CompetencyWorks

National Summit on K-12 Competency-Based Education

In Search of Efficacy: Defining the Elements of Quality in a Competency-Based Education System

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

WRITTEN BY:

Chris Sturgis

WITH CONTRIBUTIONS FROM:

Natalie Abel

iNACOL

In Search of Efficacy: Defining the Elements of Quality in a Competency-Based Education System

WRITTEN BY:
Chris Sturgis
WITH CONTRIBUTIONS FROM:
Natalie Abel

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

June 2017

This paper has been a collaborative effort informed by the expertise, insights and experiences of Jan Bermingham, Elaine Berry, Mandi Bozarth, Harvey Chism, Carisa Corrow, C. Wesley Daniel, Theresa Ewald, Pat Fitzsimmons, Amy Fowler, Cynthia Freyberger, Thomas Gaffey, Laurie Gagnon, Jim Goodell, Renee Hill, Sue Lanz, Paul Leather, Kathleen McClaskey, Joy Nolan, Alfonso Paz, Karla Phillips, Alexandra Pritchett, Jeff Renard, Tom Rooney, Bror Saxberg, Andrea Stewart, Circe Stumbo, Vincent Thur, Jonathan Vander Els, Glenda Weber.

We want to take this opportunity to thank the generosity and leadership of our funders. The support and partnership of the Nellie Mae Education Foundation, Carnegie Corporation of New York, Barr Foundation, Donnell-Kay Foundation, and Chan Zuckerberg Initiative are invaluable.

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

TABLE OF CONTENTS

I. Introduction: Three Driving Questions Toward Quality

This paper seeks to explore three questions related to defining what high quality means in a competency-based district or school.

1 What are the common elements of the structure in competency-based schools?

This section begins with breaking schools into four components: structure, culture, learning and teaching, and learning experiences. Although the working definition has been helpful in engaging people in what it means to be competency-based (and at the Summit, we will be seeking ideas about how to strengthen the working definition), it has not provided an operational explanation of a competency-based structure. The goal is to provide more definition to what it means to have a competency-based structure. If some of the features of the traditional system include creating barriers to learning or perpetuating inequity, they must be eliminated and replaced with something else. In order for us to be able to describe quality, it requires us to be more clear about the structural components.

2 What are the features one might expect to see in a high quality competency-based school?

In this section, we will consider initial ideas of how quality might be defined in a competency-based system given that there are a number of models. The discussion of nine domains of competency-based structure offers key questions that might be asked on a site visit to understand the design and features, as well as "look-fors" and examples that would lead to a high quality structure.

It is nearly impossible to talk about quality features of a competency-based learning system in a district or school without touching upon the overall personalized learning approaches and instructional strategies. Although we attempt to frame competency education as a structure, personalized learning as an overall approach, and pedagogical principles as the theory of action about learning and teaching, there are certainly places where they overlap. Thus, this work requires disentangling structure from approach and pedagogy while also understanding how they intersect and reinforce one another.

3 What are the approaches that can be used to promote quality in a competency-based system?

In the final section, four approaches are explored that could be used as strategies to improve quality – outcomes, processes, design, and quality reviews – with the understanding that they are not mutually exclusive. It also includes an extensive discussion on college and career readiness given its importance in shaping graduation outcomes. The hope is that the Summit discussion might produce recommendations on how we, as a field, can develop a strategy to accelerate the process for districts and schools to implement high quality competency-based systems.

As in the other papers introduced at the National Summit on K-12 Competency-Based Education, we do not seek to address and resolve every question. Our hope is to draw upon the collective knowledge of practitioners and others with valuable expertise to build emerging ideas that can be considered at the Summit. Please see the paper *An Introduction to the National Summit on K-12 Competency-Based Education* for a glossary of terms used in this paper.

II. Why Focus on Quality?

Efficacy, the degree to which something is successful in producing a desired result, is at the heart of competency-based education. After centuries of educating America's children in schools that are designed to sort students, we are shifting from the traditional one-size-fits-all system and replacing it with a system that personalizes learning within a competency-based structure to ensure that every student is making progress toward college and career readiness (academic, higher order, and lifelong learning skills). In other words, competency-based education seeks to create a system that effectively supports students to learn to high expectations – not for some, but for every student.

We all share a sense of urgency that we must do better for our students and for the sustainability of competency education. However, there is a risk to creating a sustainable effort, if, as a field, we can't define quality. Simply describing a school as "competency-based" doesn't indicate that the approach includes all of the critical features, or that it has been designed with high quality or implemented with fidelity. There is no reason to believe that districts and schools will see improved student achievement if a piecemeal approach is used or there is low quality implementation. Creating a way to build and share knowledge about quality design and implementation is essential.

The challenge, of course, is that there is inadequate understanding of the necessary structural components of competency education. In this paper, the competency-based structure is the set of processes, policies, and mechanisms that ensure every student is making progress and that personalized learning approaches don't result in different, and inequitable, expectations.

It is also going to be challenging to define quality. Although competency-based education is based on research about motivation, engagement, and learning,[1] a body of research and evaluation on competency education is just beginning to emerge. Therefore, we must turn to practitioner knowledge to begin the conversation on how to guide districts and schools toward quality models and quality implementation.

There are many reasons for why it will be difficult to define quality competency-based education. First, the system must operate in a cohesive, integrated way. Implementing some but not all of the core structure is not recommended. Second, it is safe to say that new models and new innovations will continue to develop to further inform what the personalized, competency-based education system can look like. The field is both relatively new and involved in rapid learning about how the instructional strategies and delivery modalities (personalized learning, deeper learning, the impact of fostering agency in students, and the use of technology to support learning) fit into next generation learning. Third, in considering quality, it is important to remember

Efficacy: [ef-i-kuh-see] the capacity for producing a desired result or effect; effectiveness.

that the process of re-design and implementation means that changes are made step-by-step, iterating along the way. At any given moment, it is likely to be difficult to separate out design weaknesses from fragile implementation.[2] Finally states, districts, and schools that embrace competency education are essentially moving to a strong continuous improvement orientation for increasing effectiveness of the education system. However, this takes times, especially when information management vendors are unable or unwilling to create the student-centered programs that are needed to fully monitor the effectiveness of competency-based systems.

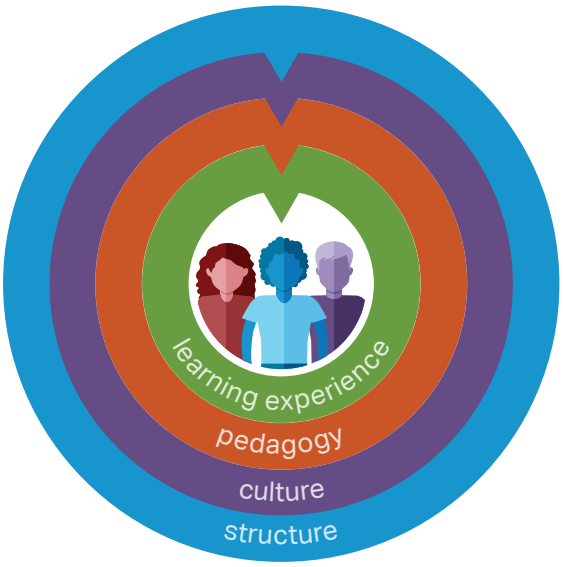
Thus, in order to advance the field of competency education, it is important that educators and policymakers create a shared understanding of what a high quality competency-based system looks like. Beginning to define what quality means in a competency-based system based on practitioner knowledge can expedite the process of states, districts, and schools adopting these new structures and approaches. This includes clarifying how the structures and approaches incorporate equity strategies to ensure historically underserved students will benefit and thrive. More importantly, having a shared understanding of high quality competency-based schools will position us to better serve and educate students today and not postpone it until some future date. We simply cannot allow students to continue to be passed on year after year to the next grade without the skills they need to be successful.

III. Building a Framework to Guide Discussion About Quality

Districts and schools are complex organizations with a complex goal – helping students from diverse backgrounds and with diverse interests, aptitudes, and skills become prepared for the transition into adulthood, defined as readiness for college, careers, and life. In the following section we use a simple four-part framework to help us think more deeply about the competency-based structure.

As states, districts, and schools re-design education systems, it may be helpful to create a framework that allows us to delve more deeply into the elements of competency-based education systems and personalized learning approaches. Based on site visits and interviews, we propose a four-part framework: structure, culture, pedagogy, and learning experiences.

COMPETENCY-BASED FRAMEWORK



1. Competency-Based Structure

If we are going to dismantle the traditional system that sorts students, we must replace it with a new set of structures. The working definition explains how the system should function.

Working Definition of Competency Education (2011)

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.

The competency-based structure is first and foremost designed to ensure students are successfully learning. This includes districts and schools advancing students based upon mastery rather than the time they have spent in the classroom and by building strong processes for internal accountability and continuous improvement. For example, transparency of learning objectives can create intentionality, empowerment and honesty about how students are progressing. Creating transparency and reliability about how proficiency is determined requires calibration among teachers. Monitoring student progress demands responsiveness, including short-term provision of rapid/differentiated supports and long-term reflection on how that feedback can improve district and school improvement.

A detailed explanation of the structure within nine domains is described further on.

2. Culture of Learning, Safety, Respect, and Inclusivity

A high quality system of competency-based education is grounded in a school culture that fosters learning, safety, respect, and inclusivity. One of the biggest changes is the shift from a culture based on the beliefs that 1) some students are smart and others not so much; 2) students are extrinsically motivated; and 3) students learn best when they are

passive and compliant. Competency-based education is based on a set of beliefs that starts with the idea that all students can learn. The culture of learning assumes that students and adults must feel safe, that they belong, and that learning holds meaning for them. This requires a culture that respects students: respects their home cultures; respects their racial, ethnic, and religious heritage; and respects their identity preferences. Students need to feel both a deep sense of belonging and valued if they are to offer their best efforts day after day. The strategies of cultural responsiveness are important to shaping this culture of learning, safety, and respect. Furthermore, respect begins with treating students as active learners who take responsibility for their learning.

