CompetencyWorks

Fit for Purpose: Taking the Long View on Systems Change and Policy to Support Competency Education

Prepared for the National Summit on K-12 Competency-Based Education.

WRITTEN BY:

Susan Patrick

Maria Worthen

Natalie Truong

Dale Frost

iNAC⊙L

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Please consider this paper a draft. A final version will be prepared and published based on input from the participants at the Summit.
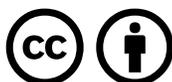
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About *Competency*Works

*Competency*Works is a collaborative initiative dedicated to advancing personalized, competency-based education in K-12 and higher education. The International Association for K–12 Online Learning (iNACOL) is the lead organization with project management facilitated by MetisNet. We are deeply grateful for the leadership and support of our advisory board and the partners who helped to launch *Competency*Works: American Youth Policy Forum, Jobs for the Future, and the National Governors Association. Their vision and creative partnership have been instrumental in the development of *Competency*Works. Most of all, we thank the tremendous educators across the nation that are transforming state policy, district operations and schools that are willing to open their doors and share their insights.

About iNACOL

The mission of the International Association for K-12 Online Learning (iNACOL) is to catalyze the transformation of K-12 education policy and practice to advance powerful, personalized, learner-centered experiences through competency-based, blended and online learning. iNACOL is a non-profit organization focusing on research, developing policy for student-centered education to ensure equity and access, developing quality standards for emerging learning models using competency-based, blended and online education, and supporting the ongoing professional development of school and district leaders for new learning models.

National Summit on K-12 Competency-Based Education

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I. Introduction

The purpose of this paper is to explore and reflect on the ideas that state policy needs to address in the long-term to support a transformation to competency-based education systems designed to ensure equity so all students can be truly ready for success. We will explore some ways that state policy could approach tackling *threshold concepts as* part of a long-game strategy. This paper is intended as a "thought leadership" piece to spark conversation around next steps for policy at the National Summit for K-12 Competency-Based Education.

Our challenge is to catalyze the creation of a new, transformational theory of change for state policy to work toward in the long term. In doing so, we need to identify the blind spots - the things that we don't even know that we don't know - that are standing in the way of a system that is fit for purpose.

Our intent is to push current thinking beyond the assumptions that perpetuate root causes of inequity and the structural issues that perpetuate injustice. We are focusing on a strategy for policy to support systems change over the long haul toward competency-based systems that ensure mastery for all students and equity for all.

There is a growing realization that the traditional system design for American K-12 education is failing to adequately prepare students for the future. It is time to build a system on the core principle that all students can succeed and be ready for the next step in their learning, the workforce, and life.

Today, educators are beginning to build new competency-based learning models in which students are actively driving their learning while mastering the habits and skills necessary to fulfill their dreams. These new learning models are competency-based, learner-centered, and highly personalized. They hold all students to the same high standards and high expectations, and open the doors to fulfill their potential by providing targeted supports and emphasizing continuous growth. With a focus on competency, high-quality supports and sufficient resources, all students can learn and succeed.

In the traditional model of education, schools batch students by age, and move them through the same content and courses at the same pace. Students are ranked and sorted based on variable outcomes, creating "winners" and "losers" and perpetuating patterns of inequality in society. Education systems must transform to align with the needs of learners and the skills and dispositions they will need to succeed beyond secondary school. According to the Organisation of Economic Cooperation and Development (OECD):

> *"In the past, education was about teaching people something. Now, it is about making sure that individuals develop a reliable compass and the navigation skills to find their own way through an increasingly uncertain, volatile and ambiguous world. It will often be the mistakes and failures, when properly understood, that create the context for learning and growth. Today, schools need to prepare students for more rapid economic and social change than ever before, for jobs that have not yet been created, to use technologies that have not yet been invented, and to solve social problems that we do not yet know will arise."*[1]

Even with high school graduation rates at an all-time national high of 82%, 37% of high school graduates are entering college requiring remediation in math and reading – thus, unprepared for the rigor of higher education.[2] Graduates who enter the world of work directly after high school fare no better, with 62% of employers by one account indicating that "high schools aren't doing enough to prepare their graduates to meet the expectations of the work place."[3] Students are not fully prepared for civic engagement to ensure a functioning democracy (only 30% of today's young people believe it is "essential" to live in a country that is governed democratically[4]). With these academic, workforce and civic readiness outcomes, it is clear that it is time to engage in a public dialog with communities and states around what is the goal and role of our K-12 education system. The very purpose of our education system has changed, but its design has not. Policymakers should be asking: are K-12 education systems fit for purpose?

II. Threshold Concepts: Key Issues for Policy to Tackle for the Long-term

With this paper, we hope to inspire new ideas and launch dialogue among communities and state policy leaders. *Threshold concepts* are "core concepts, that once understood, are needed to transform a given subject."[5] They can help us think differently about what is possible in an equitable future education system where all students succeed, and how to address deep-seated systems design flaws across K-12 education.

In this section, we discuss our thinking around the core concepts that state policymakers might think about addressing for a long-term, sustainable shift to personalized, competency-based learning. The threshold concepts which we will discuss here are:

- > Certifying learning;
- > Assessment literacy;
- > Pedagogical innovations based on learning sciences; and
- > Meeting kids where they are.

As we discuss the threshold concepts, we will also introduce some *Issues to Tackle:* ideas that state policymakers could be thinking about as part of a long game for transformation to student-centered learning. We will present some specific examples from policy, with the caveat that different approaches will work best in different contexts, and that true, broad application of these concepts in policy will only become possible if state policymakers begin to think long term.

Threshold Concept: Certifying Learning

How is it possible that our education system still graduates many students who lack basic reading and math skills when they hold a high school diploma? Unpacking what a diploma means and how we might re-envision this qualification is crucial to inform short-term policy conversations. The United States has made significant progress in improving high school graduation rates over the past decade. However, far less attention has been given to what the diploma signifies. Today, the only thing we can know for sure about a high school graduate in most U.S. school districts is that they have put in the required seat time in the requisite courses. When schools are passing students along and graduating them with major gaps in skills and knowledge, they are doing them a disservice. Sadly, we are not being honest with our high school graduates when we tell them that their diploma means they are ready for the next step. Students who require remediation in college courses are less likely to persist and graduate. Those who directly enter the workforce and lack the basic communication, problem solving, collaboration skills, and habits of learning, may face unemployment.

How can the high school diploma align to a more comprehensive definition of success?

For the purpose of this paper, let's consider core concepts that may need to be unearthed as design flaws in our current system which may be missing from current debates. The term "curriculum redesign" is a common concept emerging in global education systems which is fundamentally asking the question, "what do our students need to know and be able to do" – especially with respect to a more holistic notion of student success for the future. Whether a community conversation or a state conversation, the idea of engaging communities and families in conversations around what is different, and around what students need to know and be able to do is increasingly important.

What do we need to think differently about a broader set of outcomes? These would include considerations for academic knowledge and skills, and competencies such as learning how to learn, lifelong learning which includes how to set goals personally, academically, professionally and attain them, learning important social emotional skills, empathy, compassion, cultural responsiveness and understanding. Lastly, it includes navigating an increasingly complex world with problem-solving, communication, and self efficacy skills to actively engage in civil society and democracy.

The fundamental question curriculum redesign attempts to answer *"What should students learn to succeed in the 21st century?"* From Asia to Europe, from Australia and New Zealand, to Africa and India, and across the provinces of Canada – there is a deep and complex debate taking hold in each community around what students need to know and be able to do. Conversations in policy in the United States around what students need to be prepared are happening around standards and graduation requirements; however, they are based on limited definitions of success centered around content proficiency. States can begin to engage districts and communities around what students need to master for true preparedness, and the implications for rethinking outdated accountability models. We need to think about redesigning education with new models of active, inquiry-based pedagogy to move forward with more holistic, learner-centered, competency-based learning models that help students gain the knowledge and skills they need to thrive after high school graduation. Once local communities have a shared understanding of what student success looks like, they can drive state-level understanding of curriculum redesign and the implications for new accountability models, new designs for assessments, new school models and building systems capacity (and better coherence).

Issue to Tackle: Redefining Success

A core concept in need of further development is examining the current limited definitions of student success. We must put greater emphasis on engaging our communities in the conversations around new definitions of success and what is necessary for redefining student success to include academic competencies, social emotional competencies, skills and dispositions with a holistic focus for the whole child, a well-rounded education, and the future of our communities.

An important concept for policymakers to consider, as they identify their theory of action for driving changes to the systems surrounding curriculum, instruction and assessment, is how to redefine success and how it could be used to drive system coherence. In countries with high-performing education systems, "curriculum" is a broader concept that encompasses much more than academic content standards,[6] reflecting knowledge and skills in higher order thinking, academics, and lifelong learning. It may also be linked to qualifications frameworks, which define the competencies necessary for success in career pathways.

States are beginning to embrace this concept. For example, in Virginia, a series of community, local and state conversations around whether students are adequately prepared with transferable skills, employability skills and college readiness with value to the learner, workplace and community, led to a new initiative to examine future directions in the high school diploma is known as the "Profile of a Graduate."

Virginia's new initiative on the Profile of a Graduate "describes the knowledge, skills, experiences and attributes that students must attain to be successful in college and/or the workforce and to be 'life ready' in an economy and a world characterized by rapid change."

The Profile of a Virginia Graduate provides a north star to educators and leaders in the state to ensure a coherent approach to systems change, including redesign of the Virginia Standards of Learning, school accreditation requirements, accountability, systems of assessments, and high school graduation requirements. In the Profile of a Graduate, a "life ready" Virginia graduate must:

> - Achieve and apply appropriate academic and technical knowledge (content knowledge);
> - Demonstrate productive workplace skills, qualities, and behaviors (workplace skills);
> - Build connections and value interactions with others as a responsible and responsive citizen (community engagement and civic responsibility); and
> - Align knowledge, skills and personal interests with career opportunities (career exploration).

These requirements were established by the State Board of Education based on a new law passed by the state legislature. The law was passed by the legislature in response to calls from local stakeholders to redefine student success more holistically for students' needs in the new economy. Local leaders and educators are actively engaging in systems redesign around the Profile of a Virginia Graduate. This is an example of policymakers engaging with and listening to stakeholders to define what graduates should know and be able to do, and working together to begin to build system coherence.

