various occupations and sectors. Programs can use this assessment to help determine the best skills development pathways for adults, based on their workforce goals. Programs can also use Education & Skills Online to measure progress as adults move through a skills development program.[2]

Adult education and workforce training programs can also use the **detailed frameworks** for each of the cognitive assessment modules to develop curricula and guide instruction.[3]

These tools can help programs develop streamlined pathways for adult learners based on their work-related goals. At the same time, programs can use them to put in place a data-driven continuous improvement system to promote program effectiveness.

Key dates

October 2013	*International Release by the OECD*
	National Release by the U.S. Department of Education
November 2013	*Data Conference for Researchers*
December 2013	*Education and Skills Online Release*
	U.S. Public and Restricted Data Files Release
	PIAAC Data Explorer Release This is an interactive online tool that will allow users to produce customized PIAAC reports.
January 2014	*Technical Reports Release* These reports will provide detailed information about the development and administration of PIAAC.

More information

Visit the OECD website at http://www.oecd.org/site/piaac/ for data files and analysis tools, reports, and more information about PIAAC internationally (data and results available October 2013).

Visit the NCES website at http://nces.ed.gov/surveys/piaac/ for data files and analysis tools, reports, and more information from a U.S. perspective. To host a presentation on PIAAC results (web-based or in-person), please contact twerwath@air.org.

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[2] For more information on E&S Online visit the OECD website at http://www.oecd.org/site/piaac/ENG_Brochure%20Education%20and%20Skills%20Online%20SAS.pdf.

[3] For a summary of the assessment domains in PIAAC see http://www.oecd.org/site/piaac/Summary%20of%20assessment%20domains%20in%20the%20Survey%20of%20Adult%20Skills.pdf.

The U.S. PIAAC National Supplement and Prison Study

What is the U.S. PIAAC National Supplement?

The U.S. PIAAC National Supplement is an administration of the international adult literacy assessment PIAAC (the Program for the International Assessment of Adult Competencies) to a sample of U.S. adults in late 2013 in order to supplement the U.S. PIAAC Main Study data collection that was administered in 2011. The National Supplement will increase the sample size of key U.S. subgroups of interest, including:

» unemployed adults (ages 16–65),

» young adults (ages 16–34), and

» older adults (ages 66–74).

The National Supplement will survey a target population of 3,600 adults and use the same procedures, instruments, and assessments that were used for the PIAAC Main Study.

Purpose of the National Supplement

The PIAAC National Supplement will build upon the PIAAC Main Study and enhance the information available about the adult competencies and skills of subgroups of high interest to policymakers, businesses, and educators by allowing for more detailed analyses of these subgroups.

What is the U.S. PIAAC Prison Study?

The U.S. PIAAC Prison Study, to be conducted in early 2014, will extend the PIAAC study to incarcerated adults in the United States, a key subgroup of interest not covered by the main household study. The Prison Study will draw from a sample of 1,200 inmates aged 16 to 74 currently detained in state, federal, or private prisons in the United States.

Purpose of the Prison Study

Similar to the PIAAC Main Study, the Prison Study will include direct assessments of the literacy, numeracy, and problem-solving in technology rich environments skills of incarcerated adults, as well as a background questionnaire that is tailored to address the needs and experiences of incarcerated adults. The background questionnaire asks about activities in prison, such as participation in academic programs and ESL classes, experiences with prison jobs, and involvement in nonacademic programs such as employment readiness classes.

The PIAAC Prison Study report will provide a snapshot of the skills of incarcerated adults in comparison with those of the household population from the Main Study. The study's findings will provide insights into the relationships between skills, education, and job training, as well between skills and non-educational experiences in prison such as work assignments.

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Institute of Education Sciences

http://www.nces.ed.gov
http://www.nces.ed.gov/surveys/PIAAC

EDUCATION AND SKILLS ONLINE ASSESSMENT
The Online Version of PIAAC
A joint Initiative of the OECD and the European Union

WHAT IS EDUCATION AND SKILLS (E&S) ONLINE?

➤ **E&S Online** is an assessment tool designed to provide individual level results that are linked to the OECD Survey of Adult Skills (PIAAC) measures of literacy, numeracy and problem solving in technology-rich environments. All results will be comparable to the measures used in this Survey and can be benchmarked against the national and international results available for the participating countries.

