



# **Transforming Education and the Future of Assessment: From Seat-Time to Skills**

## Introduction to the Problem

The current education system is failing to meet the needs of American students. The increasingly non-linear path through and from education and into the workforce requires society to rethink how learning progressions and competencies are demonstrated, and the methods used to assess both.

For well over a century, time spent in the classroom has been the primary indicator of progress and ultimately the index of learning. This had led to a system that awards credentials and opens the door to opportunity based upon seat time. Yet, it is clear that the knowledge, skills and dispositions needed to be successful in the global workforce are not demonstrated singularly through time on task, whether sitting at a desk or in front of a digital platform. Moreover, a system that privileges time as the measure of progress and accomplishment is susceptible to tremendous variability in how and how well that time is spent. This institutionalizes the unacceptable gaps in performance that plague our education system.

A fundamental obstacle to achieving an authentically competency-based education, not tethered to the Carnegie Unit (or credit hour), are the standardized assessments that permeate the system. Their emphasis on normative characterizations of performance make them far better suited to sorting and exclusion of students than to warranting legitimate accomplishment. In essence, current standardized assessment regimes limit opportunity for rigorous, valid, yet more accessible and therefore more inclusive, demonstrations of mastery. As a result, current assessments do an inadequate job of capturing the full range of knowledge and skills essential for success in school and the workplace. Without an assessment system that does so, we will not make more than superficial progress toward building an educational system that ensures all students are properly prepared for success.

Together, ETS and Carnegie are proposing a seismic shift. We aim to tackle two cornerstones of American schooling — the Carnegie Unit and standardized assessment — and build an educational system that puts the focus on skills — specifically the complex tapestry of affective, behavioral and cognitive skills that are necessary for individuals to thrive in the 21st century.

The Carnegie Unit has served as the bedrock currency of the educational economy. It plays an instrumental role in almost every aspect of American schooling. The Carnegie Unit is central to how K–12 and postsecondary schools are organized; defines what “counts” as learning (credits, time in courses); determines what is and what is not assessed; establishes who is eligible for financial aid; is foundational to what goes on a transcript; drives school accreditation; and is a primary index by which employers determine whether prospective hires are “career ready.” It even determines the workloads of instructional professionals and determines the allocation of resources. The Carnegie Unit isn’t just hard wired into the current educational system — it is the system.

While the Carnegie Unit served an important purpose in its time, the systemic conflation of time and learning creates fundamental problems. It does not consider the vast amount that has been learned over the last 100 years — from neuroscience, cognitive psychology and the learning sciences — about how people learn and develop expertise: through immersive experience, solving real problems in a broad range of contexts, from peers and mentors, in internships and apprenticeships, in and out of school, and at highly variable rates. Further, the Carnegie Unit has had a pernicious effect on the pace, scale and effectiveness of educational innovation and

improvement. Certainly, there have always been alternative ideas and models: Dewey and Montessori® at the turn of the last century; various competency-based models; and emerging credential systems. The problem is these models have been pushed to the margins of the education economy. They do not define it. As a result, they are all too infrequent and limited in their impact. Finally, and perhaps most problematic, there is abundant evidence that the U.S. educational system defined by “seat time” is having diminishing impact on the core purpose of schooling — creating opportunity. As Chetty (2017) describes, the percentage of children earning more than their parents dropped from over 90% for the 1940 birth cohorts to around 50% for the 1980 birth cohort.

Alongside the Carnegie Unit, a modern assessment regime has developed that constrains educators and limits opportunity for students. Empirical evidence affirms that high-stakes, standardized assessments narrow the curriculum, encouraging focus on a limited band of cognitive skills, at the exclusion of the skills and dispositions essential for success in postsecondary school and career (see, e.g., Au 2007). More problematic, the pressure to perform on narrowly bounded standardized assessments has disincentivized educators from developing the accelerative, immersive, experiential learning modalities young people need to excel. Conversely, assessment systems that encourage and reward authentic student performance, encourage teachers to enact richer, more problem-centered pedagogies (Darling-Hammond & Rustique-Forrester, 2005). While parents and educators are well aware that current assessment regimes fall short, the assessment community has not kept up.

It is past time to build a suite of tools that provide a much richer view of student learning and development, and reliably indexes and makes visible the arc of student progress on such aims.