Issue to Tackle: Meaningful Qualifications

QUALIFICATIONS FRAMEWORKS

There are alternatives to the American system of time-based credits and transcripts. Internationally, at least 47 countries (not including the U.S.)[7] have developed a national qualifications framework,[8] or a system of competency-based qualifications that form linkages between K-12, higher education, and the needs of the future workforce.[8] Qualifications systems provide flexible pathways for learning and offer accountability with evidence.

TACKLING MEANINGFUL QUALIFICATIONS IN POLICY: EXAMINING THE HIGH SCHOOL DIPLOMA

State policymakers might consider how the high school diploma could become a meaningful representation of students' readiness for the future; it should reflect success in rigorous academics, and signify that its holder has mastered the knowledge, skills, and habits of success needed in the new economy. It is exciting to think about how many more students would be ready for success if the high school diploma were aligned with a comprehensive Profile of a Graduate, and students advanced upon demonstrated mastery, not seat time. This could open up new ways of thinking about multiple pathways with formal and informal learning, targeted supports to ensure each student's future goals and successes, and rich learning experiences that spark creativity and a passion for lifelong learning.

High school graduation requirements in the U.S. are generally determined by states, with varying degrees of local authority to interpret the requirements and award a diploma. Diplomas are typically based on high school transcripts which record how many academic seat-time units students have earned in the required subjects.

PROFICIENCY-BASED DIPLOMAS

In the United States, this idea of addressing what a high school graduate should know and be able to do based on demonstrated mastery, is starting to take hold in a few states, which are considering and adopting policies around the *proficiency-based diploma*. This is beginning to happen in state level policy conversations and holds potential to support a competency-based approach to earning a high school qualification.

International Example: The New Zealand Qualifications Framework

The New Zealand Qualifications Framework is aligned across K-12 education, higher education and the workforce certifications. While a Level One qualification is based on attaining demonstrated mastery on literacy and numeracy, it is only attained when a student actually achieves the proficiency and mastery of the reading, writing and mathematics levels (not age dependent) with the evidence in support of the learning. It might happen at age 12 or age 14. A Level Two qualification involves a broader set of academic competencies and skills within the national curriculum framework and this is aligned across K-12 education into attainment of the diploma equivalents that extend into tertiary education and the workforce competencies (again, each of the qualifications are earned within an aligned system of K-12, higher education, and the workforce organizations/professional competencies identified as students earn level 2-8 and so on into their higher education degrees and professional certifications).

High school diploma requirements are within state policymakers' domain (such as a governor, legislative body, state board of education or state department of education). Across the country, state leaders are asking how they can help to develop a framework for rethinking public education systems to ensure the qualifications for high school are meaningful for each student. Because education in many states is locally controlled, communities may be engaging in deep conversations around what a student should know and be able to do. In competency-based systems, the concept of each student having a personalized learning plan (and student profile) lends itself to providing the evidence of a student's demonstrated mastery toward a proficiency-based diploma. This concept is central and very important.

A focus on proficiency-based diplomas has the potential to change the way we think about what the high school diploma represents. However, when it comes to using records of proficiency for college admissions, proficiency-based diplomas and transcripts alone won't meet their promise without other requisite shifts in systems. An increasing number of higher education institutions have developed the capacity to translate standards-based, course-based, and competency-based transcripts. Therefore, the proficiency-based diploma as a transfer document may not be necessary. Policymakers could focus on the potential of proficiency-based diplomas to credential proficiency, change learning pedagogy, and determine what students should know and be able to do when they graduate.

There is another risk with proficiency-based diplomas being layered onto the traditional model, where content is king. In states getting started with a shift toward proficiency-based diplomas, the policy often emphasizes credit by examination. As policymakers think about how a proficiency-based diploma could align with a comprehensive profile of a graduate, the limitations of credit-by-end-of-course-exam are laid bare (so long as end of course exams continue to measure only content mastery). Policymakers might consider how a proficiency-based diploma could better align to a culture of active pedagogy and improved pedagogical practices focused on using learning evidence, providing immediate supports and expanding learning opportunities with multiple pathways.

Threshold Concept: Assessment Literacy

"Student assessment is essential to measure the progress and performance of individual students, plan further steps for the improvement of teaching and learning, and share information with relevant stakeholders." – OECD, 2013

Assessment literacy is important for practitioners but it is also important for policymakers and stakeholders throughout the system to understand the roles that different types of assessment play in student learning, how assessment and moderation are used to comparatively and fairly judge student mastery, and how the information generated by assessments can be used toward a cycle of continuous improvement in teaching and learning. The lack of assessment literacy across the system is a major blind spot. Thus, building significant capacity for assessment literacy is needed to advance new competency-based approaches and address tough issues in our current system.

An important concept in assessment today is related to the concept of comparability. Comparability is defined as the degree to which the results of assessments intended to measure the same learning targets produce the same or similar results. This involves documenting the reliability of judgments and not assuming that comparability is stable over time or invariant across multiple subgroups such as English language learners and special education students.[10]

There are unique circumstances in the U.S. education system that have driven the need for much greater degrees of comparability than is true in most other nations. When the federal government became involved in K-12 education with the Elementary and Secondary Education Act of 1965, it was in direct response to deep inequities that have remained in the wake of de-segregation.. Because of the history of inequities in education offerings among student groups, concerns for equity are much greater than in many other countries, which drives, to a significant extent, the degree to which we need to take greater care that measures are fair and have common meaning among students, schools, and districts.[11] This drives the prevalence of standardized tests in our country, causing the concept of assessment to often be conflated with the end-of-year, statewide, summative accountability tests.

Practitioners working deeply in competency-based learning models realize quickly how our K-12 education systems lack systems for calibrating the quality of student work, so we know that fundamentally there is significant consistency across schools and systems. As much of a systems challenge as this would appear across the states in the U.S. today, building professional educator capacity and policymakers' understanding of assessment literacy is fundamental to shifting to personalized, competency-based systems at scale and focusing on equity.

A common misconception about assessment literacy is that it is only about how to interpret standardized test results. In contrast, assessment literacy is a much broader and more significant concept. The New Zealand Ministry of Education defines assessment literacy as:

> *"The possession of knowledge about the basic principles of sound assessment practice, including its terminology, the development and use of assessment methodologies and techniques, and familiarity with standards of quality in assessment. The primary purpose of assessment is to improve students' learning, as both student and teacher respond to the information that it provides. Information is needed about what knowledge, understanding, or skills students need. By finding out what students currently know, understand, and can do, any gap between the two can be made apparent. Assessment is the process of gaining information about the gap, and learning is about attempts to reduce the gap."*

Personalized, competency based learning requires us to reorganize systems around doing what it takes to ensure every student is attaining mastery, rather than the ranking and sorting them into high achievers and low achievers that is created through variable A-F grading practices. Redesigned systems will need to build capacity for clear evaluation criteria to make valid and reliable comparisons of students' progress against outcomes (commonly understood outcomes) using evidence and common rubrics.

Thus, progress isn't measured by ranking and sorting kids against each other, or through grading "curves," but instead for each student to measure their evidence against articulated, high-level, common expectations of success and with clear depictions for what success looks like. This process of developing clear expectations for common proficiency levels is a key part of a "calibration." Calibration is a process that allows two or more things to be compared via a common standard (e.g., a weight in the physical sciences or commonly scored papers in an education system). The purpose of common performance tasks given to students by different schools and districts is to serve as a "calibration weight;" a way to compare the way one school or district scores students on the common task, with the way other schools and districts score those same students' work. In order to use the common performance tasks as calibration weights, districts need to re-score other districts' common performance tasks. Calibrating expectations as well as grading and scoring processes for learning goals is very important in competency-based learning systems. Calibration may involve groups of educators who collaborate and develop consensus around rubrics for scoring student work. The calibration process makes scoring student work consistent and more aligned to the standards upon which rubrics and scoring criteria are based, as well as creating reflective processes focused on improving student learning.

In addition to calibration processes for consistently and accurately evaluating student work, assessment literacy also includes knowing which assessments are appropriate for what purpose (e.g., formative, progress monitoring, or summative). This idea of common expectations, and evaluating evidence against common standards and rubrics to build and evaluate comparability across schools and systems, requires careful moderation of assessment practices across the system and perhaps across the state level. Professional development of educators to assess student evidence using calibration processes and developing rubrics with scales for evaluating performance tasks against criteria is central to building the capacity needed in a competency-based education system. A competency-based learning system that offers personalized pathways for students to meet learning goals and learning targets must rely on multiple forms of evidence against common standards and expectations.

TACKLING ASSESSMENT LITERACY IN POLICY: BALANCED SYSTEMS OF ASSESSMENTS

Assessment is integral to the process of teaching and learning. Teachers should be constantly checking for their students' understanding in formal and informal ways. They are checking for understanding with formative assessment, tracking progress with interim assessment, and checking mastery of standards with summative assessment. And yet, "assessment" today in the United States is often used as a shorthand term for, or conflated to mean, "statewide accountability test."

To be clear, though intricately linked to each other in today's policy context, accountability and assessment are two separate concepts. We should examine our approach to policy regarding assessment. We can be very clear about the need to measure student learning and growth in valid, reliable, and comparable ways, while also opening up new approaches to assessment that support, rather than disrupt, the learning process. Reflecting on where we are in the United States, if assessment is conflated with accountability today, it is because our policies have been structured to do just that. Counter to some of the narratives that are dominating policy conversations today, assessment and learning need not be at odds with each other. Policy can and should help to drive coherence of K-12 education systems by ensuring that assessment, teaching, and learning are complementary and supportive of one another.

