Skills for a New Economy
What the Workforce of Tomorrow Needs Today
The nature of work is changing as technological advances and global competition transform the workplace. Automation, artificial intelligence, global competition and multinational corporations are all transforming the jobs we hold and the work we do.

Workers are told to be quicker, smarter and more efficient; to demonstrate digital and technological skills; to be culturally sensitive; and to work in teams. And still, they are being displaced or advised to retrain.

Not since the Industrial Revolution more than a century ago has there been so much churn in the workplace. The implications are enormous, especially so for students, institutions of higher education (IHEs), workers at all levels and employers. And they are urgent.

The question, for each of those sectors, is how to meet both current and future skills and competency requirements for success in this rapidly transforming, continuously evolving workplace?
At ETS, we believe the answer entails three key steps:

**Step 1:** Identifying Next-Generation Job Requirements from the perspectives of knowledge, skills (cognitive, social and emotional, and technological), and abilities — that is to say Skills for a New Economy, or SNEs.

**Step 2:** Building a Taxonomy That Classifies SNEs Into Broader Competencies so that educators, students, including adult learners, and employers can use them quickly and easily to achieve their goals.

**Step 3:** Aligning academic and workplace goals so that means and ends are consistent and mutually supportive.

For ETS, this means developing relevant and meaningful SNEs across industries and job levels, and designing assessments to measure and certify their attainment.

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Identifying Next-Generation Job Requirements

Much of the groundwork for identifying next-generation job requirements has already been done. The U.S. Department of Labor’s Occupational Information Network (O*NET, www.onetonline.org) is a comprehensive, data-driven occupational classification system that documents knowledge, skill and ability requirements across jobs reflecting different levels of education, experience and training expectations. Combined with the Bureau of Labor Statistics, O*NET identifies “Bright Outlook” jobs.

Using O*NET, McKinsey Global Institute estimated the distribution of labor hours in 2016 and in 2030 based on automation and macroeconomic trends and projections. The analysis showed the rising importance of higher-level skills, including social and emotional skills.

U.K.-based Pearson® and Nesta (formerly the National Endowment for Science Technology and the Arts) took the analysis a step further. They applied trend analyses, expert panels and machine learning to O*NET data to organize occupations into high-growth clusters. These clusters included advanced manufacturing, skilled trades, health care, computer and mathematical operations, personal care and service, and engineering and technology.

They then examined the critical Knowledge, Skills and Abilities, or KSAs, of these emerging jobs to extrapolate future skill demands. The top-ranked skills included:

- Interpersonal skills
- Higher-order cognitive skills such as critical thinking and decision making
- Fluency of ideas skills such as oral and written communication
- Digital technology skills
- Intercultural fluency skills

The findings are consistent with McKinsey’s and with the results of the National Association of Colleges and Employers (NACE) Job Outlook 2017 Survey. Despite wide recognition of the importance of some skills, the NACE survey showed that college graduates fell short, particularly on critical thinking and problem-solving, oral and written communication, professionalism and work ethic, and leadership.
A Competency-Based Taxonomy

Developing a common competency-based taxonomy is critical to alignment of ends and means among learners, IHEs and employers. We view competencies as clusters of related knowledge, skills and abilities that can be applied in current jobs but also transferred to new situations.

Aligning Goals: From the Classroom to the Workplace

By aligning skills development with employers’ expectations, we can raise learners’ confidence and constructive accountability for academic institutions. Achieving this alignment requires articulating and documenting a clear and agreed upon set of SNEs and related assessments to certify and validate SNE attainment.

Assessments may be embedded in learning and training opportunities. Or they may take a nontraditional form, such as observations, verifiable accomplishments and performances. They do not need to be limited to traditional stand-alone, in-class written assessments.

Adoption of competency-based assessments and credentials such as certificates will encourage learners to develop the SNEs that match employers’ needs and expectations.

IHEs and other workforce development and training providers could further promote alignment by partnering with local employers — for example on co-defining the necessary skills and on-the-job learning opportunities such as apprenticeships.
ETS’s Role

Defining, operationalizing and measuring Skills for a New Economy requires evidence-based practices to ensure that they are conceptually and empirically sound and rigorous. No one is better at this work than ETS. We have a 70-year track record of building innovative assessments that serve diverse learners and institutions and an unshakeable commitment to fairness and equity in assessment design and development.

We believe what is needed are:

- Identification of which skills or competencies are critical both for career entry and career progression
- Assessments to measure current levels of competencies and SNEs
- Support for higher education institutions and other workforce development and training providers in developing learners’ skills and competencies
- Solutions that support IHEs and individuals to document and certify that learners have acquired satisfactory levels of these needed skills or competencies

From Competency to Assessment: A Path Forward

If we are to be prepared for “a new economy,” two- and four-year higher education institutions and employers need to collaborate to assure that learners have the opportunity to acquire and continuously develop these competencies.
And in fact, institutions and employers are partnering. But it is the exception. One way to encourage integration of education goals and employer needs is to make sure that education institutions and employers are defining critical competencies in the same way. They need to share a common language about what the competencies mean. And the competencies need demonstrated relationships to effective work behaviors for employers to adopt them.

For an assessment to be meaningful, the information provided must be closely aligned with what stakeholders most value and share in common. That’s why we believe it is imperative to bring together education institutions, employers, recent graduates and those recently employed to develop a consensus on competency definitions and a range of useful interventions and assessments.

**21st-Century Skills, 21st-Century Assessments**

The role of assessments in the context of SNEs is to help create alignments among the education system, the training and certification of 21st-century skills, and employer recognition and adoption. They do this by generating information consistent with the goal of equipping workers for the workplace. It sounds simple. But it is deceptively difficult to do in a systematic and fair way.

That is why ETS pioneered what is known as Evidence-Centered Design, or ECD. ECD defines who the test takers are; explicitly states what evidence the test is designed to adduce regarding a test taker’s knowledge, skills or proficiencies; describes how the test will elicit that evidence; and delineates how to score the evidence in a way that allows us to draw fair, consistent and appropriate conclusions about what the test taker knows or can do.

In this way, 21st-century assessments are the indispensable link between means and ends in the 21st-century workplace.

**How Will We Know When We Get There?**

We need to build a skilled workforce with higher levels of proficiency in literacy and numeracy as well as strong interpersonal, technical and problem-solving skills. We will know we have achieved these goals when we see education systems preparing learners with critical, work-relevant competencies, employers endorsing and using evidence-based assessments and certificates, and learners demonstrating competencies as a means of obtaining skilled-based work.
For more information on Skills for a New Economy and how ETS research and assessment design is preparing learners, academic institutions and employers for the new world of work, contact:

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