3. Theory of Learning and Teaching (i.e., Pedagogy)

In personalized, competency-based schools, teachers collaborate with students and each other using intentional strategies designed to reach, engage, and support every student. To date, personalized learning has been described as an approach. However, it is increasingly being used to describe a set of pedagogical principles based on research about how students learn.

This set of principles starts with growth mindset and the idea that students learn best when they are active and have agency. It draws on the Universal Design for Learning and how to best engage and motivate students, is culturally responsive, and takes into consideration where students are in their own learning trajectory (as compared to solely focused on grade level standards). In the paper *In Pursuit of Equality: A Framework for Equity Strategies in Competency-Based Education*, we argue that schools also need to embed the equity strategies for ensuring students receive the instructional support they need into the core instructional design. Districts that have a clearly articulated pedagogy seem to have a much easier time implementing a competency-based structure because they can incorporate those structures and experiences in a way that is coherent and advances a broader set of instructional practices.

4. Learning Experience

In the traditional system, learning experiences were designed by teachers and described in terms of classrooms and curriculum. In competency-based education systems that use personalized approaches, students take a much more active role in shaping their learning. Learning may take place in the classroom, online, or in the community. It may be inquiry-based, project-based, or require direct instruction. Within the discussion of learning experiences, teachers organize tools and resources, including hands-on and online instructional strategies. Assessment is part of the cycle of learning and should be considered as part of instructional design (and should also be identified as part of the structure).

Although one might think of these as foundational layers, districts and schools are using different entry points to transform their systems. Thus, at this point it may be better to think of each of these four elements as doorways rather than stepping stones. The challenge is that no matter what the entry point, we need to support districts to build out all aspects of the competency-based structure with fidelity.

IV. Defining Quality within Each of the Components of a Personalized, Competency-Based System

In this section, what accompanies quality within each of the four components of a competency-based structure – culture, structure, pedagogy, and learning experiences – will be explored more deeply by crafting questions to open meaningful discussion, indicators or look-fors, and examples. It is important to remember that knowledge is evolving and that at this point, there is no clearly defined best practice.

Component A. Quality CBE as Core Structure - Designing for Success

Developed by 100 innovators in 2011, the working definition of a high-quality competency-based education was designed to build a shared understanding of how a competency-based system functions. However, it does not precisely describe what the competency-based structure (beliefs, policies, and operational mechanisms) is that would replace the traditional structure. In this section, we hope to outline the specific structures that districts and schools should have in place while still highlighting the innovations and variations developed by districts and schools. At times, structures that are considered "must-haves" or "non-negotiables" are identified.

What are the Structures that Make Up a Competency-Based District and School?

Think of the structure as the architecture of a house. It's the foundation, frame, and load-bearing walls. This paper organizes the structure of a district and school into nine domains, with each domain made up of the beliefs, policies, and processes that support learning and teaching. The way that the structure operates is likely to be shaped by policies and funding established by outside entities, including state or federal government, as well and the broader education system, including accreditation bodies and vendors.

Making the transition from the time-based system to a competency-based one requires the process of deconstructing the traditional structure and constructing a new one with great intentionality to ensure that it works effectively. To understand a structure, it is helpful to think about them as a mix of beliefs, policies, and operational processes.

Beliefs

The beliefs that people bring to their work will have a powerful impact on the entire organization. There will be a formal set of policies and processes based on espoused beliefs and an informal one based on the actual beliefs brought to bear.[3] Thus, understanding the beliefs underlying each domain of the structure is important in identifying strengths and weaknesses in the competency-based structure. There are two beliefs that are absolutely essential to a quality structure for competency-based education: 1) that all students can and should learn to high standards

There are two beliefs that are absolutely essential to a quality structure for competency-based education: 1) that all students can and should learn to high standards and 2) the role of the growth mindset, with adults developing it within themselves as well as supporting it in students. These two beliefs demand that adults in the system challenge assumptions and unlearn habits and practices built upon sorting students and the fixed mindset.

and 2) the role of the growth mindset, with adults developing it within themselves as well as supporting it in students. These two beliefs demand that adults in the system challenge assumptions and unlearn habits and practices built upon sorting students and the fixed mindset.

Other important beliefs include:

- The job of educators includes empowering learners to build the lifelong learning skills they need to own and manage their education.
- That instructional design and practices should be based on research in the learning sciences and the field of teaching, including attention to productive feedback, learning progressions, and attention to working memory.
- That students will have personalized paths toward mastery and graduation.
- That providing a bias-free learning environment requires intentional effort to root out implicit bias.

Because students are active participants in the culture and operation of the school, their beliefs will also shape the quality of the competency-based structure. Students need to be supported in developing a growth mindset; they must believe that the adults care about them and want them to be successful, they must believe that learning is relevant to their lives, and they must feel safe and respected. These are all beliefs shaped by the adults in the schools, although life experiences outside the school may also be influential. Thus, strategies for students to develop habits of work and learning, social and emotional learning skills such as managing their inner voice, and metacognition are important processes in helping them have and hold the beliefs for learning.

Policies

Within the domains of a competency-based structure, policies refer to a "deliberate system of principles to guide decisions." Within this discussion, the focus is on the specific policies at the district and school levels that can contribute to high quality design and implementation. Or another way to ask it: "What policies are in place in a quality structure for competency-based education? When you see a poorly developed structure for competency-based education within a district or school, what policies are missing?" Issues specific to state policy are being developed in the accompanying paper *Fit for Purpose: Taking the Long View on Systems Change and Policy to Support Competency Education*.

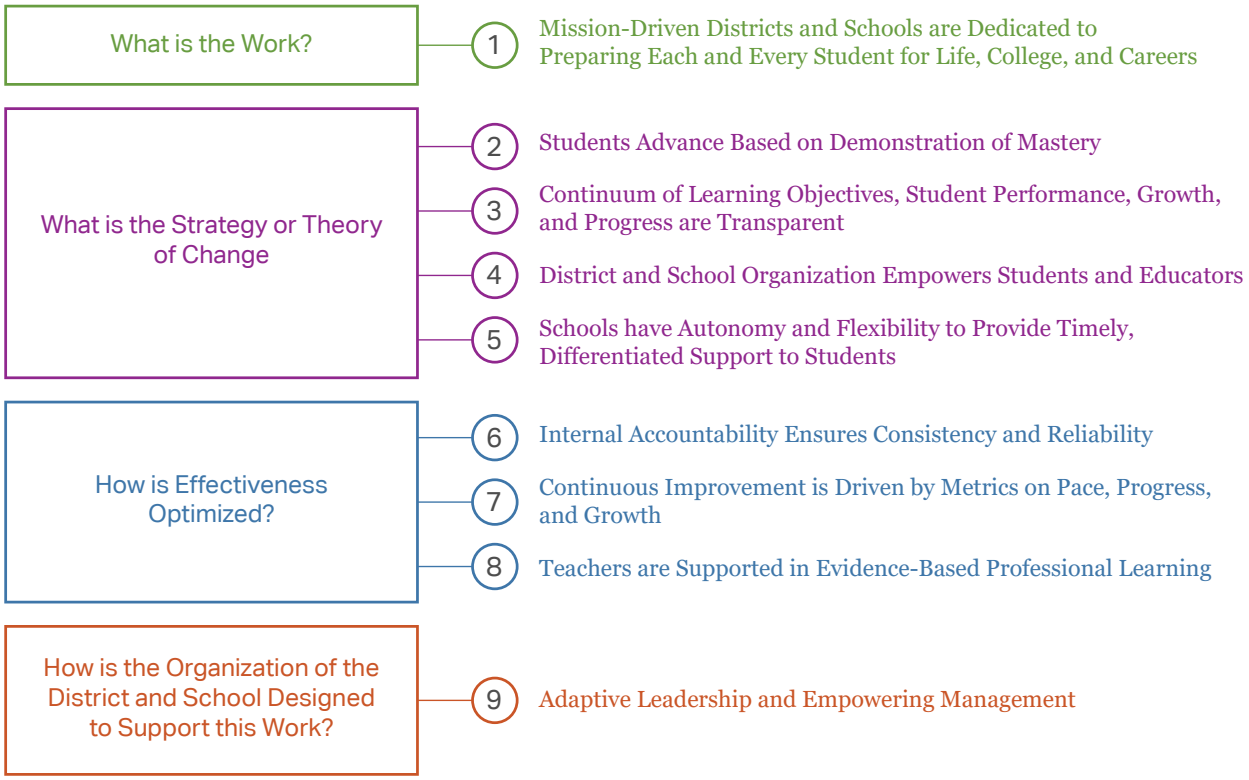
Organizational and Operational Processes

Districts and schools are made up of a number of processes, with the most important set of them related to helping students learn. We have all grown up with the traditional system, so it is hard to imagine districts and schools organizing themselves around anything other than academic domains, courses, semesters, and A-F grading. We forget that this was originally created as a set of processes that optimized efficiency.[4]

One way to think about these processes is through a set of four questions:

1. What work is needed to prepare each and every student for life, college, and careers?
2. What is the theory of action or strategy to bring about this change? What are the core functions in implementing that strategy?
3. How is effectiveness optimized?
4. How is the organization of the district and school designed to support this work?

Within each of these four questions, we now identify nine structural domains.



In the following section, each of these domains is explored. Please note that there are not examples for each of the look-fors. Please feel free to suggest examples as the goal will be to have at least two for each.

WHAT IS THE WORK?

Structural Domain 1.

Mission-Driven Districts and Schools Dedicated to Preparing Each and Every Student for Life, College, and Careers

Description of Structures - Beliefs, Policies, Operational Processes

One of the most powerful leverage points that states, districts, and schools have to transform their schools is the opportunity to expand expectation of student success. Success in college and careers takes much more than comprehension of the core academic subjects. Students need to become self-directed, lifelong learners with critical thinking and problem-solving skills to address challenges and take advantage of opportunities. They will also need skills such as communication, collaboration, and cultural competence to help them work in ever-changing, diverse workplaces. In order for students to develop these skills, they need to be actively learning, with opportunities to apply their skills in new contexts. (See discussion on College and Career Readiness in Section V.)