WHO CAN TAKE THE ASSESSMENT?

➤ **E&S Online** has been developed and validated on a population ranging between 16 and 65 years of age. It can be used for students or out-of-school youth who are interested in transitioning to post-secondary education and training or into the workforce. This assessment can also be used for adults of various ages who either wish to re-enter an educational or training environment or want to demonstrate their workforce readiness skills.

WHAT IS MEASURED?

➤ **E&S Online** measures a set of cognitive and non-cognitive skills that individuals need for full participation in modern societies. These skills and knowledge include being able to understand and use printed and electronic texts, reason with numbers, and solve problems in technology environments. Literacy and numeracy skills have been shown to be important foundation skills that are necessary for the development of higher order problem-solving skills. The assessment also provides a measure of reading component skills to better understand those who may demonstrate poor reading literacy skills. It also includes non-cognitive skills modules that allow individuals or organisations to obtain information on: skill use at work and at home, as well as health and well-being.

WHAT INFORMATION WILL BE PROVIDED?

➤ **E&S Online** will provide individuals and/or organisations with an easy-to-read report after the completion of the assessment. These reports will characterise the strengths and weaknesses in each cognitive area assessed. Scores will be reported in terms of described proficiency levels that capture the progression of task complexity and difficulty.

➤ **E&S Online** will also provide summary information in each non-cognitive area selected and tested. In addition to descriptive and summary information, individuals and/or organisations will be able to benchmark their results against the OECD Survey of Adult Skills results from their country and internationally.

OECD Survey of Adult Skills (PIAAC)

The Survey is an initiative of the OECD that assesses the proficiency of adults in key information processing skills essential for the participation in the information-rich economies and societies of the 21st century. These are: *literacy, numeracy and problem solving in technology-rich environments.*

The Survey allows countries to analyse the level and distribution of skills among their adult populations as well as the extent of skills use in different contexts. A total of 33 countries have participated in this survey, which will allow for international benchmarking. First results will be available in October 2013.

Participating Countries

Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, *Indonesia, Ireland, Israel, Italy, *Lithuania, Japan, Korea, the Netherlands, New Zealand, Norway, Poland, *the Russian Federation, *Singapore, the Slovak Republic, Slovenia, Spain, Sweden, Turkey, the United Kingdom, and the United States.

* OECD Partner Countries

HOW IS THE ASSESSMENT ADMINISTERED?

➤ **E&S Online** is a fully computerised measure of cognitive and non-cognitive skills. It is available over the internet and incorporates flexibility and adaptability to provide reliable and valid measures of critical skills associated with work, home and the community.

➤ **E&S Online** allows individuals to choose which skills they want to assess. As a baseline, individuals receive a core set of background questions followed by a set of tasks providing information related to their literacy and numeracy skills. They can elect to get information on their reading component skills, problem-solving skills and on selected non-cognitive skills.

➤ **E&S Online** is available in several languages: English (Canada, Ireland, UK, US), French (Canada, France), Spanish (Spain, US), Czech, Italian and Japanese.