### **Rare Bright Spots Have Emerged**

Despite the constraints of the existing credit and assessment system, some successful examples of pioneering competency-based education exist at the state level, in K–12 and in higher education contexts. An increasing number of states and school systems have articulated goals for students that encompass a broad array of skills and competencies that go far beyond discipline-specific cognitive skills of mandated assessments<sup>[1]</sup>. Some states have gone further, enabling students to generate credits and credentials wherever learning occurs. At the K–12 level, examples include the [Competency Based Learning Network](#) which leads to advancements in game-based learning, the XQ Institute’s [Learner Outcomes](#), which provide a comprehensive secondary school framework to produce richer, more engaging and rigorous learning opportunities, and the New Hampshire Department of Education’s [Learn Everywhere](#) program which provides high school credit for approved out of school learning experiences. At the higher education level, considerable progress has been made by pioneers such as [Arizona State University](#), [Western Governors University](#) and [Southern New Hampshire University](#) implementing competency-based education models to meet diverse student needs. These early adopters have accomplished much by *pushing against the grain*. However, large-scale changes to the broader credit and assessment system are necessary to enable many more K–12 schools and higher education institutions to move to authentic competency-based education.

## A Skill-Based Solution

The Carnegie Foundation and ETS propose to create a skills-based suite of assessment tools as well as the data management and analysis platform that supports generating insights from a wide range of authentic student experiences — whether that learning occurs in or outside of the classroom. The aim of this system of assessments is to capture evidence of the development of a robust set of skills that we know are necessary for success in high school, postsecondary school and the workforce. This skills-based assessment system will index student development across three core domains: 1) the **affective skills** that are essential for engaging effectively in school, the workplace and society including effective communication, intrapersonal skills, the ability to set goals, personal management and executive functioning; 2) the **behavioral skills** that focus on **how** individuals work and solve problems, including dimensions like perseverance, the ability to work on teams, to innovate and to lead; and 3) the **cognitive skills** that include traditional forms of academic knowledge and the ability to *apply* knowledge and *develop* new forms of expertise. In addition to subject matter knowledge, such cognitive skills include critical thinking and problem solving as well as the ability to analyze, synthesize and evaluate information.

The new assessment suite will leverage recent advances in the measurement and data sciences and assessment technology both to codify learning wherever it occurs and provide insights to students, parents and educators on a holistic set of indicators. Put another way, the assessments will be built to report on the progression of key skill development, and to identify strengths, address skill gaps and recommend courses of action. Our ambition here is disruptive. It includes the development of assessments that serve those who are closest to the learning process — students and those responsible for their growth and development — as opposed to those whose interests lie far from it. *Making these assessment tools usable and useful will be a central goal.*

To undertake this work, we draw from a rich body of existing research on authentic assessment (McArthur, 2022, Palm, 2008; Sokhanvar, et al., 2021) as well as deep expertise in technology-assisted assessment design. Five key design principles will undergird the work:

- 1. Recognize the social and cultural backgrounds of students.** Students bring considerable social capital in the forms of cultural, linguistic and community experiences into school. Our system will connect with this life experience and offer opportunities for learners to demonstrate their knowledge, skills and dispositions through appropriately varied authentic demonstrations of performance and accomplishment.
- 2. Benefit instruction and learning.** As described above, turning data into actionable insights requires a strong connection with learning and instruction. This assessment system will collect data on instructionally relevant dimensions and couple that to evidence of both accomplishment and need, to meaningfully inform students, parents and educators concerned with the growth and development of students.
- 3. Use technology responsibly to generate insights and create authentic and challenging assessment situations.** Technological advancements offer great efficiencies (e.g., automated scoring of student work, automated data capture and integration) and combined with advances in data science and analytics they offer flexibility (e.g., assessment data can be integrated into

learning to personalize learning opportunities). Such tools for automation and machine learning must be designed from the outset to connect educators to options for high priority, high leverage learning activities addressing identified student needs. Technology can also be used to create rich and authentic assessment situations that allow the measurement of complex competencies.

- 4. Enable personalization.** Assessments yield more meaningful insights about learners when they are tailored to individual learners' levels and understanding. Traditional "score reports" will become "insight reports" that provide actionable information about not only *what* a learner knows and can do — but also to provide insight into *how* they learn, to inform next steps to support their growth.
- 5. Focus on equity and fairness.** Persistent racial and ethnic performance differences have long been a source of concern in the United States. Our assessment system will consider the diverse backgrounds and experiences learners bring into classrooms and learning spaces and offer opportunities for students to demonstrate what they know, can, and are disposed to do in both standardized and flexible ways. The system will have equity and fairness at its core, so that any new design and implementation serves all learners, rather than just the few who are already advantaged.