Key Questions to Ask in Self-Assessment or District/School Reviews

- What is the definition of school success or graduation outcomes that shapes the school mission and guiding principles?
- What role have the community, parents, and students had in shaping the vision and mission?
- How is the the mission actively referenced as a guide to make key decisions?

- In what way is the district and school designed to help students develop all the skills identified in their graduate profiles or graduation expectations, including lifelong learning skills, higher order skills, and academic skills?
- How will the community know if the district and school are achieving outcome goals for students? How will they know if the outcomes are equitable?
- How is the use of resources (facilities, money, staffing, and time) aligned with the mission and learning goals?

Look-Fors and Exemplars

Guiding principles based on mission are used to make decisions throughout the district/school.

- Lindsay Unified School District developed guiding principles that are used by the district and in schools as criteria to structure discussion and decision-making.

School designs, learning experiences, and professional learning opportunities for educators are based on mission.

- Boston Day and Evening Academy has one week each year dedicated to project-based learning to ensure that students have the opportunity to apply and reflect on skills.
- Memorial Elementary in Sanborn uses self-reflection tools to assess habits of work. Students build agency and self-awareness, and become comfortable with self-reflection as a tool for growth. After self-assessment, teachers engage students in conversations to provide additional feedback and strengthen the practice of self-reflection.
- Windsor Locks School District revised the teacher evaluation process to be aligned with values, pedagogical principles, and the mastery-based model.

Systems of assessments should support application of skills and development of higher order skills.

- Districts in New Hampshire's PACE initiative are building capacity and calibrating performance-based assessments.

Measures of student outcomes are articulated, including how equity in outcomes is being measured.

WHAT IS THE STRATEGY OR THEORY OF CHANGE?

Structural Domain 2.

Students Advance Based on Demonstration of Mastery

Description of Structures - Beliefs, Policies, Operational Processes

When students advance upon mastery, not time, educators can direct their efforts to where students need the most help and make sure they learn the skills they will need in more advanced courses. This is one of the ways that competency-based education will contribute to greater equity. The features of advancing upon mastery are based upon research on motivation, engagement, and learning. Students are more engaged and motivated when grading is seen as feedback that helps them show what they know and focuses on what they need to work on rather than judgment. Students may spend more time working in those areas that are more difficult for them. They may even advance beyond grade level in some domains, while taking more time in those that are more challenging.

There are several features of the "move on when ready" policy to advance upon mastery, all of which need to be taken into consideration:

- Schools are designed to meet students where they are. There are multiple strategies to do this depending on where students are in their learning, the presence and size of their skills gap, the needs of other students in the class, the domain, and the knowledge-based and instructional skills of the teacher. Districts and schools have to organize resources and schedules to have organizational agility to respond to the needs and progress of students.
- When students have gaps in skills, the teacher takes responsibility for working with the student to address and build fluency in those skills. The expectation is that the skill gap will be addressed.
- Students should be able to work on different learning targets and units within a class or have access to instruction at their performance level. This includes offering classes above or below the grades of a school. Thus, seventh graders who are ready should be able to take ninth grade math.
- The term mastery suggests that students should be proficient in the learning targets and be able to apply them in new contexts. This means that students need opportunity for: 1) projects and inquiry-based learning that requires them to select content and skills to apply to the problem; 2) performance-tasks or performance-based assessment; and 3) coaching in higher order skills, not just academic skills and content.
- Districts and schools need to put in place the processes and structures to ensure reliability of assessments.

Beliefs, policies, and processes organized around student advancement based on demonstration of mastery include: multiple opportunities to demonstrate learning, targeted and timely instruction, coaching that supports students as they strive for the next level of mastery, and transparent feedback and grading practices that inform on pace and progress in reaching mastery. Districts and schools need to ensure that evidence-gathering against each well-designed learning outcome is valid and reliable, as this influences the degree to which students have mastered the content/skill before advancing and ensures that monitoring structures are designed for providing high quality education.

Key Questions to Ask in Self-Assessment or School Reviews

- What processes are in place to ensure every student is reaching mastery and that students above grade level have opportunities to advance and demonstrate mastery at higher levels even beyond school level and into higher education?
- What is in place to make sure everyone reaches graduation-ready competencies?
- What policies and processes are in place to ensure that students have demonstrated mastery as they advance?
- What processes are in place to ensure consistency and fairness, and that evidence for determining mastery is high quality?

- How is student learning and growth monitored to ensure progress?
- What policies and processes are in place to guard against implicit bias?
- What systems are in place to help students develop the metacognition and reflection necessary to understand what it takes to learn a given skill or body of knowledge (in essence, learning how to learn)?

Look-Fors and Exemplars

Leaders of instruction have up-to-date information about progressions of students, and regular (at least weekly) conversations with their teachers (as a group and individually) about optimizing progress, on all dimensions.

School-wide strategy for helping students understand graduation-ready competencies and opportunity to work on cross-cutting, transferable skills in multiple classes so they can see how they differ within different domains.

Teachers and others continuously review progress of students to look for mastery issues within the system – if a student is expected to do well on an outcome but does not, was their mastery of a pre-requisite not well-enough confirmed? Is there a validity/reliability issue for the outcome demonstration?

All teachers have access to evidence-based practices (potentially multiple instructional methods) for their hardest, most important outcomes – and demonstrations and coaching as needed to develop mastery of those techniques.

Students progress through a continuum of learning (as compared to only grade level standards).

- At Kettle-Moraine, continuums of learning are used to capture student learning, gaps, and progress. Students work along their personal learning trajectory whether it be below or above their grade level.

Educators help students build habits of work and understand the connection to success in learning.

- At Sierra Middle School in Riverside, student-led conferences focus on how students are building their habits of work and learning.
- Students at Flushing International High School prepare for student-led conferences by reflecting on their academic performance, language outcomes, and work habits. Educators in this school track but do not grade work habits and language outcomes.

Strategies to help students master and become fluent in prerequisite skills are in place.

- Teach to One uses a process of anchoring mathematical instruction to the grade-level standards and then working with students to build all the prerequisite skills needed for that standard. In this way, even if it takes more time, students are better prepared for tackling other standards with similar prerequisites.
- Arlington High School in Riverside District has built a system for the first course of integrated math that includes a skill tracer so students know which skills they know, which are prerequisites, and what to learn/study to pass the unit competencies.

Learning is reported around broader content competencies, allowing for innovation in scheduling and calendars. Classes may be redefined as an organizational component of a transcript or units of learning rather than the structure of the day.

Structural Domain 3.

Continuum of Learning Objectives, Student Performance, Growth, and Progress are Transparent

Description of Structures - Beliefs, Policies, Operational Processes

Transparency of district-wide or school-wide learning objectives and student progress toward those objectives is one of the high leverage aspects of competency-based education. Although transparency does not automatically result in greater student agency, it is required for fostering greater ownership by students over their education, and providing opportunity for choice in how they learn and how they demonstrate their learning. In a quality competency-based structure, students receive feedback (scores or grades) that helps them understand how they are progressing toward the learning objectives. Teachers collaborate frequently and with intentionality about what they want students to know and be able to do. Working together, they improve instruction and assessment literacy, and build deeper understanding of learning progressions. They also monitor the outcomes and experiences of subgroups of students so they can share responsibility for eliminating disproportionality in outcomes. In addition, family and community support can be marshaled around attainment of learning targets.

Key Questions to Ask in Self-Assessment or School Reviews

- What has been taken into consideration in creating the learning objectives (competencies and standards)?
- How comprehensively and effectively do assessments measure students' mastery of learning objectives?
- How do the assessment strategies (including portfolios, projects, and capstones for deeper learning) reflect the learning objectives?
- In what ways are students empowered to take responsibility for their learning, including skill building? In what way do they have opportunity for co-design of how they learn or how they demonstrate learning, choice, and voice?
- How are transparent learning objectives used to improve teaching and drive personalized, job-embedded professional development?
- In what ways are students' academic performances tracked systematically to identify those who may be lagging or struggling? How is this tracking being used to ensure that appropriate supports are put into place and that the supports are effective?
- How do we re-engage and support students who have experienced failure within the traditional system? What strategies are in place (positive youth development, SEL, mindsets, CRE, community school models, other) to re-engage learners and bridge gaps in learning so that students feel they belong in school, value school, and are successful in their academic work?

Look-Fors and Exemplars

Students have access to a continuum of learning objectives, including what it means to be proficient and where they are in their own learning trajectory.

- Kettle-Moraine School District has developed an information system with the full learning continuum that is available to students, parents, and educators.
- New Tech Schools consistently include five areas of outcomes within rubrics (Agency, Collaboration, Skills and Knowledge, Written Communication, and Oral Communication).

The continuum is aligned vertically (i.e., along performance levels above and below student grade levels). It includes cross-disciplinary competencies (transferable skills) as well as discipline-specific skills.

The district and school have a balanced assessment system anchored in systems of teacher practice, where teachers collaborate to design performance assessments and rubrics, provide feedback, and analyze students.

At the school and district levels, the assessment system has a variety of assessments mapped to the competencies that work together and include interim and culminating moments of reflection and assessment of the overall body of evidence.

Reporting and promotion policies incorporate structures and processes such as capstones, projects, gateway presentations, and portfolios throughout a student's education.

- At Making Community Connections Charter School students advance through phases based on a collection of evidence of their learning captured in their portfolios.

Teachers use a validation process to ensure assessments are aligned with learning targets.

Teachers are involved in a shared process of refining continuum language and targets as they sharpen their assessment literacy.

Students are involved in the process of unpacking and refining continuum language to ensure the language is accessible to them.

Students demonstrate their learning as it relates to their passions, interests, and goals by partnering with local and global community members to create service learning or entrepreneurial experiences that contribute toward graduation requirements.

Students, teachers, and community partners work together to design internships, job shadows, and other in-depth learning experiences that happen systematically and move beyond one experience to something that contributes to graduation requirements and value beyond school.

- Pittsfield School District has a coordinator to create customized extended learning opportunities for students.

There is a high-functioning system in place to track students' progress and to capture and store the evidence that demonstrates their progress. Students use the tracking systems to make goals, build their body of evidence, and reflect upon their lifelong learning skills.