The Main Elements of Education & Skills Online Assessment
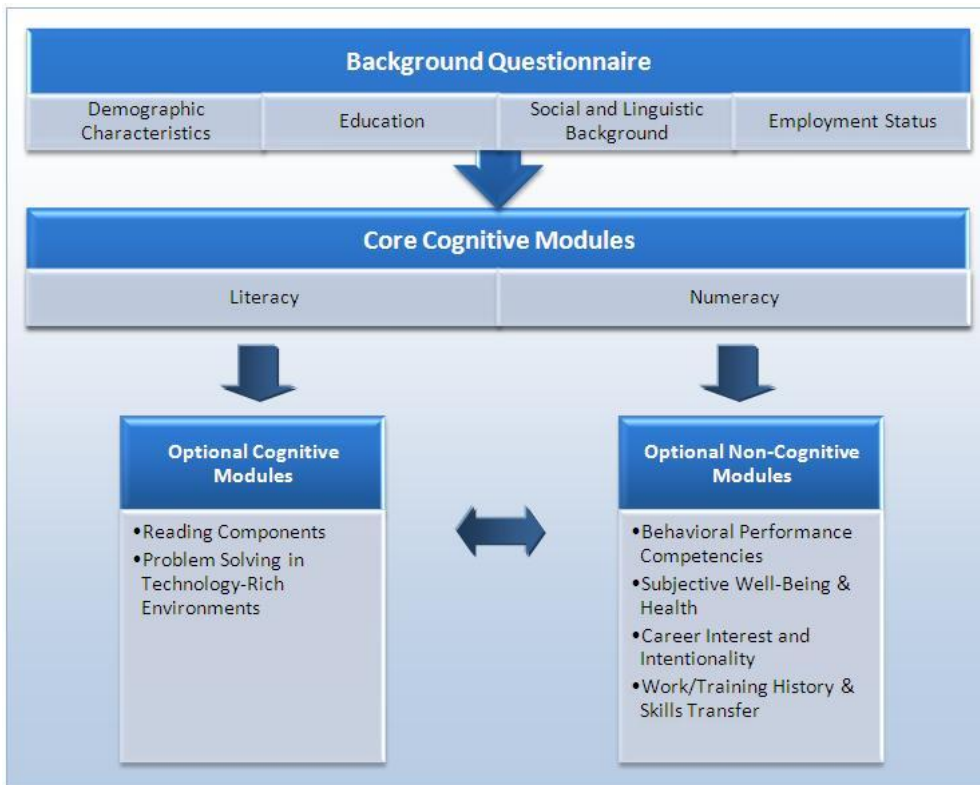
Background information

The background questionnaire contains questions regarding demographic characteristics, social and linguistic background, education, employment status. The questionnaire has been designed to give information concerning issues such as the relationships between education and training and skills development, and also to benchmark the performance of test-takers against that of individuals with similar backgrounds and experiences.

Non–cognitive modules

The non-cognitive modules of E&S Online provide information about aspects of the personality, interests and work history of test-takers. For individuals, this may help them think about their occupational choices. For institutional users this will provide information that helps understand individuals' results and to compare them with those of like individuals. These modules provide customizable measures that assess critical determinants of work training and work place success:

► Behavioral Performance Competencies
► Subjective Well-Being & Health
► Career Interest and Intentionality
► Work/Training History & Skills Transfer

The assessment cognitive modules

The direct-assessment component of the survey evaluates the skills of adults in two core domains – literacy and numeracy – and two optional components – reading components and problem solving in technology-rich environments. These are considered to constitute "key" competencies in the sense 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. In addition, these skills are necessary in a broad range of contexts, from education through work to everyday life.

Summary of the cognitive domains in Education and Skills Online

	Literacy	Numeracy	Problem solving in technology-rich environments
Definition	Ability to understand, evaluate, use and engage with *written texts* to participate in society, to achieve one's goals, and to develop one's knowledge and potential.	Ability to access, use, interpret and communicate mathematical information and ideas in order to engage in and manage the mathematical demands of a range of situations in adult life.	Ability to use digital technology, communication tools and networks to acquire and evaluate information, communicate with others, and perform practical tasks.
Content	Texts are characterised by : Medium: ▶ Print-based ▶ Digital Format: ▶ Continuous or prose texts (narration, argumentation or descriptions) ▶ Non-continuous or document texts (tables, lists, graphs) ▶ Mixed texts ▶ (combination of prose and document elements) ▶ Multiple texts (juxtaposition or linking of independently generated elements)	Mathematical content, information and ideas: ▶ Quantity and number ▶ Dimension and shape ▶ Pattern, relationships, change ▶ Data and chance Representations of mathematical content: ▶ Objects and pictures ▶ Numbers and symbols ▶ Diagrams, maps, graphs, tables ▶ Texts ▶ Technology-based displays	Technology: ▶ Hardware devices ▶ Software applications ▶ Commands and functions ▶ Representations (text, graphics, video) Nature of problems: ▶ Intrinsic complexity (number of steps, alternatives required for solution, complexity of computation and/or transformation, number of constrains) ▶ Explicitness of the problem statement (largely unspecified or described in detail)
Cognitive strategies	▶ Access and identify ▶ Integrate and interpret (relating parts of text to one another) ▶ Evaluate and reflect on	▶ Identify, locate or access ▶ Act upon and use (order, count, estimate, compute, measure, model) ▶ Interpret, evaluate and analyse ▶ Communicate	▶ Setting goals and monitoring progress ▶ Planning ▶ Acquiring and evaluating information ▶ Using information
Contexts	▶ Personal ▶ Work-related ▶ Community ▶ Education	▶ Everyday life ▶ Work-related ▶ Society & Community ▶ Education	▶ Personal ▶ Work-related ▶ Community