Differentiating Between Assessment and Accountability

It is common today in U.S. education policy to see the terms *assessment and accountability* used interchangeably. This conflates a broad set of tools that generate information about student learning (assessments) with policy initiatives designed to incent desired behaviors, or disincent undesired behaviors in order to reach specific goals (accountability). Of course, accountability and assessment are linked concepts, to the extent that assessment provides data that can be used for accountability. However, problems arise when the goals in the accountability system are too narrowly defined and the incentives or disincentives are too limiting or too punitive. No Child Left Behind tied a single assessment (end of year summative state tests) to multiple high stakes (identifying schools for intervention, diverting their federal funds into proscribed uses, and, with the changes brought about under the Elementary and Secondary Education Act waivers and Race to the Top, teacher evaluations sometimes used to make human resources decisions). So, it makes sense that accountability and assessment get confused with each other. A critical shift in thinking needs to happen around accountability and assessment, starting with accountability systems that move the focus from performance on a single test, to multiple measures aligned with the profile of a graduate, and accountability that balances incentives/disincentives with supports.

To start, policymakers could begin to think about assessment in terms of systems of assessments that serve multiple purposes for multiple stakeholders, rather than in terms of a single assessment that is designed to be used solely for accountability and has the end result of driving teaching and learning toward limited outcomes.

Chattergoon and Marion (2016)[12] argue that as states redesign their approaches to assessment, they should pursue *balanced systems of assessments* that meet the following three criteria:

> ❯ *Coherent systems:* "The assessments in a system must be compatible with the models of how students learn content and skills over time;" and "curriculum, instruction, and assessment must be aligned to ensure that the entire system is working toward a common set of learning goals;"

> ❯ A well-articulated *theory of action* that articulates how each part of the system relates to the others. In other words, what purpose does the system as a whole serve, what different needs does it meet for different stakeholders, and how does it meet them? "A set of assessments, even if they cohere, will not fulfill the intended purposes if the information never reaches the intended user;" and,

> ❯ Assessment *efficiency* means that systems are providing stakeholders with the full range of information that it is intended to provide. "For example, if a state wants to give educators information to help them adjust instruction, its assessments must be tied to the curriculum that is being used. These assessments should in turn yield timely, detailed information about the knowledge and skills being assessed at the local level."

What does this look like in practice? The policy constraints under No Child Left Behind (NCLB), the federal K-12 education law that predated the Every Student Succeeds Act of 2015 (ESSA), as well as the local control of curriculum in most states, have made it challenging for states to produce comprehensive

statewide models for balanced systems of assessments. States could take a leadership role working with districts and schools to set conditions for more balanced systems of assessments, with multiple measures, aligned to student-centered learning, to identify what specific data the state needs for accountability. There are states beginning to move in this direction and further along with this work in new systems of assessments, such as in the Assessment for Learning project, that provide examples of pathways in state policy and systems "advancing our understanding of assessments' essential roles in the learning process, as learning models become more personalized, less cohort-restricted, more competency-based, and student-centered."[13]

Perhaps the best example of a statewide approach, the State of New Hampshire's work on competency-based systems, has been underway for more than two decades. In New Hampshire, the Performance Assessment for Competency Education (PACE) system is currently being piloted in a subset of districts across the state and offers a more comprehensive state system of assessments that the New Hampshire Department of Education describes as:

> A learning system designed to capitalize on the latest advances in understanding of how people learn. The goal is to structure learning opportunities that allow students to grapple with gaining meaningful knowledge and skills at a depth of understanding that they can transfer to new real-world situations. As a coherent system, NH PACE is designed to foster positive organizational learning and change by supporting the internally-driven motivation of educators instead of the all-too-common top-down accountability approaches where the goals and methods of the accountability system are defined at the state or federal levels and districts are simply expected to comply.[14]

As this description shows, New Hampshire is taking a future-focused approach to assessment, thinking about it as an integral support for teaching, learning, and building local and teacher capacity.

The Every Student Succeeds Act opens up some significant new opportunities for states to rethink assessment. Section 1204, the Innovative Accountability and Assessment Demonstration Authority, allows states to ask for permission to pilot innovative systems of assessments in a subset of districts. States and districts participating in the pilot would be able to use determinations from these new systems of assessments for accountability purposes. This pilot offers an opportunity for states to intentionally focus on building next generation systems of assessments. It facilitates this by allowing states to pilot new systems of assessments in a subset of districts to eventually scale across districts statewide. States participating in the demonstration authority could pilot performance assessments, developing educator capacity for assessment literacy and moderation practices. Consortia of districts could work together to catalyze state leadership to move forward with innovative models of assessments across within their state and nation-wide.

Issue to Tackle: Accountability as Continuous Improvement

How do we balance quality assurance, accountability, transparency, validity and equity with responsive learner-centered designs? How do we make significant changes for continuous improvement over time that will build capacity at all levels? Are we building educator capacity and professionalism? How do we manage local and community needs? How do we think about designing for every student's success and build consensus among all stakeholders? How do we improve transparency of outcomes with holistic approaches?

An additional major core concept is the fundamental need to build capacity, trust and professionalism toward a powerful idea of "reciprocal accountability."

In Bridging the Gap Between Standards and Achievement, Harvard Professor Richard Elmore explains:

> Accountability must be a reciprocal process. For every increment of performance I demand from you, I have an equal responsibility to provide you with the capacity to meet that expectation. Likewise, for every investment you make in my skill and knowledge, I have a reciprocal responsibility to demonstrate some new increment in performance. This is the principle of "reciprocity of accountability for capacity."[15]

A major concept missing in our current approaches to accountability is to consider what it would look like if we had a system designed to build trust. Typical state accountability systems are put in place by rigidly grouping students by age cohorts at each grade level to better ensure data quality and comparability against the same test. But the unintended retrograde consequences resulting from this time-based model of accountability may inhibit educators from evidence-based practices for meeting students where they are. If we are not constantly assessing where students are, meeting them where they are, and addressing gaps to provide supports and accelerate learning at high levels, will we ever begin to advance true equity across the system or be able to provide responsive pedagogical approaches?

TACKLING ACCOUNTABILITY AS CONTINUOUS IMPROVEMENT IN POLICY: NEXT GENERATION ACCOUNTABILITY MODELS

As we mentioned, the idea of accountability in American education has become synonymous with end-of-year, statewide, summative tests that are tied to high stakes outcomes for teachers and schools. NCLB's intent was to increase equity. The strategy NCLB employed was to require states to test all students in grades 3 through 8 and once in high school in math and reading/language arts, and report the percentage of students who were proficient on grade level standards. These data were the main focus of NCLB's accountability model. Schools were required to make "Adequate Yearly Progress" (AYP) toward a goal of 100 percent proficiency (in every subject and subgroup) by 2014. Schools were subject to increasingly punitive sanctions for each year that they did not make AYP. The effect of NCLB's strategy to increase equity in education through a singular focus on grade-level proficiency tests has been a conflation of equity with the same test for the same age student to measure grade-level proficiency on reading and math. In the process of developing the new federal education policy, the Every Student Succeeds Act, conversations about "guard rails" in accountability for equity were centered on ensuring all students were being tested using the same end-of-year, single, summative test containing only items from a student's assigned grade level based on age.

We have discussed the need for better assessments that more accurately show student proficiency, growth, and application of knowledge and skills. Now, we need to unpack the concept of accountability, completely reimagining it as a tool for transparency to support and empower rapid and constant improvement in learning toward a more comprehensive definition of success.

Policymakers should consider engaging stakeholders to think through what communities and the state need in terms of a "Profile of a Graduate" and what that means for next generation accountability systems to ensure students are being prepared for success in postsecondary education, the workforce, and civic life.

We need to ensure that accountability systems are "fit for purpose" and support student-centered, competency-based learning. How could we know in real time whether students are making progress on developing the skills they need? How do we know how much progress is being made against the graduation goals and what resources are needed to support their learning? What would it take to create a policy environment that actively encourages a growth mindset?

Education systems should reflect families' and communities' hopes for student success in school, work, life, and society. We imagine an accountability system that empowers stakeholders with the information they need to help students succeed. Systems should provide a complete picture of students' successes and challenges, providing the right information to the right stakeholders at the right time. We need to bolster communities in and around schools to have more input on student learning and shared ownership of student outcomes. Policy could catalyze the creation of accountability systems built around ensuring all educators and schools can give students the supports they need to master the knowledge and skills necessary for success. State and local education systems need to focus on supporting an accountability system that is iterative to constant improvement and innovative over time to meet the needs of a changing society, economy, and student populations. Information from systems of assessments should help to inform and improve school and educator practice and capacity and help to move students toward their next learning goals and beyond.

There are a number of important considerations that policymakers might keep in mind as they think long term about accountability redesign. These include:

> Engaging diverse local and state stakeholders to redefine success and ensure that the goals, measures, and systems are all working together to support each student's success;
> Identifying how each level of the system can keep "skin in the game" so that accountability is shared and does not fall disproportionately on the shoulders of any one stakeholder group, and so that it encourages collaboration;
> Thinking about school quality reviews and interventions as part of a process of continuous improvement;
> Thinking about systems as dynamic and responsive to stakeholders. Under ESSA, states can request to amend their accountability plans at any time. As states learn what works, or doesn't work, they may make changes in the spirit of innovations for equity and continuous improvement.
> Providing timely information to the right stakeholders, at the right levels, at the right time, and recognizing that the same data can be aggregated or disaggregated to meet different needs;
> Considering how to present multiple measures of student learning and school quality with advanced data visualization, to provide families with rich, easy to understand information;
> Embedding professional learning into quality improvement processes;
> Considering the inputs, processes, and outcomes that reflect a relentless and multi-faceted pursuit of equity for students;
> In considering student learning outcomes, thinking differently about the concepts of "proficiency" and "growth" and how we can monitor student learning in real-time, so that educators can intervene quickly to fill in gaps or meet other needs as they arise; and,
> Investing in the requisite educator and leader capacity.

We need to move from thinking about measuring one point of proficiency at one point in time, to understanding the transparency of data with student proficiency every day as well as each student's growth over time. We need more advanced quality assurance, evaluation and assessment approaches to provide ongoing transparency of student progress. With better data, data literacy, and the requisite investments in educator capacity, we could evaluate proficiency, achievement gaps, rate of progress and also understand growth based on individual student growth over time; we could also look across cohorts of students and disaggregate data by sub-group to ensure equity and transparency with a depth not possible today.