- Lindsay Unified School District uses Empower to track student progress.
- Matchbook Learning and Building 21 have used Slate as a platform to create customized information management systems.
- Many schools have students use data notebooks to track their learning.

Structural Domain 4.

District and School Organization Empowers Students and Educators

Description of Structures - Beliefs, Policies, Operational Processes

Competency-based education makes the desired learning clear to the student, enabling the student, family, and community to know, in advance, what is expected and to apply the effort necessary to demonstrate the expected learning and habits. In other words, competency-based education is designed to empower students and educators. Students are supported in building sufficient skills and a framework of knowledge to take responsibility for their education and become lifelong learners. Educators are empowered to collaborate in responding to the changing needs of students so that all students are making progress.

Non-negotiables:

- Students and educators are treated with respect and supported in developing agency and ownership of their learning.
- Educators require personalized professional learning and latitude to use their professional judgment.

Key Questions to Ask in Self-Assessment or School Reviews

- What policies and structures are in place to support students in building lifelong learning skills and taking ownership of their learning?
- How is responsibility shared within the district and school for student success?
- What information is available to educators to support decision-making regarding instruction?
- What structures are in place to enable students and staff to participate in continuous improvement?
- What professional learning structures (job-embedded coaching, micro-credentialing, peer feedback, studio cycles, educator competencies, etc.) are in place to empower teachers and administrators to grow in student-centered practices through their own learner-centric experiences?

Look-Fors and Exemplars

School-wide practices are in place to enable students to take responsibility for their education and understand expectations (as compared to navigating different approaches with different teachers).

- Red Bank Elementary has a school-wide set of practices that allow students to take ownership over their learning, including shared vision, code of cooperation, standard operating procedures, and student tracking learning (posters and/or notebooks).

All students are expected to meet the same core competencies, but flexibility is given with regards to specific content, how to engage with the content, and how to demonstrate their learning.

Students take ownership in managing their learning, including co-designing units of learning based on which competencies they need to meet and participating in student-led conferences.

Students are not only empowered to be self-advocates, but actually have a voice in decisions that are being made. The school should have a platform that allows students to be thought-partners in the process.

Educators have access to reflection tools (such as educator competencies or an innovation configuration map that describes a progression of the shifts in teacher practice) that are necessary in a personalized, competency-based system. Educators design their professional learning and development through those shifts, allowing for personalized pathways to educator competency, and receive job-embedded coaching through feedback cycles to improve their practice.

Collaboration structures (such as collaborative teacher teams, studio cycles, peer observation and feedback efforts, job-embedded instructional coaching, and team teaching) empower teachers to reflect on professional growth and identify their learning needs as they develop educator competencies that support personalized learning.

Structural Domain 5.

Schools have Autonomy and Flexibility to Provide Timely, Differentiated Support to Students

Description of Structures - Beliefs, Policies, Operational Processes

Policies, operations, and deployment of resources designed to be responsive to student learning need to provide timely, differentiated instructional and other necessary supports. Every student struggles at one point or another. To keep engagement high and quickly address misconceptions before they become rooted in a student's understanding, competency-based schools provide flex time during the day for students to receive additional instructional support. When students don't complete a course within the semester, they continue to focus on the specific skills they need to develop as they move to the next semester or through additional time after school or in the summer. What they do not need to do is retake an entire course. Districts and schools are organized to be responsive to student progress with flexibility to provide the necessary support, including creating additional time for learning.

Non-negotiables:

- Schools need to have autonomy and a high level of control over their budgets and hiring to increase agility to respond to student needs, interests, changing demographics, and opportunities.
- Scheduling must be designed to offer frequent support for students who are struggling and opportunities for teachers to work within professional learning communities.
- Districts and schools need autonomy to define graduation competencies and the steps toward it such as credits, performance levels, and phases.

Key Questions to Ask in Self-Assessment or School Reviews

- What are the capacities, structures, and systems that have been put into place to respond to students' needs and progress (academic and lifelong learning skills)? How effective are they, and how do they know?
- What are the pedagogical (or instructional) approaches used to meet students where they are?
- How does the master schedule provide students with just-in-time instruction and support?
- What structures are in place to validate anytime/anywhere learning in partnership with experiences or entities beyond the walls of the school?

Look-Fors and Exemplars

Structures are in place to ensure students get additional support in learning daily.

- Noble High School has a formal system to ensure students get the support they need, with student input, each day.
- Carroll Gardens School for Innovation offers all students homogeneously grouped "intensives" that provide targeted support in math and ELA two periods a week. All students in a grade are scheduled for intensives at once, so that students across the entire grade who need a given support can get it. This is in addition to daily heterogeneously grouped classes in these subjects.
- At Marsh Avenue Expeditionary Learning School, a teacher invites students to respond frequently with Post-It notes to answer: "How can I support you in this unit?" She uses students' requests and ideas to help drive classroom activities.
- At Brooklyn International High School, the regular bell schedule is suspended for several days as students near the end of a substantive cross-disciplinary project. Students are free to be in the classroom of whichever teacher(s) can best support the aspect of the project they are working on.

Systems of assessments are organized to provide productive feedback to students to ensure they are building skills and addressing misconceptions; to provide just-in-time summative assessments (rather than specific day and time testing); and to provide additional support and multiple opportunities for students who have not yet reached proficiency.

Schools can manage budgets to support learning and teaching, including providing additional opportunities for learning after school, on weekends, and into the summer.

- Juarez High School has organized budgets to support the continuation of school into the middle of August for those students who need additional support and time.

How is Effectiveness Optimized?

Structural Domain 6.

Internal Accountability Ensures Consistency and Reliability

Description of Structures - Beliefs, Policies, Operational Processes

A quality CBE system relies upon the consistency and reliability of the evidence used to inform, develop, and ultimately demonstrate learner competencies. In competency education, educators take responsibility for ensuring all students are learning, progressing, and have a plan to reach graduation and college/career readiness. For example, a policy to eliminate the option to pass students on with Cs and Ds and replace it with the concept of "Not Yet" supports internal accountability necessary to develop quality within a competency-based structure. In turn, this policy requires processes that ensure consistency (in expectations), reliability (in assessing student learning and in growth rates), and continuous improvement (for students, adults, and the entire organizational performance). Accompanying these policies and processes is the belief that all students can demonstrate proficiency and achieve high expectations.

Elements of this domain within a quality competency-based structure should include:

- Aligning learning objectives, instruction, and assessment: Structures and processes are in place to ensure that the instruction and assessments are fully aligned with the learning objectives and offer rich and frequent opportunities for students to perform at the highest possible depth of knowledge.
- Calibrating proficiency: Formal processes are in place to ensure that within a school, districts are reliably determining proficiency and there are efforts to calibrate across schools and with other districts.
- Educators monitor growth and student pacing toward graduation and a personal learning trajectory with steps to provide additional instruction support and interventions as needed: Educators work closely together to monitor student growth supported by formal structures such as professional learning communities, information systems, and access to specialized expertise. Data on student learning provides information on three types of continuous improvement:
  - Monitoring student progress includes tracking growth on a trajectory based on each student's performance levels and progress on a personalized plan toward graduation, pace (on or above grade level), and depth of knowledge;
  - Interventions are monitored for effectiveness; and
  - Student pace and growth rates drive continuous improvement to identify areas where there may be implicit bias or a need for professional learning, more effective deployment of resources, and redesign of organizational structure, policies, or processes.
- Implementing equity strategies and eliminating disproportionality in outcome: Processes and strategies are in place to monitor and respond so that students who have been historically underserved are receiving adequate evidence-based support, are demonstrating reasonable growth (1.0 performance levels or more per year), and are on track in their plans to reach graduation.

Key Questions to Ask in Self-Assessment or School Reviews

- What processes and structures are in place to ensure that superintendents and principals are confident that the instruction and assessments are fully aligned with the learning objectives and offer rich and frequent opportunities for students to perform at the highest possible depth of knowledge?
- In what ways is the development of lifelong learning skills included in tracking student progress and proficiency? How are students involved in monitoring progress, and is the data of this progress being used by students to set personalized goals to help them develop the ability to drive their own learning?

- What systems and structures are in place to ensure that all students are held to the same rigorous expectations, including historically/previously underserved students?
- What systems and structures are in place to ensure that all students are expected to and are given opportunities to demonstrate the ability to apply learning to challenging new contexts?
- What systems, policies, and structures are in place to ensure that students are not prevented from advancing at a pace that is commensurate with their growth potential?

Look-Fors and Exemplars

The district has clear policies and procedures to ensure consistency across schools in credentialing proficiency.

- Teachers at Chugach School District credential learning within a performance level with a district review when students advance to a higher performance level, including an assurance that students had the opportunity for deeper learning.

Districts and schools have proportionate growth and/or outcomes (rather than disproportionate or inequitable outcomes).

Structural Domain 7. Continuous Improvement is Driven by Metrics on Pace, Progress, and Growth

Description of Structures - Beliefs, Policies, Operational Processes

Continuous improvement is a critical element of competency-based education. When districts and schools take responsibility for ensuring every student is successful in their learning, they will need to be engaged in constant efforts to respond to students (in the short run) and improve school performance (in the long run).

Information management systems need to be designed to allow district and school leadership to monitor student progress, identify when teachers need additional support or have strengths that can be further utilized, and monitor effectiveness of processes. This requires that information management systems are built to follow a student over the K-12 continuum rather than adhere to a course-by-course basis, thereby allowing growth and pace to be monitored and measured more incrementally. This system should allow for monitoring student progress over the course of a year, not just measured in the typical nine month school year. Data dashboards, if used, can provide insights on level of proficiency, progress, individual student growth, and depth of knowledge.

Key Questions to Ask in Self-Assessment or School Reviews

- In what ways do students participate in the continuous improvement process?
- What are examples of school improvement or capacity building that have been put in place based on continuous improvement processes, and what is the result?
- How do management reports help leaders and educators monitor for potential disproportionate growth, outcomes, or marginalization?