WHO ARE THE POTENTIAL USERS?

- ➤ Researchers who would like to have access to tests that could allow benchmarking to deepen and complement the results of their assessment efforts at a national or regional level.
- ➤ Organisations concerned with adult literacy and numeracy who seek literacy level benchmarks to compare with results of training.
- ➤ Universities, vocational education and training centers can use E&S Online as a diagnostic tool for incoming students and their literacy course needs.
- ➤ Government organisations interested in assessing learning needs for unemployed, prison populations or economically disadvantaged.
- ➤ Public or private companies who want to use the results to help with recruitment and candidate assessment and to identify training opportunities for their workforce.
- ➤ Students or out-of-school youth transitioning to post-secondary education/training who can use the results to assess their individual course needs.
- ➤ Adults of any age who either wish to re-enter an educational or training environment or want to demonstrate their workforce readiness skills.
- ➤ Any individuals who might want to compare their results with those obtained at the national and international level or to determine whether their skills have improved over time as the result of educational efforts.

CONTACT INFORMATION

Website: www.oecd.org/site/piaac

Contact: William Thorn (William.thorn@oecd.org) and Marta Encinas-Martin (Marta.encinas-martin@oecd.org)

DID YOU KNOW? *Some adults who do poorly on literacy surveys have been shown to have strong basic reading and writing skills, but are unable to apply these skills to real-life situations.*

Page Web	Contact
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PIAAC 2012 Publications and Data Tools

National Center for Education Statistics (NCES)

PIAAC *First Look* and Web portal | Release date: October 8, 2013

The *First Look* report will present select findings from the PIAAC Main Study, including specific results for the U.S. population on the literacy, numeracy, and problem-solving in technology rich environments skills. The report will compare overall scores for the United States and other countries, as well as present trend scores using earlier international adult surveys including the International Adult Literacy Survey (IALS) of 1994–1998 and the Adult Literacy and Life Skills Survey (ALL) of 2003–2008. Other select findings will include literacy, numeracy, and problem-solving in technology rich environments by age, race, gender, educational attainment, employment, native language, civic participation, health status and skills used at work. An interactive web portal containing PIAAC data tables will supplement the information available in the First Look report. It will be provided on the NCES website under the "Summary of Results" page.

Organization For Economic Cooperation And Development (OECD)

International PIAAC reports | Release date: October 8, 2013

The OECD will release an initial international report at the time of the PIAAC data release in October. This report will be followed by a series of in-depth reports that present information on cross-country comparisons of the level and distribution of adult skills in literacy, numeracy, and problem-solving in technology rich environments; the distribution of proficiency among various socio-demographic groups in different countries; the skill proficiency of workers and the use of literacy, numeracy, and technology skills in the workplace; the process by which adults develop and sustain literacy and numeracy skills; developing and sustaining foundation skills; and the link between foundation skills and social and economic outcomes. These reports will be published online and will be publicly available free of charge.

PIAAC Data Explorer | Release date: October 8, 2013

The PIAAC Data Explorer is a dynamic interactive online tool that will allow users to produce customized reports using PIAAC data. Users can explore the performance of adults in literacy, numeracy, and problem-solving in technology rich environments, as well as compare performance among countries and over time. Data can be displayed and exported in a variety of formats, including statistical tables, charts, and maps.

Further publications and data tools

- » U.S. Department of Education, Office of Vocational and Adult Education (OVAE) PIAAC Report
- » NCES PIAAC Data Explorer (December 2013)
- » OECD Education and Skills Online (December 2013)
- » OECD Education at a Glance Indicators (2014)

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