Under ESSA, states are no longer required to "rank and punish" schools on a single, end-of-year summative determination of grade-level proficiency. Rather, states may now use multiple measures of academic achievement, graduation, and performance of individual student subgroups, as well as a measure of school quality, to identify schools for improvement. States may use student growth, extended-year cohort graduation rates and additional metrics of their choosing. With multiple measures, the opportunity is there for states to redesign accountability around a broader definition of student success. After all, while the abilities to read and do math are important, students will need to be equipped with other skills, such as critical thinking, communication and collaboration, to be successful after high school.

Policymakers in other states could consider the example of Vermont, which has created an accountability system designed to foster continuous improvement, both for school systems and for student learning. What most distinguishes Vermont is that every school has been identified for improvement. This removes the "black eye" of the improvement label, and puts each school and district in a mindset of continuous improvement. The state's Education Quality Standards require schools to submit Continuous Improvement Plans that outline the school's accomplishments, progress, goals and strategies for improvement. All Continuous Improvement Plans are reviewed by the Vermont Agency of Education staff. However, the in-person monitoring visits are carried out by Vermont educators in a peer-review process. With peers providing feedback to the schools on their performance, the recommendations for improvement become more meaningful and feel lower-stakes. Interventions are required for schools not meeting quality standards; since all schools are reviewed and continuous improvement is the goal for every school, interventions become more differentiated based on each one's characteristics and capacity needs.

Threshold Concept: Pedagogical Innovations Based on Learning Sciences

Learning models should be rooted in the research about how students learn best (the learning sciences), with any redesign putting student success at the center. One way to to design a system based on learning sciences research is to consider how educators are engaged in teaching as inquiry where "inquiry is the state of identifying student learning problems, hypothesizing on causes, investigating and testing causal links, and acting on the findings to improve outcomes," according to Dr. Linda Bendikson.[16]

Using research and evidence as a foundation for 'inquiry' allows all levels of the system to engage in deep conversations around what is working in student learning and how educators are central to systemic improvement. It is important for educators to question how they are using an inquiry approach to improve culturally responsive teaching, as well.

In competency-based systems, we must engage in tough conversations around outdated pedagogical approaches. It is time to critically analyze how the current time-based models may be barriers to addressing learner needs. We should examine how we assess and determine whether our assessment strategies are consistent with the learning sciences research on how students learn best. In addition, we need to determine if our pedagogical approaches align with research

on student motivation and meeting kids where they are at the appropriate level of readiness, whether the learning strategies employed are truly fit for purpose. We must ensure we are designing for equity using research on how students learn best, youth development theory, and evidence-based approaches.

Threshold Concept: Meeting Kids Where They Are

David Hood's "Paradigm of One" describes how the current model focuses on "one teacher, teaching one subject, to one class of one age, using one [textbook], at one pace, in one classroom, for one hour," and describes this rut in which the traditional system is stuck.[17] In a time-based factory-model education system, students move through grade levels with varying amounts of learning with recorded grades of A-F without ensuring mastery. This all but guarantees that students will have significant gaps in core knowledge when they move from one grade level to the next. These disparities grow over time. When different levels of expectations are held for different students, the disparities grow larger, wider and deeper.

New personalized learning environments that are competency-based and student-centered help teachers identify the strengths of individual students and help meet kids where they are. They include assessments for learning with structured feedback to pupils, setting individual learning targets, planning to support individual needs, using data to dialog and diagnose each student's learning needs every day.

In our current, traditional educational system, there is a significant focus on old pedagogical models for delivering a one-size-fits-all lesson of grade-level content each day. The retrograde effects of accountability systems are perhaps most apparent in the challenges educators face across the United States to truly try to meet students where they are.

The research on how students learn examines how important it is to meet a student within their zone of proximal development, allow for productive struggle and design progressions effectively – where learning hinges on successful prior learning. A student's zone of proximal development is defined as the difference between what a learner can do without help and what he or she can do with help.[18] We know that when students are able to address prior gaps in their learning, they can accelerate their learning dramatically. As such, educators need to be able to scaffold instruction at the appropriate level as well as offering the supports and resources depending on student needs when delivering instruction. If our old pedagogical approaches force content to be traditionally delivered through one-size-fits-all approaches within age-based grade levels, we are not truly meeting students where they are. How do we advance equity in a system that approaches it with sameness in pedagogy? Is it fundamental to create equity through a foundation that is competency-based to ensure every student reaches mastery?

Meeting students where they are requires a true fundamental shift of the learning environment to become learner-centered and to be organized around mastery-based learning progressions across a continuum over time with opportunities for in-depth teaching and learning based on each student's goals and needs and providing extended learning opportunities and supports with flexibility. And, most importantly, competency-based systems require knowing where every student is academically and holistically and then making sure each student receives the instruction and support they need to build confidence, lifelong learning habits, knowledge, skills and competencies to be successful.

Advancing competency-based systems means meeting students where they are every day and engaging in a cycle of supporting learning academically, socially, emotionally and holistically. There are major challenges when students have moved through a time-based system with decent grades to find out when entering a competency-based educational model that they are several grade levels behind. How do we address these issues in the traditional system that leave students with major gaps in knowledge, skills and abilities, and a lack of preparedness based on the system's focus on drilling students forward with time-based (not learning-based) progressions?

The concept of "meeting kids where they are" is holistic and honestly addresses where they are in the learning progression. In a competency-based education system, it is important to develop the competence and confidence of each learner through teaching and learning strategies that build on individual needs and offer extended learning opportunities. Learning environments are learner-centered to accommodate different paces and styles of learning. Students build their own capacity and have to "learn to learn" lessons, thus becoming literate in the learning sciences and more knowledgeable about their own assessment literacy across the curriculum, too.

Competency-based education systems offer choice (every day) in order to engage and respect students' breadth of study and personal relevance with clear pathways through the system toward goals. These are more scaffolded in earlier levels of development and student agency is developed from early years with growing independent learning opportunities over time. The learning targets are consistent and set high goals for all students. The ethos is focused on student needs and provides student agency and voice in schools through a focus on data and continuous improvement, too. Knowing where every student is every day focuses on a whole new level of transparency for students, parents, educators, principals, schools and communities. It offers deep conversations about data-driven decisions every day.

Meeting kids where they are will catalyze new, sometimes radical approaches to organizing learning environments that challenge traditional schedules, course structures, and grade-levels. Learning is organized around mastery-based progressions and rooted in research on how students learn. Accelerated options are available and students can move on when ready. There are opportunities for deeper learning for every student.

Competency-based approaches which meet kids where they are provide learning opportunities beyond the classroom to best fit their needs and future interests. Communities, local institutions, social services, health providers, museums and the arts are supporting schools to drive forward progress of students. It includes extended learning opportunities within community-based institutions. Voice and choice are about engaging students in their own learning and shaping the provision of loosely networked educational opportunities, where students can partner to do internships or projects that matter in their communities and then schools will credential learning that occurs outside of the classroom. This will allow students to work toward developing their talents and building competence aligned with their future goals.

New systems of education to support competency-based approaches will begin to expand into networks of learning spaces and hubs – across programs, schools and institutions, where there is collaboration and knowledge building. This will require clarity of concepts for meeting kids where they are and common language including the understanding of new pedagogical models, tools, evidence-based practices, personalized learning and competency-based learning among professionals. Core to this work is the development of capacity for new models of assessments including authentic assessments, performance assessments, digital portfolios as well as the development of pedagogical innovations and better learning strategies.

Issue to Tackle: Building Teacher Professional Judgment

If we fail to invest in the capacity of educators– the people who can make the greatest difference in students' learning– we will do both teachers and students a grave disservice. We need to make a shift in how we think about teacher pre-service training and professional learning. It is not enough to rely on teachers' love of teaching, enjoyment of working with children, or subject expertise, particularly when they often must work in high-stakes, low-pay, and low-trust conditions. A passion for teaching is an important prerequisite, but it is not enough. Teachers in the U.S. are being trained and credentialed to deliver academic content with the goal of student proficiency on academic standards. More often than not, teachers are not gaining the skills to establish supportive learning environments with their students and engage students in the learning process before they get to the classroom. Building professional capacity in the educator workforce is the best thing we can do in the long term to ensure success for every student.

We need to be mindful of how we might consider building capacity in leaders and educators to lead the system transformation toward competency-based education. We should be driving toward a system that trusts teachers to exercise professional judgement about student learning, in which teachers are empowered and have the professional expertise and systemic supports to make valid and reliable determinations of student mastery. How would we redesign a system to foster better relationships across student, parent, family, community and state, and provide the data, transparency and reciprocal accountability to hold each other responsible? What role will teachers play in the development and implementation of new systems of assessments that actively support student learning?

TACKLING BUILDING TEACHER PROFESSIONAL JUDGMENT IN POLICY: TRANSFORMING SYSTEMS TO BUILD EDUCATOR CAPACITY

Transformation of K-12 education systems will also require transformation of educator preparation and development systems to themselves become personalized and competency-based. These new approaches to educator preparation and development will enable teachers to take on new roles as they work individually and collectively to design customized pathways to graduation for every student. To fully transform K-12 education systems to student-centered learning, we need to rethink the way we build educator capacity.

Rather than our nation's siloed systems of educator pre-service preparation, certification, professional development and evaluation, a competency-based system would provide a seamless continuum in which aspiring educators build and master instructional competencies, and upon entering the profession, access customized professional development and evaluation opportunities to ensure continuous improvement throughout their careers.

Ongoing, job-embedded, competency-based, and personalized professional learning must be at the heart of any system redesign. Pre-service training and professional learning cannot be siloed from new learning model designs, innovative pedagogical practices, personalized learning, systems of assessments, or accountability in a competency-based education system. The New Hampshire PACE[19] report examines "Balanced Systems of Assessments" and illustrates how coherent systems of assessments are as much about building capacity for teacher professional judgment and assessment literacy as they are for student learning. In doing so, New Hampshire is recognizing that teacher capacity, student capacity and student learning are inextricably linked. Teachers from the PACE pilot districts collaborate to develop the performance tasks that will be a part of the systems of assessments at statewide Quality Performance Assessment Institutes. Teacher teams score and moderate student work on the performance tasks, participating in a statewide Comparability Workshop to ensure that scores of student work are consistent across reviewers from different school districts.

Following are some issues that policymakers could be thinking about as they consider ways to develop systems that support teacher capacity and build trust that gives teachers space to exercise professional judgment.