Look-Fors and Exemplars

Students and educators are provided with data and analysis to monitor progress, inform goal setting, and shape personalized plans toward benchmarks, transition points (between schools, into college or jobs), and graduation.

- Building21 has created the School Vital Signs and Progress Dashboards. Vital signs is used by the school to regularly see the progress of various items such as behavior, attendance, growth, engagement, and teachers feeling valued. The progress dashboard is the student view of the same data.

Management has processes in place to consider optimizing use of resources to ensure that all students demonstrate meaningful growth rate, those who are struggling receive adequate support, and those with substantial gaps build mastery and fluency in prerequisite skills.

Teachers are provided with data to support their decision-making regarding student learning.

- At Sanborn Regional High School, the ninth grade is organized into five academies, each with a team of teachers. The teachers, working as a Professional Learning Community (PLC), use data to help students boost their skills, develop habits of learning, and successfully transition into high school.

Structural Domain 8.

Teachers are Supported in Evidence-Based Professional Learning

Description of Structures - Beliefs, Policies, Operational Processes

Just like their students, teachers are supported in their own learning through transparent measures of mastery, ongoing feedback, and access to evidence-based, professional learning that is responsive to their areas of growth. They have access to data that provides helpful feedback on their strengths and opportunities for growth. They are familiar with the learning sciences and apply them to their learning as well as to instructional design and support for students.

Effective competency-based structures have policies, processes, and beliefs that support this structural domain. Non-negotiables include:

- A culture of trust, respect, and safety for educators.
- Dedicated time for teachers to engage in professional learning communities, collaboration, and planning.
- Structures for instructional leadership and/or coaches who provide support to teachers based on personalized professional learning.
- District and school leaders who use distributed leadership strategies that engage educators in decision-making.

Key Questions to Ask in Self-Assessment or School Reviews

- What structures and processes are in place to support teachers in inquiry-based professional learning?
- How do human resource policies reflect the mission, guiding principles, and pedagogical philosophy?

Look-Fors and Exemplars

Teachers have access to personalized, competency-based professional learning that deepens their understanding and skills in applying the pedagogical framework and improving their practice.

- Flushing International High School uses an RFP process to fund educators' off-hours work on special projects related to their mastery-based learning practices. This allows teachers to propose a project that will benefit the school and get funding to do research or work collaboratively to build tools and practices that they then introduce to others.
- At Riverside Unified, the bargaining agreement includes weekly teacher-lead collaboration.

Weekly professional learning communities are built into schedule.

How is the Organization of the District and School Designed to Support this Work?

Structural Domain 9.

Adaptive Leadership and Empowering Management

Description of Structures - Beliefs, Policies, Operational Processes

Adaptive or distributed management strategies are deployed to create an empowering learning organization. Leadership sets the tone regarding seeing mistakes as an opportunity to learn rather than one for blaming. Structures and protocols are used to support inclusive decision-making. One of the principal's most important leadership functions is to support PLCs, making sure they have the time to meet and are staying true to the norms that allow them to be a source of collaborative, professional development.

Key Questions to Ask in Self-Assessment or School Reviews

- What type of management strategies are used and how is that reflected in daily operations?
- How are leaders supported in developing adaptive leadership strategies?
- What structures and protocols are used in meetings and to support decision-making?
- In what capacity are students, educators and community members involved in decision-making?
- How is decision-making distributed throughout the organization? How far is the "distance" between those who decide and those who are affected?

Look-Fors and Exemplars

Decision-making is based on predetermined criteria that values and weighs what is good for students above all else.

- Lindsay Unified School District uses guiding principles to make decisions and to empower others to make decisions based upon them.

Clear decision-making processes are established so that everyone knows when and how decisions are developed.

- District 51 uses a holacratic decision-making process that clarifies authority for decision-making.

Decision-making includes representatives of those who are impacted by the decision, including students.

- Pittsfield School District includes students and community members on the Good to Great Committee that oversees school improvement efforts.

District organization has been re-designed to support mission, strategies, and support to schools. Districts and schools have revisited structure and job descriptions and human resource policies, including evaluation, to reflect values, mission, and strategies.

- Pittsfield School District needed a flatter or more distributed organizational management structure to reduce organizational silos. The job of secondary school principal was restructured into two deans, one of instruction and one of operations. The position of teacher was revised to include facilitating ownership of learning for all students, exposing students to multiple learning opportunities, and encouraging perseverance in challenging tasks.

Component B. Quality Culture of Learning, Safety, and Respect

School culture is comprised of the shared beliefs, mindsets, habits, routines, and rituals that define the behavioral norms within the school and how it interacts with the broader community. One might think of it as the glue that creates coherency within a school. A high quality culture of learning, safety, and respect is shared and nurtured by everyone in the district and school. It is demonstrated through shared beliefs and common behaviors, routines, and rituals; and affirmed when students and teachers speak about how they feel safe to take risks, supported in their learning, and respected to share their opinions and ideas.

Key Questions

- What are the beliefs, behaviors, routines, and rituals that describe a school or district? How were they developed, and how are they reinforced?
- What are the ways in which the district and school are explicitly designed to ensure a culture and environment that nurtures safety, learning, and respect? What are examples of ways in which the district and school might be undermining their efforts?
- How do the district and school demonstrate respect for the communities and families they serve?
- In what way is the culture of learning communicated and reinforced?
- To what degree do students and staff feel respected, safe, and supported in their learning and a sense of belonging?

Look-Fors and Exemplars

Formal strategies to explore values around learning, safety, and respect are present both in class and outside.

- EPIC North has daily check-ins with students to see how they are doing and to create a sense of safety. There are also weekly Rites of Passage groups that support students in the development of positive identity.

Student participation and inclusion are part of the decision-making processes.

- Pittsfield School District shows respect for student voice by having students sit on every governing board and task force.

Formal structures such as professional learning communities explicitly take responsibility for culture and share strategies that reinforce the culture.

There are cultural "on-ramps" for newcomers to the school.

Formal strategies to seek feedback include focus groups and surveys.

- Riverside Unified uses Gallup student poll results as a climate indicator. With feedback from the survey, school teams develop strategies to increase student engagement.

Component C. Theory of Learning and Teaching (i.e., Pedagogy)

A high-quality structure for competency-based learning requires a clear pedagogical philosophy. Some districts are leading their transformative process by clarifying their pedagogical philosophy that reflects research on engagement, motivation, and learning before they begin the transition to competency-based education. Other districts start the transition to competency-based education first and then discover their pedagogical philosophy over time.

Irrespective of how they arrive at the discussion around pedagogical philosophy, a clear philosophy of learning and teaching that supports competency-based education is a critical element of a quality structure. These elements often include the following:

- Agency and Lifelong Learning Skills: Students learn best when they are active learners, take ownership of their learning, and are supported in developing the lifelong learning skills needed to continue taking ownership of their learning. Schools seek to nurture and reinforce the growth mindset in students and teachers. Students build metacognitive skills and students' ability to manage their social and emotional learning. Students are coached in the habits of work and learning that are tied to success in school and the workplace.
- Motivation and Engagement: Instruction and learning experiences must take into consideration strategies to engage students and develop intrinsic motivation.
- Effective Application of Learning Sciences: Instructional design draws upon research on cognitive aspects of learning, including working memory, how multiple media can help or hinder learning, the importance of worked examples for certain common complex problem-solving learning situations, etc.
- Meeting Students Where They Are: Strategies are used to meet students where they are – academically and developmentally – so students are able to learn at their zone of proximal development and address gaps in their skills.
- Inquiry and Application: Students need the opportunity to create meaning through inquiry-based strategies, engage with content using higher order skills, and apply their skills.
- Generating High Quality Evidence of Competence: Students have opportunity to create evidence to demonstrate their skills and/or demonstrate through performance tasks and assessments.
- Assessments Designed to Build Mastery and Fluency: Systems of assessments are designed to help students build mastery and fluency in the foundational skills, in metacognitive skills, in comprehending and engaging with content, and in developing higher order skills.
- Educators as Learners: Great educators are action researchers. They assume an inquiry stance in their work, with students constantly posing questions, about where students are, what strengths to build upon, how to most effectively identify and respond to needs, and how to optimize the impact of learning experiences that nurture curiosity and foster growth. Educators need safety, support, respect, and resources.

Many of the policies, processes, and beliefs needed to support a pedagogical philosophy that supports competency-based education have been mentioned previously in this paper and the paper *Meeting Students Where They Are*.

Key Questions

What is the research base for the pedagogical philosophy used within the district and school?

- How do the guidelines for learning and teaching enable students to access deeper learning and the opportunity to apply their skills?
- How is professional development organized to provide personalized learning opportunities for teachers?

Look-Fors and Exemplars

There is a shared understanding of pedagogical philosophy, and districts/schools draw upon it to design school operations and build instructional capacity

- Lindsay Unified School District's guiding principles drive decision-making.
- The New Hampshire Department of Education promotes Richard Elmore's work on the Instructional Core as a pedagogical model and is working with Center for Innovation in Education's Essential Skills and Dispositions framework in developing operational tools for districts to use in nurturing higher order skills and lifelong learning skills.

Professional learning is personalized, with teachers able to access learning based on areas identified by student data and their professional role within the context of the local model.

Professional learning draws upon learning science in terms of motivation, opportunities to practice and receive feedback, and demonstration on evidence of learning.

- Montpelier School District in Vermont has an intentional strategy for helping to build competencies of educators based upon JFF/CCSSO Educator Competencies.
- District 51 draws upon teachers to teach design labs. Teachers have opportunities to learn, tap into the knowledge of their peers, and build their skills in response to the needs of their students.

Component D. Robust Mix of Learning Experiences

The paper on *Meeting Students Where They Are* delved deeply into the types of learning experiences that are needed to respond to students based on their skills and learning trajectories. This paper seeks to identify the processes, beliefs, and policies underlying structures that districts and schools need to ensure that teachers can select, curate, design, and/or co-design a robust mix of learning experiences.