## **A Carnegie Foundation and ETS partnership: A Catalyst for Transformation**

Carnegie was one of three institutions behind the creation of ETS more than 75 years ago. It seems fitting our organizations remain mission-driven yet focused on solving today's challenges with the modern resources now available.

The Carnegie Foundation has deep roots across the K–12 and postsecondary sectors and considerable respect and goodwill among stakeholders. The Foundation has also spent the last 15 years pioneering a new research and development approach in the education field through application of Networked Improvement Science, developing important capacities for innovation at scale that will serve this effort well.

ETS is a world-renowned organization, with a global footprint applying its cutting-edge capabilities in educational research, assessment development and large-scale administration. ETS's deep expertise in the measurement sciences and validity and fairness research has established it as a global leader in assessment research and development and large-scale assessment management and field operations.

The Carnegie Foundation and ETS are uniquely positioned to address the challenge of transforming the seat-time based system and pivoting to a skills-focused system. Partnered together, the Carnegie Foundation and ETS will be able to leverage ETS's innovative assessment design, development, analysis and reporting capabilities with the deep field-based partnerships and improvement research expertise that the Carnegie Foundation has developed.

The Carnegie Foundation and ETS will engage state, district, institutional and community organizations to build an authentic assessment system that focuses on a broad range of skills important for academic, workforce and civic success. While the details of the system are still being conceptualized, prototyped, tested and refined, the fundamental aim is clear: to move from a system in which progress and

ultimately success is determined by “time spent” to one in which success is based on performance and accomplishment. This new system will:

- embrace multitrait and multimodal forms of assessment — it will capture a wide variety of skills and attributes through numerous complementary forms of assessment serving as opportunities to demonstrate accomplishment;
- be extensive over time — unbound from time delimited forms of assessment, it will therefore capture and retain evidence collected over the duration of student participation in and outside of formal education settings;
- provide multiple forms of evidence — as is necessary to meaningfully provide for the information needs of very different stakeholders (e.g., students, parents, school-based educators, community members, policymakers, etc.); and
- be driven by new forms of data management and analysis — as recent advances in data science, analytics and representation permit the meaningful exploration of multivariate data like that described above to provide deeper insights of value to a range of stakeholders.

Taken together, these attributes will allow the new assessment paradigm to move us away from an educational system in which time is fixed and achievement varies, to one in which achievement is fixed (i.e., high for all students) and the means of getting there determined as is appropriate to the needs of each student.

### **Engaging Stakeholders to Identify the Solution**

This work is not ours alone. For too long assessments have been built by companies or in ivory towers without authentic guidance from the people for whom assessments should exist. An essential goal of our work is to engage key stakeholders — including students, parents, teachers, education leaders, civil rights organizations, employers and foundations — to participate in this partnership.

With our partners, we will develop a comprehensive competency framework that captures the key knowledge and skills essential for education and career success.

With our partners, we will design and pilot innovative and practical solutions to assess these competencies at scale, relying on cutting-edge measurement and data science and education technologies.

And with our partners we will engage networks of educators to learn about the new suite of assessments, share strategies related to its use, refine the tools and create the demand and support that will aid in broad scale adoption and use over time.

### **Reimagine A New Future for Assessment**

We are at a moment in time when transformation is an absolute necessity. That transformation must move us from a monolithic focus on seat-time to an educational sector focused on the affective, behavioral and cognitive skills and dispositions a learner develops, wherever that learning may occur. To get there demands a new, multidimensional and scalable assessment system that provides students, parents, educators, policymakers and employers with the information they need to support

and expand opportunities for 21st-century learners. Building that system is the fundamental purpose of this partnership between the Carnegie Foundation and ETS. We are convinced it can have a significant impact on learners of all ages, the educational sector as a whole, and the American democracy, economy and social fabric. We invite you to join us in this journey.

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<sup>[1]</sup> See, for example, Utah's Portrait of a Graduate: <https://www.uaesp.org/resources/Documents/Portrait%20of%20a%20Graduate.pdf>