System Coherence Around Clear, Specific Educator and School Leader Competencies

In competency-based and personalized education, educators often take on new roles as they work individually and collectively to design customized pathways to graduation for every student. Before a state can transform its pre-service preparation, certification, professional development, and evaluation programs to ensure educators have the support and resources to make this transition, educators need to know what they need to know and be able to do to succeed in student-centered learning environments.

State policymakers might think about how they can support educators, school leaders, institutions of higher education, and experts in the fields of competency-based education to collaboratively design and adopt these competencies. They will need to outline the skills educators need to implement personalized learning strategies to meet the needs of every student and to exercise professional judgment on student mastery. For school leaders, they will need to outline the skills for change management and creating positive cultures of learning within their schools, in addition to instructional leadership.

One example of an effort to define clear educator competencies was led by the Council of Chief State School Officers (CCSSO) and Jobs for the Future (JFF). CCSSO and JFF created a set of educator competencies based on four domains: cognitive (need to know), intrapersonal (need to process), interpersonal (need to relate) and instructional (need to do). These competencies represent some of the knowledge, habits, mindsets, and skills educators need to possess in order to foster personalized, student-centered learning.[20]

Clear definitions of what educators need to know and be able to do run parallel to the idea of a Profile of a Graduate for students, in the sense that the competencies should emphasize knowledge, skills and dispositions that will lead to lifelong career success. This learner-centered, competency-based approach to building skills for adults and educators with different roles across the system could be a powerful tool to drive coherence in the systems that build the educator leadership, educator workforce professional learning, and student success outcomes, including pre-service training, credentialing requirements, induction, professional development, evaluation, and career pathways.

Certification and Licensure Requirements, and Educator Pre-Service Preparation
Traditional educator certification and licensure requirements based on one-size-fits-all schooling models can make it difficult for states and districts to build a workforce prepared for leading, designing and implementing competency-based learning environments. Most educator credentialing requirements currently focus on traditional roles and skills that do not reflect the methods, strategies and dynamics within a competency-based learning system. Educator preparation programs focus on the nuts and bolts of state licensure and credentialing requirements, which is one reason why we are not seeing a rapid increase in the shift to the more innovative pedagogical approaches in next generation learning taking hold in pre-service educator preparation programs.

Two notable exceptions to this rule are Western Governors University and Southern New Hampshire University, which take a competency-based approach in their educator pre-service programs. Educators who come from these programs are more likely to be comfortable teaching in a competency-based learning environment because they have experienced it during their pre-service training.

In addition, certain school networks have created new pathways to certification and graduate degrees, to train teachers to succeed in their innovative learning models. High Tech High, for example, created an Intern Program and an Induction Program to create pathways to certification that align with the school network's emphasis on project-based learning. High Tech High then created a graduate school of education to teach experienced educators innovative learning strategies and how to apply these strategies in their schools and classrooms.

School leaders from Uncommon Schools, KIPP and Achievement First worked to develop the Relay Graduate School of Education program, which uses competency-based approaches for teachers and school leaders on how to develop the academic skills and character traits needed to succeed in college and life for all students.

Finally, the charter school management organization Match Education created the Sposato Graduate School of Education. Sposato offers a self-described "third way" for teacher preparation, combining the classroom-based training of traditional pre-service with intensive, ongoing residencies that put aspiring teachers into the classroom immediately, as with alternative certification routes such as Teach for America. According to the program's website, what is different about the program is that residencies are exclusively in the highest performing charter schools that serve the most disadvantaged students, and that "training is hyper-prescriptive and detailed regarding the nuances of great teaching. Our year of training allows for extensive practice and coaching, to the point where subtle teaching moves become automatic."[21]

Policymakers might consider how they can work together with school and district leaders, institutions of higher education and teacher preparation programs to better meet the needs of future-focused, competency-based systems in K-12 education and align certification, teacher licensure and accreditation.

In the long-term, there is a strong need to create an effective, coherent educator preparation system that prepares teachers for the realities of a competency-based system in K-12 education. States leading the way are beginning to encourage innovative approaches through pilots with competency-based districts and schools to design new program models that prepare teachers to meet the needs of all students. A final step will be to create pathways that are competency-based toward licensure and certification, then work with accrediting agencies to recognize these elements and promising practices for accrediting competency-based programs.

Creating Multiple, High-Quality Pathways to Educator Credentials and Development

In a competency-based system, students need multiple, high-quality pathways to high school graduation, higher education and workforce. In the same way, educators need multiple, high-quality pathways to credentials, advancement and development.

For pre-service training, policymakers can consider ways to leverage micro-credentials and other avenues to certify knowledge already gained through multiple pathways. Teaching candidates, through internships and community-based experience, could experience teaching hands-on, in controlled environments, to gain the skills they need to meet the needs of all students.

Teacher professional development should also be personalized, job-embedded, leveraging mentorships and positive relationships with other educators to create customized development pathways that are meaningful both to individual educators and meet system's needs.

Just like students, educators need an array of high-quality pathways to meet their personalized professional needs and to address the capacity needs of school systems. Micro-credentials, discussed in the next section, hold great promise for assessing and credentialing key competencies for teachers in student-centered learning systems.

Facilitating Differentiated Roles for Educators

In student-centered learning models, educators often take on new roles as they collaborate to design customized pathways to graduation for every student. State teacher credentialing structures are based on grade and content areas and do not account for new personalized, competency-based learning models where educator roles and responsibilities are differentiated to create flexible, dynamic systems able to meet the needs of every student.

For example, New Hampshire encourages local school districts to adopt policies that encourage extended learning opportunities (ELO) for learning outside of the traditional classroom, including apprenticeships, community service, online learning and internships.[22] To facilitate these extended learning opportunities, New Hampshire school districts have created a new ELO Coordinator role that is distinct from the roles of classroom teachers or facilitators. Other examples of expanded or differentiated roles and functions for educators include subject matter experts across grade levels (such as math specialists for learning progressions), personalized learning instructional coaches, team teaching, coordinating specialized learning spaces such as makerspaces, teaching across multiple grades and content areas, and creating teacher leadership roles and pathways.

As policymakers seek to increase educator capacity to transform learning environments, they need to examine adult deployment strategies as well. Policymakers could collaborate with leading school leaders to identify those policy structures, like credentialing based on content area and grade, that can impede the proliferation of educator roles.

Micro-Credentials

Micro-credentials are a tool to make educator preparation and development systems competency-based, personalized and relevant to systems' and teachers' needs. They hold great potential to transform the systems that develop educator capacity. Micro-credentials are competency-based credentials for professional learning that hold great potential to build the knowledge, skills and abilities to transform the system toward competency-based learning.

Micro-credentials are related to badging that recognizes demonstrated mastery of knowledge and skills - it helps to allow for modularity in the design of learning experiences to build educator capacity in a more flexible way and certify credit for the learning outcomes. States and districts are exploring personalized approaches to offering professional development that provide recognition of new knowledge, skills, and abilities through micro-credentials and badging. Future-focused states might consider how to think differently about credentialing and licensure policies to become competency-based around recognizing what educators know and are able to do. Micro-credentials also add value to conversations that explore how to differentiate teacher roles, offering accessible pathways for educators to gain the competencies they need for their specific role.

According to Digital Promise,[23] the four key characteristics of micro-credentials are:

> ❯ **Competency-Based:** They require educators to demonstrate their competence in discrete skills in their practice — either inside or outside the classroom;
> ❯ **Personalized:** Teachers select micro-credentials to pursue — based on their own needs, their students' challenges and strengths, school goals, district priorities, or instructional shifts;
> ❯ **On-Demand:** Educators can opt to explore new competencies or receive recognition for existing ones on their own time, using an agile online system to identify competencies, submit evidence, and earn micro-credentials; and
> ❯ **Shareable:** Educators can share their micro-credentials across social media platforms, via email, and on blogs and résumés.

Policymakers might begin to think about how micro-credentials could be used to transform the continuum of teacher professional learning, building capacity to transform learning environments to meet the needs of every student.

MICRO-CREDENTIALS: USHERING IN TEACHER-DRIVEN PERFORMANCE ASSESSMENTS IN THE AGE OF ESSA

By Barnett Berry, CEO & Partner, Center for Teaching Quality
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Our nation's public schools are now ready to capitalize on teacher-driven performance assessments. The Every Student Succeeds Act (ESSA) — enacted in late 2015 — has spurred one-size-fits-all federal accountability policy while fueling innovative and locally-derived measures of student learning. The student testing demanded by ESSA is reminiscent of the portfolio assessments of the late 1980s and early 1990s. But those reforms faltered, in part, because our nation's pre- and in-service prep programs have typically shortchanged teachers' assessment design and analysis skills. However, new opportunities abound with an emerging competency-based approach to teachers' professional learning—micro-credentials—which could support practitioners to ramp up their performance assessment skills with efficiency and rigor.

The emerging micro-credential movement

Over the past two years, the nonprofit organization Digital Promise has been building an ecosystem to advance the design, development, and implementation of research-backed, evidence-based micro-credentials. And with good reason. In a recent national survey, Digital Promise found that only one in five teachers are satisfied with their current PD experiences, while 72 percent are already engaged in informal learning.

Rather than focusing on "seat time" in traditional PD workshops, micro-credentials are awarded based on the evidence of a teacher's learning (which might include portfolios, video, student work, observations, etc.). Each micro-credential spells out the competency, recommended methods of learning, related research and resources, the type(s) of evidence to submit, and the relevant rubric and scoring guide. This approach personalizes educators' learning, is available on-demand, and provides practitioners with a digital badge they can display. (See Digital Promise video here.)

Dozens of organizational partners with content expertise, including the Center for Teaching Quality (CTQ), have developed more than 120 micro-credentials to address a variety of educator skills and competencies. These are available through an online platform that facilitates selection, submission, assessment, and awarding.

The performance assessment connection

The Center for Collaborative Education and Center for Teaching Quality, in collaboration with the Rhode Island Department of Education, are creating a stack of micro-credentials to develop and assess the leadership skills of teachers who can effectively lead new student performance reforms. Funded by a

start-up grant from the Center for Innovation in Education (CIE), in partnership with Next Generation Learning Challenges (NGLC), we have convened a team of teachers from ten Rhode Island schools to develop three micro-credential "stacks" that address:

» Designing valid and reliable performance assessment tasks;
» Embedding, instructing, and assessing habits and dispositions; and
» Building and leading a performance assessment learning community.