The instructional design and mix of learning experiences within a series of study should provide some level of choice (while remembering that more choice is not necessarily better) that allows students to learn within a relevant context; opportunity to learn and apply skills within deeper learning; demonstrate learning by providing evidence of learning or performance-based assessments; and have access to learning experiences that are either gauged at their performance level and/or have scaffolding that will lead to grade-level skills. Examples of structures needed to support high quality learning experiences include:

- Empowering Learners: Operational procedures enable students to know what they need to do to learn, access instruction, and demonstrate learning.
- Educator Knowledge and Roles: Teachers need to understand enough about the learning sciences and domain-specific instructional strategies to ensure that they can make informed choices about learning experiences based on where students are in their learning. In addition, teachers need to be comfortable in managing different roles in the learning process, including coaching lifelong learning skills, direct instruction, and facilitation. Professional learning is personalized to support teachers in building skills that enable them to better support students.
- Authority: Teachers need to have the authority to make decisions regarding what students require to support their learning.
- Use of Time: Calendars and schedules need to be organized to be responsive to students and enable project-based, applied, and deeper learning. Schedules need to provide time for educators to learn, plan, collaborate, and meet with students.
- Place: Extended learning opportunities allow students to learn and apply skills in the community, the workplace, online, and at home.
- Tools and Technology: Teachers need access to information about curriculum and online content resources and tools in order to make informed decisions about whether it is the appropriate product for students at the right time. Teachers need tools to help monitor and respond to students based on their learning and progress. Technological tools can be used to provide opportunities to expand students' horizons, deliver instruction, and provide productivity tools to students.

Non-negotiables:

- Students have access to flex hours for additional instructional support every day or most days in the week.
- There is flexibility and calendar schedules for students to receive extra help, access deeper learning, and take advantage of extended learning opportunities.
- Students have access to multiple modes of learning.
- There is at least one opportunity with a course of study for applied learning and/or rich project- or problem-based learning.
- Teachers have time each week for planning, learning and collaboration.

Key Questions

- In what way is the district and/or school using time and resources to support student learning, especially those students who are starting at a lower performance level than their grade level cohorts?
- Are there strategies and tools to meet students where they are?
- How is the annual calendar and weekly schedule organized around the comprehensive graduation and learning outcomes?
- What structures are in place to enable students to take advantage of learning in the community or workplace?
- How do the tools and educational technology options (including adaptive software) reflect the pedagogical philosophy, instructional strategies, and general evidence about learning?
- How is the calendar and schedule organized for teachers to be supported in developing their professional skills?

Look-Fors and Exemplars

There are school-wide practices of shared visions, codes of cooperation, standard operating procedures, and mechanisms for monitoring personal progress in learning (wall charts, data notebooks, or an information system).

Extended learning opportunities, in the community or online, are organized around learning targets that use the same rubrics as those used for learning experiences in the classroom.

- Pittsfield School District offers extended learning opportunities in the community and the workplace.

Teachers have authority and latitude to make decisions regarding student learning.

- Sanborn Regional High School organizes the ninth grade into five academies with five teachers and 125 students. The teacher teams, referred to as professional learning academies, have authority and accountability to fully help students build their foundational skills and lifelong learning skills for success in high school.

As the discussion above shows, the exploration of what makes up a high quality competency-based structure is just emerging. In the next section, we will explore four approaches regarding how initiatives could be structured to begin to build a formal understanding of quality.

V. Strategies for Defining and Building High Quality Competency Education

The purpose of this section is to explore options for ways in which those organizations that make up the field of competency-based education could work together to build a deeper understanding of what quality looks like in competency-based districts and schools and support educators in developing it in their own systems. As you consider the four approaches described below based on outcomes, design, processes, and quality reviews, consider how each approach will be most helpful in the following:

- **Does it Drive Equity?** How valuable and viable are these approaches in helping districts and schools create equitable systems that effectively serve students, particularly those who have been historically underserved?
- **Does it Make the Case for Expanding Competency-Based Education?** In what ways can these approaches demonstrate that competency-based education is a better option than continuing with the traditional structures? How do they also build capacity within districts and schools to implement effective competency-based education structures? Are there any other approaches that should be included in the approaches described below?
- **Does this Contribute Meaningfully to the Field?** What is the the best strategy to advance our understanding of how high quality, personalized, competency-based districts and schools are designed and operated? How might the field move forward in defining high quality in the medium-term (2-10 years) or long-term (10 years or more)? Are some strategies more useful than others at building capacity within districts and schools to design competency-based structure with quality?

Approach A. Driving Quality through a Focus on Outcomes

If each state co-designed with their districts a crystal clear and calibrated understanding of proficiency-based graduation requirements, could quality be determined by student performance levels upon graduation?

In the traditional system, there is substantial variability in what evidence districts and schools use to determine that students are ready to graduate. Most depend on a number of time-based credits that have proven to be very weak proxies for learning, resulting in some students graduating without the foundational skills in math and reading they need to navigate their lives, let alone complete college. Even in competency-based schools, there is variety within graduation expectations of the levels of knowledge, skills, and competencies required, especially in the states in which districts have the responsibility for establishing the policies for graduation. Thus, some argue that it is difficult to define quality based only on attaining a high school diploma, as there is some degree of comparing apples and oranges.

However, there are ways to reach a consensus of graduation requirements.

First, there could be a shared level of minimum proficiencies for students to master prior to graduation. In competency-based systems, we are rethinking how "graduation-readiness" is measured, especially at the state level. Traditionally, states and districts have organized graduation requirements around completion of a number of courses and the accrual of credits. Some have added specific types of experiences (service learning or capstones), assessments (Board of Regent's exam), or evidence (exhibitions). Maine, New Hampshire, Vermont, and Colorado have introduced the idea of proficiency-based diplomas and opened the door to discussion about what mix of skills and knowledge students need in order to graduate. If each state and their districts were to establish proficiency-based graduation requirements that are aligned to college and career readiness, in which the diploma would have specific meaning in terms of skills and knowledge, it should be possible to measure student growth and demonstrated mastery of those skills based on outcomes and evidence. Theoretically, if graduation requirements were then aligned with higher education and workforce, the levels of skills and knowledge students have at graduation could shed light on the quality of schools in a district.

Second, at a more localized level, states could allow schools and districts to determine how they will allow students to develop and demonstrate proficiencies. Presumably, this will be accomplished with checks for comparability and rigor. Such an effort would require each state and/or district to determine precisely what was expected at graduation and then allow districts and schools to use whatever approaches they thought best.

The third option includes supporting schools and districts in using competency-based structures in exercising their flexibility to develop and demonstrate proficiencies. At the state level, this could mean implementing a tight/loose approach to developing quality, where outcomes are held tightly with the expectation that districts and schools would innovate with the goal of reaching better outcomes.

Opportunities

In considering the viability of this approach, there are several issues that need to be considered:

1. What does it really mean to be college and career ready? What are the types of features or competencies that should be included?
2. Could and should the proficiencies in the definition of CCR be organized around performance levels that would align with college admissions and workforce readiness?
3. How might these competencies be measured?
4. What are the implications of this model in terms of driving district and school improvement (i.e., quality)?

Defining College and Career Readiness (CCR)

What does it really mean to be college and career ready? What are the competencies and/or characteristics that should be included to determine if a student is ready to graduate?

CCR is a complex term, bundling together many ideas and goals. It is an ever-evolving term carrying different weights and functions over time (e.g., employer needs will shift through the years). In general, states have embraced the concept of CCR as an overarching policy goal, and some states are working toward greater alignment with their graduation requirements and college and workforce readiness; however, it is not yet precise enough to be operationalized as a powerful driver for providing robust learning experiences for students. Furthermore, efforts to create a single definition of CCR are confronted by the personal post-secondary goals of each student. The challenge is to find a definition of CCR that opens doors to young people while

recognizing that students are going to take different paths and experience evolving conditions on their way to establishing what will hopefully lead to family-wage careers.

Dr. David Conley notes that students need to be ready to succeed in college, not just eligible, for college. Conley states that the college eligibility method, "worked well when the basic purpose of admission requirements was to sort students into 'college material' and 'not college material.'" Conley further explains that even though the eligibility requirements (specific titles of courses, standardized tests, and GPAs) have little to do with the skills students need to succeed in jobs or in college, as an equity strategy, districts must ensure that students can jump through the hoops of college eligibility.

Conley has provided a four-part framework for considering college and career readiness: think (five high-level cognitive strategies), know (foundational academic knowledge), act (the skills to take ownership of one's learning), and go (transition knowledge).

In his upcoming paper, Conley reviews nine readiness frameworks and finds that there is more agreement about the academic content, specifically math and ELA, than there is on the learning skills.[5] He also notes that the emphasis is much more on college than the skills required for careers. He proposes a three-part framework for preparing students for the world of work: work readiness, occupation-specific training, and career readiness. It is easy to assume that those schools serving students from low-income families would also need to include career exploration as an important step in the process toward readiness.

Readiness Profile

To date, the term CCR has lent itself to a "yes" or "no" dichotomy: either a student is college and career ready, or she isn't. An alternative perspective might consider CCR along a spectrum that could be tied to the specific educational goals of each student. Conley proposes the development of readiness profiles that capture what students know and can do. Such profiles would also provide information on what skills students didn't develop that could be useful as a mechanism for internal accountability and continuous improvement efforts, and even as a part of external accountability systems. By shifting to a "ready for what?" approach, states and districts can shape different levels of expectations without removing the ability to compare detailed competency results for matched subgroups of students.

Building upon the idea of a spectrum of skills captured in readiness profiles, one measure of quality could be the degree to which learners are ready for multiple college and career options. Monitoring equity across subgroups could look at students' performance levels of skills and the number and kinds of pathway options that are available based on the competencies attained.

However, the weakness in any effort to drive quality through a set of college and career readiness measurements is that there is little research on which ones are the most powerful predictors of success. Thus, the risk is that in clarifying what it means to be CCR, it is possible that it will not actually prepare students for success. A research agenda to support the transition to CCR outcomes should include generating longitudinal evidence about the specific competencies and skills included in the definition of CCR.

What Do Communities Want for Their Children?

Those districts that fully engage their communities in establishing a vision for what they want for their students upon graduation often describe the skills in broader terms than college and career readiness: They want their children to be prepared with lifelong learning skills, have a strong sense of civic purpose, and know how to create a healthy lifestyle. There

are also gaps in the CCR frameworks that relate to our weakness as a country to address race, multiculturalism, class, and other forms of systemic discrimination against non-dominant groups. Students who encounter institutional racism need to know how to develop or access a wide range of strategies, including organizing on a large scale, to navigate what can be a challenging, and sometimes, dangerous world. When facing implicit bias, explicit discrimination, and institutional racism, students may need to tap into lifelong learning skills, such as building strong networks, developing relationships with mentors and advocates, and assessing both formal and informal values within an organization, to stay on track and be successful.

CCR and Multiple Pathways

> Could and should the proficiencies in the definition of CCR be organized around performance levels that would align with the selectivity of colleges and types of jobs?

By organizing proficiencies and the definition of CCR around performance levels that align with multiple pathways toward success, students are empowered, clearly understand, and can articulate where their competencies can take them, and recognize which subsequent competencies they need to continue on a personalized pathway. Students would clearly understand and be able to articulate the CCR competencies and performance levels, and know the evidence needed to support mastery of each competency. Performance measures and well-designed rubrics, with inter-rater reliability, provide powerful information to teachers about each student's knowledge, skills, and abilities. Gathering student data and evidence on valid, reliable assessment tasks within a student learning profile can provide rich data on student learning to drive holistic instruction as well as drive school and district improvement.

If the core competencies undergirding CCR are transparent and clear, students, colleges, and employers will be able to more clearly unpack and assess what each student knows and is able to do. A transparent CCR system could provide competencies for each level of readiness (e.g., by mastering these five competencies, a student demonstrates readiness to enter the workforce; by mastering these seven competencies, a student demonstrates readiness to enter a two-year institution of higher education, and so on). Efforts to codify multiple pathways leading to different levels and types of skills could help this effort. For example, Summit Schools has developed personal learning plans in which students can pick their college type, and their pathway changes when they do that. In terms of guarding against inequity, there are strengths and weaknesses to the idea of formalizing and codifying multiple pathways. By making this transparent, it becomes more easy to monitor and engage students in understanding the consequences of their choices. However, the question of whether doors are being closed to students will arise. Certainly, in the opaque traditional education system of sorting, doors are regularly closed to students without their ever knowing it.

By broadening the definition of CCR into a summarized set of competencies that tie to multiple pathways, each student can choose the college/career of her choice, and the term CCR carries more weight and meaning in true preparation for a student's next steps in life.

Measuring CCR

How might college and career readiness competencies be measured?

In districts converting to competency-based education, community members are often engaged in creating a shared vision that then informs a graduation profile. They may include concepts of being a lifelong learner (i.e., having the skills to manage one's own learning and education, including agency, habits of work, and the ability to navigate new environments), transitioning to adulthood (civic responsibility, social and emotional learning, career development, and soft skills needed for employment), and developing higher order skills (problem-solving, creativity, communication, and collaboration). Many of these higher order skills can be learned across different domains. It also challenges our current thinking on how we focus so much on subject domains on traditional transcripts to rethink college and career readiness approaches as building skills and knowledge through more interdisciplinary, competency-based, wholistic approaches. From a competencies perspective, there is a need for a core base of transferable skills.

Not every graduation competency requires summative assessments, although calibration to ensure consistency is important for any skill necessary for success after graduation. New Zealand offers insights into how comprehensive outcome indicators can be developed, including identity, social and emotional skills, lifelong learning, academics, and higher order. (See New Zealand's School Evaluation Indicators for examples.)

One thing is clear. Any effort to align the education system with CCR will require a strong effort to build the capacity of districts and schools to use performance-based assessments. New Hampshire's Performance Assessment of Competency Education (PACE) initiative is an example of how states can create processes through which districts and schools can build capacity about and calibration of performance-based assessments.

Implications of Using College and Career Readiness Outcomes to Drive Quality

What are the implications of this model in terms of driving district and school improvement (i.e., quality)?

As much as we know that an education system can be strengthened by clarity of purpose, common metrics, and structures to support capacity building and continuous improvement, the value of local control can make system-building more challenging. Local control of course promises much stronger ownership of ideas. However, there are downsides. For example, in some states, graduation requirements are a state-level policy that can then be expanded upon by school boards. However, in Vermont, each district decides its own proficiency-based graduation requirements. There are direct consequences for students (often from low-income families in search of low-cost housing and jobs) who transfer between schools when there are locally grown graduation requirements. Furthermore, it is difficult for students and parents to know if what students are learning is what they really need to be successful in college and careers.

There are a few strategies to mitigate the challenges of local control of graduation requirements. One is to create a common set of outcomes through a voluntary process. A second is a process of co-design as developed in New Hampshire: Multiple districts facilitated by state leadership create processes and policies that are then established as state policy. A third strategy is to turn to the idea of a readiness profile in which districts could select among a predetermined set of indicators to monitor the development of skills, abilities, and knowledge a student needs to graduate.

Challenges

One argument against the outcomes-driven approach to determining quality is that context matters. Similar to today's challenges to consider school performance based on state accountability exams with schools that serve middle and upper income appearing to be higher performing than those that serve lower income communities, competency-based schools may produce great growth but not have every student master every outcome by the end of four years of high school. This invites a more complex determination of quality when students may require an extended amount of time in order to reach a common set of graduation competencies. One of the key variables is the skills that students bring with them when they enroll in a school described in the traditional context as below, at or above grade level and in the competency-based context as a personalized learning trajectory.

A second challenge is the powerful tradition of local control of schools and districts. What is the impact on our ability to define and measure quality if outcome definitions vary based on the vision of the local school board? Furthermore, the economic strength and local labor market demands might have undue influence if quality is determined solely by local control – with those communities with more knowledge-based jobs demanding more higher order skills, whereas economies based on lower skilled jobs designing for lower depth of skills. Different belief systems also factor in here, and their implications should be considered (e.g., beliefs around the value of funding education, whether students should reach success of their own volition versus creating systems and structures to better position students, and other societal factors).

A third issue is that the comprehensive set of skills of a successful graduate would require states, districts, and schools to use other types of metrics (quantitative and qualitative) for measuring the lifelong learning skills. This raises questions about the availability of assessment tools and the importance of building capacity to coach and assess students.

Finally, when cultivating an innovation or design mentality while also providing autonomy to schools, it is likely that different types of models with different sets of learning outcomes will be developed. Obviously, that is a value to creating dynamic schools and also a beneficial feature of choice and portfolio of school strategies. Yet, there is a benefit to having common learning outcomes in that it provides students assurance that their competencies will translate into opportunities beyond their local communities.

Approach B. Driving Quality through a Focus upon Processes

Transparency is one of the most powerful and transformative aspects of competency-based education. Transparency makes it easier to understand processes in use by competency-based systems, but it doesn't necessarily enable one to determine if some processes lead to greater effectiveness than others. Some argue that there should be inherent flexibility in how we think about quality because schools use different models, including different definitions of student success. They argue that instead, the focus should be on ensuring that districts and schools use high quality processes as well as their ability to produce better results. For example, states could build capacity for district and school review that considers the processes by which districts and schools shape outcomes, the competency framework (the specific competencies and standards that students are to learn and apply), the pedagogy or theory of change, continuous improvement, systems of support for teachers and administrators, and the processes for holding themselves accountable.

Opportunities

By focusing on process as a measure of quality, it is more likely that there would be high quality implementation while allowing for local contexts. If strong systems of support are available (from the state Departments of Education, districts, and/or intermediaries), it is possible that a focus driven by processes can be designed to build more trust and buy-in over state policies that might compare schools based on graduation outcomes. The process definitions (inputs, steps, and outputs) need to be concrete enough for people to know specifically what they need to do and with corresponding formative evaluation/feedback processes. There would also need to be strong commitment and management capacity to ensure that feedback leads to adjusting the educational processes, as well as a governance process using the feedback to guide the adjustments. Focusing on processes alone will be inadequate, and there will need to be some focus on commonly defined outputs or outcomes, including ensuring the evidence behind them is solid.

Once again, New Zealand offers insights into defining quality. In the New Zealand's School Evaluation Indicators, there are examples of process indicators in six domains: stewardship; leadership for equity and excellence; educationally powerful connections and relationships; responsive curriculum, effective teaching, and opportunity to learn; professional capability and collective capacity; and evaluation, inquiry, and knowledge building for improvement and innovation.

Challenges

There are a number of challenges to this strategy for defining and nurturing quality. First, it is possible that benchmarking would be difficult if there are substantial differences in how districts and schools shape and define their processes. Second, given the influence of explicit and implicit biases, well-designed processes may still produce inequitable results. Thus, this strategy would have to evaluate how well schools are implementing the process as intended as well as whether the process is leading to the outcomes that were aimed for.

Approach C. Driving Quality through a Focus upon Design

For those deeply engaged in creating competency-based systems, a powerful driver is the process of redefining what is meant by successful student outcomes. Districts and schools are redefining success much more broadly to include lifelong learning skills such as growth mindset, agency, and well-being skills such as social and emotional learning, as well as academic and higher order skills. In short, we are expanding the role of schools to explicitly include the development of children and adolescents and documenting their development progress within specific competencies backed up by artifacts.

This has huge implications for the design of schools. No longer focused solely on core academic content, competency-based districts and schools are in the creative process of integrating everything we know about learning and teaching into a powerful pedagogy that is supported by the competency-based structure. This includes creating different systems of assessments, new staffing roles, and new schedules that create opportunities for strong relationships between students and teachers to be cultivated as well as applied learning and daily flex hours for extra instructional support. At this point in the development of the field, with so many variations of models being developed, creating an overarching framework rooted in learning sciences that can catalyze conversation, conduct the exchange of ideas and knowledge, and capture lessons learned is an important interim step. This also has implications for day-to-day teaching and learning, where educators begin to share responsibility for supporting students to gain these new capacities. An important question becomes: how do we share responsibility for teaching, tracking, and assessing growth in these capacities, and what is the action plan for developing these cross-cutting capacities?