Teachers who pursue these micro-credentials will develop portfolios of evidence indicating their performance assessment expertise.

Still, more work needs to be done.

States can begin to recognize micro-credentials for relicensure credit and establish virtual networks for teachers to learn from each other in earning them. Districts can transfer a portion of their PD dollars to teachers in support of their earning micro-credentials in the growing marketplace of professional learning. And unions can advance new collective bargaining agreements that create time, and reward teachers, for spreading their expertise through micro-credentials.

We can seize the opportunity ESSA has presented to assemble powerful measures of deeper learning outcomes. As high stakes, multiple choice testing makes its exit, let's create the infrastructure that equips teachers to build and sustain the 21st-century accountability system that all students deserve.

Barnett Berry is founder and CEO of the Center for Teaching Quality (CTQ), which launched the nation's first virtual network of teacher leaders in 2003. The CTQ Collaboratory now includes more than 11,000 members — fueling unique opportunities for teachers to lead boldly without leaving the classroom. Barnett is a former classroom teacher, think tank analyst, senior state education agency policy leader, and university professor. His two books, TEACHING 2030 and Teacherpreneurs: Innovative Teachers Who Lead But Don't Leave, frame a bold vision for the profession's future. Follow Barnett and CTQ on Twitter: @BarnettCTQ and @teachingquality.

Cross-Cutting Policy Strategy: Building Capacity to Lead Change

As we have discussed above, human capital is a critical element of transforming K-12 education systems for the long term. Systems transformation will not happen overnight, nor will it happen by default. Indeed, the shift to personalized, competency-based K-12 education systems will require bold leadership. We need leaders in schools, districts, and states, who are willing to challenge the status quo and provide the cover that their subordinates and communities will need to take risks. Policymakers could be thinking about how the state can play a role in fostering the development of a new generation of change agents and educator leaders. Local districts who are leading the way in the development of personalized, competency education models have the potential to play a critical role in the creation of new leadership pipelines.
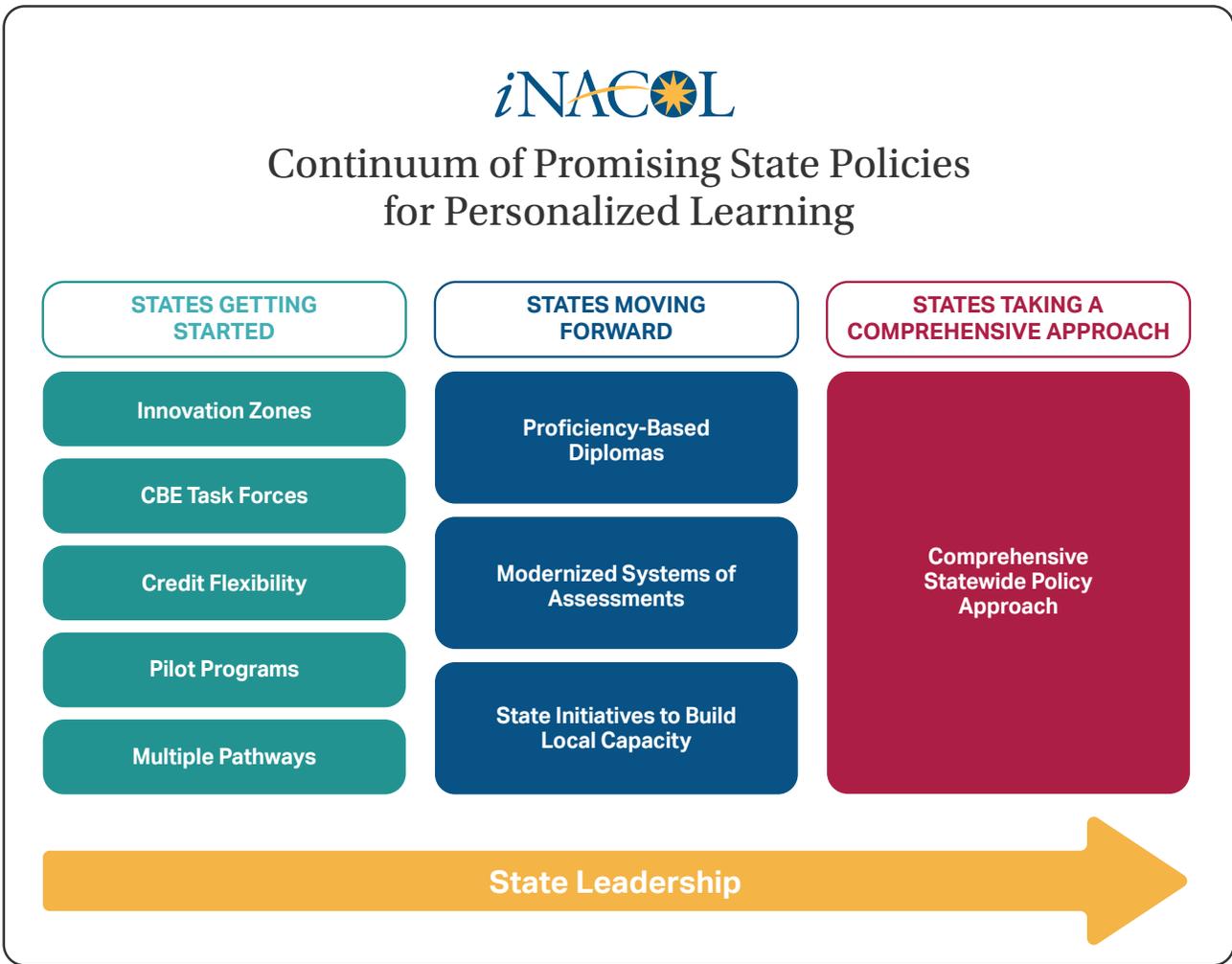
Moving from "What Are Threshold Concepts?" in Competency-based Education System Design to "How to Create a Long-Term Strategy" to Support a Fully-Developed CBE System

Many of the concepts outlined in the above section are still nascent today in competency-based education models in the United States. While innovators are beginning to develop more competency-based systems, many early practices and models are still rooted in traditional time-based systems and constrained by our short-term approaches to incremental policy reforms and limited concepts of what is possible.

It is very important to recognize that innovators designing competency-based education models may get started within the current K-12 education policy environments, but in order to have a fully developed competency-based education system, the difficult areas of how to build a system designed for every child's success, with meaningful qualifications aligned across K-12, higher education and workforce systems and building trust and capacity across the system, must be addressed with a long-term theory of change and long-term strategies with significant state policy considerations.

III. Ways That States Are Beginning the Shift to Competency-Based Education

There are many different entry points for policymakers wishing to enable the shift to a more personalized, competency-based K-12 system in their state. States that do not yet have any enabling policies in place may wish to take one or two incremental, initial steps to create space for new learning models, while a state that already has made some progress may be contemplating some bolder, more comprehensive steps toward transformation. The graphic below summarizes the different entry points that policymakers could discuss to catalyze transformation of K-12 education in their state, with varying levels of state leadership:

iNACOL

Continuum of Promising State Policies for Personalized Learning

STATES GETTING STARTED	STATES MOVING FORWARD	STATES TAKING A COMPREHENSIVE APPROACH
Innovation Zones	Proficiency-Based Diplomas	Comprehensive Statewide Policy Approach
CBE Task Forces	Modernized Systems of Assessments	
Credit Flexibility		
Pilot Programs	State Initiatives to Build Local Capacity	
Multiple Pathways		

State Leadership →

We will not attempt to thoroughly discuss each entry point in this paper, however, we will highlight the promising policies most states are starting with in their journeys. The iNACOL report, *Promising State Policies for Personalized Learning*,[24] goes into each of these policy levers, with examples of specific policies and practices that are active in different states.

INNOVATION ZONES

Innovation zones and competency-based education pilots are two promising entry points for states to create space for personalized, competency-based learning models.

State policymakers can help to catalyze personalized, competency-based learning by creating innovation zones. This policy strategy creates room for districts and schools to develop new learning models by identifying state policy and regulatory barriers, and offering waivers and exemptions from certain administrative regulations and statutory provisions.

State policy leaders create innovation zones to provide district and school leaders with the flexibility they need to innovate and develop new personalized learning models. Innovation zones offer state education policy waivers in order to support practitioners in the process of developing and implementing new learning models. Innovation zones serve the state in providing a safe place to identify potential policy barriers to innovation and also serve the district well in having a method to quickly address and remove policy barriers to better serve students.

For example, in Arkansas, state law allows a school district to petition the State Board of Education for all or some of the same waivers granted to an open-enrollment public charter school. This is enabling innovative Arkansas district leaders to implement personalized, competency-based learning models.

COMPETENCY-BASED EDUCATION PILOTS

State policymakers can also consider launching pilots to help launch small-scale, short-term programs that localities use to determine how a larger program might work in practice and go to scale. While innovations in schools are taking hold across a state, it is helpful for policymakers to support collaboration across pilots to help bring together innovative practitioners and educators to build capacity, to share lessons learned, and to address the changes needed in instructional methods. Pilot programs are one way to connect and support innovators to plan, implement, and ultimately scale high-quality competency-based education practices and systems.

Pilots are generally limited to a specified number of districts, and they are created to enable innovative educators to begin designing new learning models. A state educational agency may use pilots to identify which educators, leaders and localities are ready to move forward with personalized learning innovations. Pilots often help educators work through planning stages, identify core design elements, communicate about what competency-based education systems look like and how they work, build educator capacity for assessing performance tasks as students create evidence of mastery, and fine tune strategies that cohesively work together to create a true mastery-based system through exhibitions of student work.

State leaders are creating pilots for personalized learning and competency-based pathways to build capacity and support educators at the district and school levels for promoting student success. As a strategy to catalyze the development of new programs, states are shifting from a culture of compliance to one of cultivating innovation in an effort to support district and school leaders creating powerful, personalized learning experiences to meet each student's needs. Ohio, Utah, and Idaho are a few of the states that have recently launched competency-based education pilots.

IV. Charting the Course

How we might begin to take action in working toward a long term vision for policy at the National Summit on K-12 Competency Based Education? In this paper, we have introduced the threshold concepts that policymakers need to grasp in order to support the shift at scale to student-centered, competency-based learning. We have also discussed issues to tackle in policy to begin to address these threshold concepts.

At the Summit, it is our hope to discuss the ideas in this paper, to reflect on gaps and challenges, and to develop a strategy for engaging with state policymakers around a set of short- and long-term goals that point toward coherent, sustainable systems change for personalized, competency-based learning.

The following are some questions to spark discussion as we consider future actions that advance us toward a system fit for purpose:

1. How do we build awareness and understanding of threshold concepts for policymakers and practitioners alike? How do we begin to take action on the issues that need tackling in policy? What is the next step for policymakers? In particular how might we talk about the opportunities for building toward long-term systems change through ESSA state plans?

2. Are there issues missing, gaps, or areas we need to further develop?

3. How might we collectively develop a theory of change for the field of K-12 education for the long-term?

4. What are the implications of the changing dynamics between federal and state roles in education on developing a vision for the long term?

V. Conclusion

The goal of this paper has been to identify threshold concepts for competency-based education and developing a better understanding of issues that need to be addressed in policy over a long-term strategy. Education systems need to be designed with coherence around what students will need to know and be able to do to succeed in postsecondary education, the workforce, and civic life. Content delivery of basic skills such as reading, language arts and mathematics is necessary but no longer sufficient. Structures based on seat-time which result in awarding credit to students with minimum time exposed to content, rather than based on learning and mastery of the knowledge and skills necessary for postsecondary success and future career readiness or employability, are perpetuating entrenched inequities, harming the students that our education systems continue to leave behind. Changing structures to competency-based education systems requires significant shifts in policy in the long-term to support fully developed personalized, competency-based models. The change to competency-based education systems is necessary to drive equity, transparency, the ability for meeting kids where they are, ensuring they are learning how to learn and developing the knowledge, skills and abilities they will need for future success.

Just as we want our students to grow into lifelong learners, policymakers could approach this challenge with a growth mindset, and with curiosity around the research on how students learn best and how youths develop.

Central to all conversations around transformation of K-12 education systems should be a steadfast commitment to equity, addressing structures that perpetuate racism and other bias. We need to be thinking differently about the theory of action that drives pedagogy, grading, transcripts, strategies and methods. The design flaw at the heart of the traditional system is the idea that students must be compared against each other, rather than against the outcomes. Success needs to be seen as inevitable with the right supports, rather than as a privilege that must be rationed and hoarded by an elite few.

ESSA gives states an incredible opportunity to start to change the conversation around what is truly possible if we focus on learning and meet each student where they are. While it may not be possible to effect this transformation over the course of months or even a few years, keeping the long-game in mind with a commitment to coherence in planning short-term tactics, will be essential to getting there over time.

Resources

Accountability
- Accountability for College and Career Readiness Developing a New Paradigm (51st State Paper) by CIE and Stanford Center for Opportunity Policy in Education.
- Pathways to Accountability through the Every Student Succeeds Act by the Learning Policy Institute.

Competency-Based Systems
- Competency Education Can Address Readiness Gaps-But Not Alone by Jobs for the Future.
- Cracking the Code by *Competency*Works, iNACOL and CCSSO.
- Equity in Competency Education: Realizing the Potential, Overcoming the Obstacles by Jobs for the Future.
- Expanding Student Success: A Primer on Competency-Based Education by NGA.
- Making Mastery Work by the Nellie Mae Education Foundation.
- The Past and the Promise: Today's Competency Education Movement by Jobs for the Future.
- Policy, Pilots, and the Policy, Pilots and the, Path to Competency-Based Education: A Tale of Three States by the Foundation for Excellence in Education.
- Reaching the Tipping Point: Insights on Advancing Competency Education in New England by *Competency*Works.

Educator Preparation, Development and Leadership
- Laying the Foundation for Competency-Based Education: A Policy Guide for the Next Generation Educator Workforce by KnowledgeWorks and iNACOL.
- Educator Competencies for Personalized, Learner-Centered Teaching by Jobs for the Future.
- Leadership for Learning: What is Leadership's Role in Supporting Success for Every Student? by the National Center for Innovation in Education.

Every Student Succeeds Act
- Every Student Succeeds Act, U.S. Department of Education Website.
- Expanding Equity: Leveraging ESSA to Provide Direct Student Services by Chiefs for Change.
- Meeting the Every Student Succeeds Act's Promise by iNACOL.

Federal Policy
- K-12 Federal Policy Framework for Competency Education by iNACOL.
- Embracing the Opportunity: Recommendations for Scaling Personalized Learning Under a New Presidential Administration by KnowledgeWorks.

General
- A State Policy Framework for Scaling Personalized Learning by KnowledgeWorks.
- Breakthrough Learning: Using Learning Science to Reboot Schooling, by Saxberg and Hess.
- Education Reimagined by Convergence.
- Great Schools Partnership Resources.

- Innovation Zones: Creating Policy Flexibility for Personalized Learning by iNACOL.
- Promising State Policies for Personalized Learning by iNACOL.
- Students at the Center Hub, Jobs for the Future.
- The Glossary of Education Reform, Great School Partnership.

International Perspective
- Rethinking Education by UNESCO.
- Schooling Redesigned: Towards Innovative Learning Systems by OECD.
- The New Zealand Curriculum, New Zealand Ministry of Education.
- New Zealand Education Review Office.

Stakeholder Engagement
- ESSA New Mexico Stakeholder Input Toolkit by the New Mexico Learning Alliance.
- Let's Get This Conversation Started: Strategies, Tools, Examples and Resources to Help States Engage with Stakeholders to Develop and Implement their ESSA Plans by CCSSO.
- Collaborative Stakeholder Engagement by the Education Commission of the State.

Systems of Assessments
- Innovative Assessments by KnowledgeWorks and the Center for Assessment.
- Synergies for Better Learning: An International Perspective on Evaluation and Assessment by OECD.
- Performance Assessment for Competency-based Education (PACE), New Hampshire Department of Education Website.
- Comparability in Balanced Assessment Systems for State Accountability by Carla M. Evans, Susan Lyons, & Scott Marion, National Center for the Improvement of Educational Assessment.
- Addressing Accountability Issues Including Comparability in the Design and Implementation of an Innovative Assessment and Accountability System, by KnowledgeWorks, National Center for the Improvement of Educational Assessment, and the Nellie Mae Education Foundation.
- Scoring and Evaluation, by the Stanford Center for Assessment, Learning and Equity.
- Assessment for Learning Project, Center on Innovation in Education (CIE).

Glossary

Assessment literacy

Assessment literacy is the collection of knowledge and skills associated with appropriate assessment design, implementation, interpretation, and, most importantly, use. A critical aspect of assessment literacy is that educators and leaders know and to create and/or select a variety of assessments to serve different purposes such as improving learning and teaching, grading, program evaluation, and accountability. However, the most important component of assessment literacy is the degree to which educators and others are able to appropriately interpret the data coming from assessments and then take defensible instructional or other actions.

Calibration

Calibration is a process of adjusting results based on a comparison with a known standard or "calibration weight" in order to allow defensible comparisons of student assessment results, for example, across different entities (e.g., schools, districts, states). In order to define a calibration weight, we need to have something in common, either the same students taking different assessments or different students taking the same assessments. The latter is generally more practical so common performance tasks have been administered to students in different schools and districts as performance assessments to serve as a "calibration weight" to evaluate the extent to which teachers in different locales evaluate the quality of student work similarly.

Comparability

Comparability is defined as the degree to which the results of assessments intended to measure the same learning targets produce the same or similar results. This involves multiple levels of documentation and evaluation starting from the consistency with which teachers in the same schools evaluate student work similarly and consistently, to the degree to which teachers in different schools and districts evaluate student performances consistently and similarly, and finally the degree to which the results from students taking one set of assessments can be compared to students taking a different set of assessments (such as comparing pilot and non-pilot districts). A determination of "comparable enough" for any type of score linking should be made based on clear documentation for how comparability is determined and that it is defensible.

Competency-Based Education

Competency education, also known as mastery-based, proficiency-based or performance-based, is a school- or district-wide structure that replaces the traditional structure to create a system that is designed for students to be successful (as compared to sorting) and leads to continuous improvement. In 2011, 100 innovators in competency education came together for the first time. At that meeting, participants fine-tuned a working definition of high quality competency education which includes five elements:

- Students advance upon demonstrated mastery.
- Competencies include explicit, measurable, transferable learning objectives that empower students.
- Assessment is meaningful and a positive learning experience for students.
- Students receive timely, differentiated support based on their individual learning needs.
- Learning outcomes emphasize competencies that include application and creation of knowledge, along with the development of important skills and dispositions.

Continuum or Learning Continuum

A continuum refers to the set of standards or learning targets along a span of education (for example, K-12 or performance levels 9-12). It is the set of expectations for what students should know and be able to do. However, it does not imply that students need to learn all of the standards in a linear way or be taught them based on their age-based grade level. The student learning trajectory and research on learning progressions should inform instruction.

Curriculum

There are many definitions of curriculum in education. Internationally, the term curriculum or curriculum frameworks refers to the high level knowledge and skills students are expected to learn and describe, i.e. competencies. The curriculum framework may include student learning objectives or learning standards.

In the U.S., the term curriculum also refers to the resources that teachers use when designing instruction and assessment to support student learning including: the course syllabi, units and lessons that teachers teach; the assignments and projects given to students; the materials (books, videos, presentations, activities) used in a course, module or unit; and the assessments used to evaluate student learning and check for understanding. *Competency*Works will use the term learning experiences to refer to the design of the learning process and the accompanying set of resources to support student learning.

Culturally Responsive Teaching

First coined by Gloria Ladson-Billing in 1944, culturally responsive teaching is the pedagogical practice of recognizing, exploring and responding to students' cultural contexts, references, and experiences. Cultural responsiveness builds upon eight principles:
1. Communication of High Expectations.
2. Active Teaching Methods.
3. Practitioner as Facilitator.
4. Inclusion of Culturally and Linguistically Diverse Students.
5. Cultural Sensitivity.
6. Reshaping the Curriculum or Delivery of Services.
7. Student-Controlled Discourse.
8. Small Group Instruction.