Opportunities

The primary opportunity is that the field of education is overflowing with conversations about what each of the newer concepts (competency education, personalized learning, deeper learning, online learning) mean and how they fit with specific instructional strategies (project-based, inquiry-based, real-world learning such as internships). This approach would seek to provide a frame and common language to accelerate integration of these major concepts.

Depending on how such an initiative was structured, there could also be an opportunity to take a fresh look at what optimized learning looks like from a student-centered perspective and recognize common learner support needs across these multiple learning strategies.

Challenges

There are (at least) three considerations to move our understanding of quality forward using a descriptive framework of school design:

- There is constant learning about how all the different concepts fit together. Whatever is created is at risk of being outdated immediately. Are we ready to describe a framework in a field that is still too fluid to foster consensus? Can we create a framework that intentionally anticipates and acknowledges ongoing innovation and fluidity?
- Descriptive approaches have very little value for incentivizing change. They can spur discussion and reflection but are also vulnerable to the mentality of "we already do that." Once again, looking at common outputs and outcomes will be important.
- Some argue that defining and describing limits innovation, especially if embedded into state or district policy.

Approach D. Driving Quality through External Review

Other countries have implemented external quality review processes for addressing quality. As the OECD notes, schools are the key agencies within education systems to improve student learning; thus, the effective monitoring and evaluation of schools is central to the continuous improvement of student learning. The OECD outlines three major approaches to external school evaluations for quality reviews: internal school self-evaluation or review, external school evaluation or review, and the comparison of schools on different performance measures. These school evaluations focus on evidence-based practices and are grounded in the research on how students learn best. External review processes allow for calibration among teachers within a school and across schools.

It is possible that state departments of education could play a critical role by shifting from a compliance-oriented approach to quality to an improvement-oriented approach through external review. A quality review office could be co-created with districts, developed in partnership with an intermediary or as a multi-state effort. Co-creating systems of support that would respond to the findings of the quality reviews, including coaching, would be an important part of this approach.

Opportunities

New Zealand, a global leader in school evaluation, is striving toward an ongoing, cyclical, collaborative model of school evaluation and inquiry for improvement, where self-reviews and external school reviews are complementary and build off one another. There is high trust on both sides, and self-review is the core of the evaluation process. During self-review, schools systematically evaluate their practices, using indicators as a framework for inquiry and improvement. Through this process, schools learn and understand learning progressions, and they involve students in the self-review processes. Self-review is embedded in teachers' thinking and practice. Dialogue around achievement data is ongoing and rooted in classroom practice. The potential for wider engagement is a true strength.

Vermont offers a national example. The state is organizing Integrated Field Reviews with a team composed of Agency of Ed staff and educators from the field visit schools, and goes through a process that generates commendations and recommendations. It might be possible to build upon other school review processes in the U.S. such as accreditation agencies like AdvancEd.

Challenges

There are system-wide policy and practice implications to creating external review offices or organizing peer reviews for quality assurance. There are concerns that without a change in the orientation of state departments of education, a quality review process could simply become another set of compliance activities. Thus, it might be more reasonable to start through a voluntary and collaborative peer review process initiative to build a shared understanding of domains and indicators to evaluate quality.

Another challenge is that the focus should be on districts, not just schools. Competency-based education is best developed as a district-wide infrastructure. Quality review would need to be extensive enough to capture district policies and structures as well as school features.

Finally, states that want to introduce a quality review process and maintain accountability exams to determine school performance would need to create a two-tiered system. The Every Student Succeeds Act (ESSA) gives states almost total free reign in how they design their accountability systems. There's no reason why a quality review process couldn't play a significant role in identifying schools for improvement; and even better, it can provide opportunities for changing attitudes and consequences regarding quality because schools will see it as a valuable support rather than a punitive process.

Concluding Comments on Approaches to Quality

Each of the options explored above has value for defining and nurturing quality, and each comes with a set of challenges. Ultimately, the issue of quality will come down to the use of a system that ensures quality skills and knowledge are achieved for each student at each step along competency pathways toward higher level skills. The pedagogical philosophy, instructional design, and degree to which schools can strive to become bias-free will have the most influence on student learning. It is the system and structures in place to ensure student growth that will be a necessary part of assuring system outcomes.

VI. Charting the Course: What Needs to Happen to Build High Quality Personalized, Competency-Based Schools Every Time

The purpose of this section is to gather and recommend ideas for action steps to advance an understanding of high quality, personalized, competency-based systems and strategies to accelerate the design and implementation of high quality district systems and schools. Summit participants will have the opportunity to brainstorm and prioritize recommendations for educators, school and district leaders, state and federal policymakers, funders, intermediary organizations, and technical assistance providers and any other key organizations.

As you review the following, consider the following questions:

1. How might you change or strengthen these ideas offered below?
2. What other projects, initiatives, or recommendations are needed to advance quality in competency-based systems and schools?
3. Of all the projects listed here and discussed, which are the 3-5 most important ones to take on now?

A. Providing Exemplars in each of the Four Components of the Framework - Culture, Structure, Pedagogical Philosophy, and Learning Experiences - to Support Early Stage Design and Implementation

- Exemplars are essential in order to help people from across the field develop a vision of what CBE is, believe that it is viable by understanding key implementation steps, and build a sense of how competency-based education can reinforce student agency, personalized learning, and deeper learning. Even with the substantial documentation at *Competency*Works about school models, there is a need for districts and schools to have a more close-up understanding of competency-based structures and their implications. This could include funding positions at districts with the most mature systems to coordinate site visits, funding travel for site visits, creating detailed documentation (written and video) of the models, and developing more detailed guidebooks.

B. Building a Set of Metrics and Prototype Management Reports

- Monitoring proficiency, progress, growth, and depth of knowledge are critical features of a competency-based system. However, there has been little discussion within the field regarding how to use them or create management reports that can drive responsiveness to students and organizational continuous learning. Furthermore, metrics can be powerful in helping to tell the story of competency education. A project is needed to create new views into data for the staffing roles in competency-based systems; create prototypes of management reports that could be used for the multiple areas of continuous improvement; help identify patterns of inequity; and contribute to a stronger communication strategy. This project should be a multi-stakeholder one, including students and practitioners using the learning model, human-centered design experts, learning scientists, data experts, and vendors of information management systems.

C. Developing Voluntary Quality Review Process

- What might a voluntary or co-designed quality review process look like? What would be the core functions? How could it be designed to strengthen transfer of knowledge, trust-building, and leadership? As an initial step, a state or a collaborative team of organizations could create a planning process and outline the core components. Furthermore, visiting or inviting educators from New Zealand and other countries to present their models and lessons learned could further understanding and interest in the United States.

D. Building a Research Agenda

- There has been limited research or evaluation into competency-based systems that could help inform a better understanding of quality and effective implementation. The most important thing to do is create an initiative project in which districts co-design a research project with researchers about the impact of competency-based education on students and teachers in terms of academic learning, lifelong learning, satisfaction and engagement, and other key issues.
- A second project would be to build a research agenda to inform researchers and funders in the field. What other questions need to be explored in order for us to advance competency-based education and improve quality?

E. Clarifying and Addressing Issues in the Field

There has been confusion and competing vision in the field regarding what competency-based education is and what it means to be competency-based. It would be helpful to identify areas that need greater clarification or exploration and how this could best be accomplished. Below are some initial ideas.

- What might a process look like to identify popular or common learning outcomes? How might we better define CCR in a way that strengthens competency-based systems and empowers students? How might we begin to document the different outcomes being used by districts and identify those that are the same or highly similar?
- What can help a district implementing competency-based education to know it is headed in the right direction? How might we engage stakeholders in this process? What are the questions they should be asking to ensure that weak structures are not being put into place?
- Is it helpful or viable to create performance levels that move from twelfth grade (based on common core or national standards) and up to Level 16 so there is greater alignment between K-12 and higher education at least in ELA and math? This process would need to involve community colleges, non-selective colleges, and highly selective colleges to ensure transparency of the full higher education system's entrance expectations. This type of effort could build off the Great Schools Partnership efforts related to the proficiency pledge.
- We need to invest in district consortiums for collaboration and calibration and system-building. For example, pre-existing consortiums or CTE centers with multiple sending schools could act as hubs.

F. How Can Technology and Tools that Reinforce the Values and Cultures of Competency-Based Education be Implemented?

- Technology can be helpful in providing the tools needed to advance competency-based education. An exploration for what tools exist for which practices, functions, and processes and how competency-based districts are using technology, what they are learning, and where there are unmet needs could be helpful.

Endnotes

1. Cecilia Le, Rebecca E. Wolfe, and Adria Steinberg. "The Past and the Promise: Today's Competency Education Movement." *Students at the Center: Competency Education Research Series*, Jobs for the Future, 2014. http://www.jff.org/publications/past-and-promise-todays-competency-education-movement.
2. There is a body of research on the implementation sciences on education and other fields that can inform the field of competency education and tease out the differences between design and implementation. For more information, see National Implementation Research Network at nirn.fpg.unc.edu/ and the article Quality Improvement Approaches: Implementation Science at https://www.carnegiefoundation.org/blog/quality-improvement-approaches-implementation-science/.
3. C. Argyris, R. Putnam, and D. Smith. Action Science. San Francisco: Jossey-Bass, 1985; C. Argyris and D. Schon. *Organizational Learning: A Theory of Action Perspective*. Reading, MA: Addison Wesley, 1978; C. Argyris and D. Schon. *Organizational Learning II: Theory, Method and Practice*. Reading, MA: Addison Wesley, 1996; and Senge, P. *The Fifth Discipline*. New York: Doubleday, 1990.
4. See the chapter The Prussian Model in The One World School House by Salman Khan for a short summary of the origins of the traditional system.
5. Conley, David T. PhD. *The New Complexity of Readiness for College and Careers*. To appear as lead chapter in the section Defining and Measuring College and Career Readiness in *Preparing Students for College and Careers: Theory, Measurement, and Educational Practice* National Council of Measurement (NCME) Applications of Educational Measurement and Assessment series. University of Oregon, 2017.

***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 Metis-Net. 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.