The New York City Mastery Collaborative highlights that a competency-based approach can promote cultural responsiveness in the following ways:
- *Transparency*: path to success is clear and learning outcomes are relevant to students' lives and interests. Shared criteria reduce opportunity for implicit bias.
- *Facilitation shifts* refocus the roles of students and teachers to include flexible pacing, inquiry-based, collaborative approach to learning. Students drive their own learning, and teachers coach them.
- *Positive learning identity*: growth mindset and active learning build agency and affirm students' identities as learners (academics, race, ethnicity, gender, sexual orientation, etc.

Deeper Learning

The term deeper learning is often used to describe highly engaging learning experiences in which students apply skills and knowledge and build higher order skills. The Hewlett Foundation defines deeper learning as six competencies: Master core academic content; Think critically and solve complex problems; Work collaboratively; Communicate effectively; Learn how to learn and Develop academic mindsets. Deeper learning intersects with competency-based education in multiple ways including defining the learning outcomes, emphasis on lifelong learning skills such as academic mindset and learning how to learn; and importance of applying skills and knowledge to build competencies.

Educational Equity

There are many definitions of equity in education. *Competency*Works will use the definition from the National Equity Project:

> Education equity means that each child receives what he or she needs to develop to his or her full academic and social potential. Working towards equity involves:
> 1. Ensuring equally high outcomes for all participants in our educational system; removing the predictability for success or failures that currently correlates with any social or cultural factor,
> 2. Interrupting inequitable practices, examining biases, and creating inclusive multicultural school environments for adults and children, and
> 3. Discovering and cultivating the unique gifts, talents, and interests that every human possesses.

Equality

Equality is related to the principles of fairness and justice. It refers to equal treatment and, in the past has been used to refer to equal inputs. *Competency*Works uses the term equality as an aspirational goal of all students reaching their full potential.

Fixed Mindset (See Growth Mindset)

Carol Dweck's research suggests that students who have adopted a *fixed mindset* — the belief that they are either "smart" or "dumb" and there is no way to change this, for example — may learn less than they could or learn at a slower rate, while also shying away from challenges (since poor performance might either confirm they can't learn, if they believe they are "dumb," or indicate that they are less intelligent than they think, if they believe they are "smart"). Dweck's findings also suggest that when students with fixed mindsets fail at something, as they inevitably will, they tend to tell themselves they can't or won't be able to do it ("I just can't learn Algebra"), or they make excuses to rationalize the failure ("I would have passed the test if I had had more time to study"). (Adapted from the Glossary of Education Reform edglossary.org)

The traditional system of education was developed based upon a fixed mindset and resulted in a belief that part of the K-12 system's function was to sort students.

Growth Mindset (See Fixed Mindset)

The concept of a *growth mindset* was developed by psychologist Carol Dweck and popularized in her book, *Mindset: The New Psychology of Success*. Students who embrace growth mindsets — the belief that they can learn more or become smarter if they work hard and persevere — may learn more, learn it more quickly, and view challenges and failures as opportunities to improve their learning and skills. Dweck's work has also shown that a "growth mindset" can be intentionally taught to students. (Adapted from the Glossary of Education Reform edglossary.org)

Competency education is grounded in the idea that all students can succeed with the right supports including learning how to have a growth mindset.

Habits of Work/Habits of Mind

Habits of work and habits of mind are directly related to the ability of students to take ownership of their learning and become self-directed learners. There are a variety of Habits of Work (specific practices or behaviors) and Habits of Mind (skills, perspectives, and orientation) that help students to succeed in school or the workplace. Schools tend to focus on a few of the habits of work and mind to help students learn the skills they need to take ownership of their learning. See Learning and Leading with Habits of Mind.

Higher Order Skills/Deeper Learning Competencies

Higher order skills refer to skills needed to apply academic skills and knowledge to real-world problems. The term can refer to the higher levels on Bloom's or Webb's taxonomy or to a set of skills such as creativity, critical thinking, problem-solving, working collaboratively, communicating effectively, and an academic or growth mindset.

Learning Resources

The materials explored during a course, module, unit or activity: videos, images, audio, texts, presentations, etc.

Learning Experiences

The term *learning experiences* is used to convey the process and activities that students engage in to learn skills and knowledge. The term refers to the package of outcomes and targets, activities, resources, assessments, and pedagogical strategies that are associated with a course, module or unit. In the U.S., this is generally referred to as curriculum (See definition of Curriculum).

Learning Progression

Learning progressions are research-based approaches and maps how students learn key concepts and skills as described in Achieve's briefing The Role of Learning Progressions in Competency-Based Pathways.

Learning Sciences Research

The learning sciences are concerned with "the interdisciplinary empirical investigation of learning as it exists in real-world settings."[25] Core components of learning sciences research include:

- Research on thinking: including how the mind works to process, store, retrieve, and perceive information;
- Research on learning processes: including how people use "constellations of memories, skills, perceptions, and ideas" to think and solve problems, and the role that different types of literacies play in learning; and
- Research on learning environments: including how people learn in different contexts other than a direct instruction environment with a core principle of creating learner-centered learning environments.[26]

Lifelong Learning Skills

In the paper Lifelong Learning Skills for College and Career Readiness: Considerations for Education Policy, AIR describes lifelong learning skills as providing "the foundation for learning and working. They broadly support student thinking, self-management, and social interaction, enabling the pursuit of education and career goals." *Competency*Works uses the term to capture the skills that enable students to be successful in life, navigating new environments, and managing their own learning. This includes a growth mindset, habits of work, social & emotional skills, metacognitive skills, and higher order/deeper learning competencies.

Moderation

Moderation is a process used to evaluate and improve comparability. The process involves having teachers (or others) work to develop a common understanding of varying levels of quality of student work. Moderation processes are often used as part of calibration, but moderation is a way to evaluate comparability while calibration is the adjustment based on these findings.

Personalized Approach to Learning or Personalized Learning
iNACOL defines personalized learning as "tailoring learning for each student's strengths, needs and interests – including enabling student voice and choice in what, how, when and where they learn – to provide flexibility and supports to ensure mastery of the highest standards possible." Personalized learning takes into account students' differing zones of proximal development with regards to academic and cognitive skills, as well as within the physical, emotional, metacognitive, and other domains.

Barbara Bray and Kathleen McClaskey explain in the PDI Chart that personalized learning is learner-centered where the related approaches of differentiation and individualization are teacher-centered. Thus, teachers may use a personalized and differentiated approach to meet students where they are.

Social and Emotional Learning
According to CASEL, "social and emotional learning (SEL) is the process through which children and adults acquire and effectively apply the knowledge, attitudes, and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions." They focus on the development of five competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making.

Student Agency
Student agency or student's ownership of their education refers to the skills and the level of autonomy that a student has to shape their learning experiences. Schools that want to develop student agency will need strategies to coach students in the lifelong learning skills (growth mindset, metacognition, social & emotional learning, and habits of work & learning) and establish practices that allow students to have choice, voice, opportunity for co-design and shape their learning trajectories.

Student Learning Trajectories
*Competency*Works refers to trajectories as the unique personalized paths each student travels to achieve learning goals on the way to graduation. Educators apply what is known about learning progressions toward helping students make progress on their trajectory.

Universal Design for Learning (UDL)
CAST defines Universal Design for Learning as "a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn." UDL guides the design of instructional goals, assessments, methods, and materials that can be customized and adjusted to meet individual needs.

Zone of Proximal Development (ZPD)
A term developed by psychologist Lev Vygotsky to refer to the moment(s) during the learning process that lives between what one can do on one's own and what one cannot do at all. It is the zone in which guidance and support is needed in order to become independently competent. A personalized approach to learning provides students with access to learning experiences attuned to students' individual ZPD - which sometimes overlaps with others', but frequently may not.

Endnotes

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2. The Nation's Report Card. The National Assessment of Educational Progress (NAEP), (2015). https://www.nationsreportcard.gov/.

3. *The State of American High School Graduates: What States Know (and Don't) About Student Performance* Achieve, February 2017. https://www.achieve.org/state-profiles.

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5. Jan H. F. Meyer, Ray Land, & Caroline Baillie. *Threshold Concepts and Transformational Learning.* Sense Publishers, 2010. https://www.lamission.edu/learningcenter/docs/1177-threshold-concepts-and-transformational-learning.pdf.

6. Internationally, the term curriculum redesign refers to the education system's core values for what a student needs to know and be able to do and involves rethinking approaches to curriculum outcomes, standards, competencies, objectives, and content. In the United States, the term curriculum typically refers to the scope and sequence of learning objectives and learning materials related to a particular class or subject, and generally in relation to a specific grade level. It is locally controlled and due to the strong state role in education and prohibitions on the Federal Government weighing in on curriculum, tends to be a "third rail" in education policy conversations.

7. National Qualifications Framework wikipedia entry, 2017. https://en.wikipedia.org/wiki/National_Qualifications_Framework#cite_note-1.

8. According to UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training (2010), a Qualifications Framework is "the structure into which accredited qualifications are placed. This allows learners, training providers and employers to gain information about the broad equivalence of qualifications." http://www.unevoc.unesco.org/go.php?q=Qualifications%20Framework.

9. For example, Lumina Foundation created the "Degree Qualifications Profile" that defines what students should know and be able to do to receive an associate, bachelor, and master degree. Lumina also aligned K-12 learning outcomes from Common Core State Standards to its Degree Qualifications Profile by proposing a set of reference points that benchmark what it should take for students to graduate, earn a degree at each of the three levels addressed, and transfer those skills to a future career. David T. Conley, & Paul L. Gaston. *A Path to Alignment: Connecting K-12 and Higher Education via the Common Core and the Degree Qualifications Profile.* Lumina Foundation of Education, 2013. http://degreeprofile.org/wp-content/uploads/2015/04/A_path_to_alignment.pdf.

10. Correspondence with Scott Marion, Center for Assessment, May 5, 2017.

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