Designing the Infrastructure for Learning

A FOCUS SECTION FROM:

Implementing Competency Education in K–12 Systems: Insights from Local Leaders

RAMPING UP	DESIGNING	TRANSITIONING	IMPROVING

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About CompetencyWorks

CompetencyWorks is a collaborative initiative drawing on the knowledge of its partners and advisory board. 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 from the partner organizations 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 CompetencyWorks.

For more information on competency education, you can visit CompetencyWorks, read previous issue briefs on the topic, or visit the Competency-Based Pathways wiki for an in-depth look at the working definition.

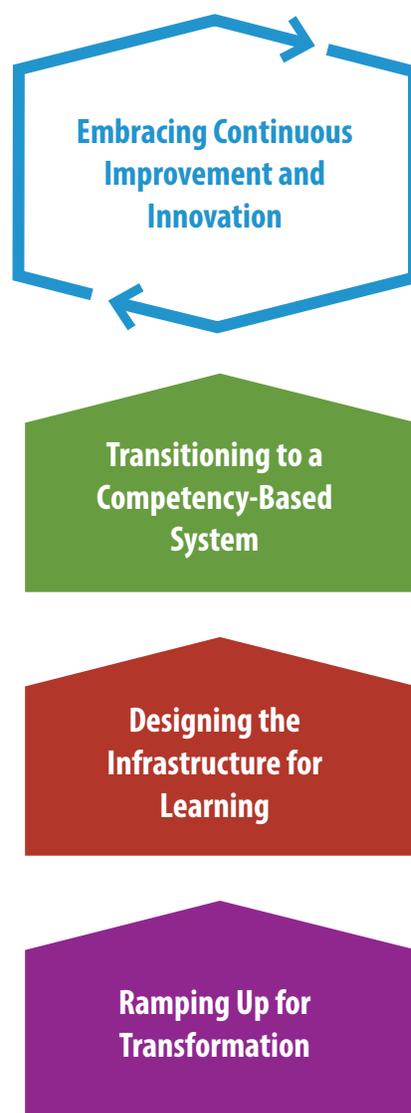# DESIGNING THE INFRASTRUCTURE FOR LEARNING

A FOCUS SECTION FROM:
Implementing Competency Education in K–12 Systems:
Insights from Local Leaders

The following is the second excerpt from the paper *Implementing Competency Education in K–12 Systems: Insights from Local Leaders*. The paper seeks to map out the terrain of the district implementation strategies being used to convert traditional systems into personalized, competency-based ones. Although states and districts use a variety of terms to discuss competency education, including proficiency-based, mastery-based, and performance-based, the goal is the same—to design the systemic infrastructure to ensure that students are getting support when they need it so that they are fully learning all the skills they will need as they advance to more challenging work. This requires schools to have the mechanisms in place to ensure consistency in how proficiency is determined and the flexibility to respond to students' needs in a timely way. Please see CompetencyWorks.org for more information on competency education.

Although not a detailed guide, the hope is that the discussion offered in the paper will be helpful to districts and schools as they begin the transformational process. Four stages of implementation are proposed in this paper: 1) Ramping Up for Transformation, 2) Designing the Infrastructure for Learning, 3) Transitioning to a Competency-Based System, and 4) Continuous Improvement and Innovation. To make it easier for you to use this paper with your colleagues, we have produced excerpts on each of these stages. You can find the full paper and other excerpts under Resources at CompetencyWorks.org.

This second excerpt, Designing the Infrastructure for Learning, discusses the re-engineering of the learning infrastructure from the traditional system to a structure where schools and districts are organized around an Instruction and Assessment model (I&A model). Prior to beginning the actual transition, leaders must weave supports within their model, discuss the implications for student agency, design the overall pedagogical approach, select knowledge taxonomy, determine methods to calibrate the determination of proficiency, and more.

Stages of Implementation

Embracing Continuous Improvement and Innovation

Transitioning to a Competency-Based System

Designing the Infrastructure for Learning

Ramping Up for Transformation

IV. Designing the Infrastructure for Learning

In the traditional system, a one-size-fit-all curriculum and instruction is emphasized—with one textbook and one method of instructional delivery. Competency education is constantly asking what kids are learning and adjusting across a more flexible instructional model to offer choices in content, learning experiences, differentiated instruction, and personalization for kids to learn and develop skills and demonstrate mastery, with assessment focused on students showing what they know. Competency-based schools use a model of instruction and assessment in which mistakes are part of the learning cycle and success is the only option.

– Susan Patrick, President and CEO, International Association for K–12 Online Learning (iNACOL);
Co-Founder, CompetencyWorks

After the ramping up efforts have been put into place, the next phase of implementation is to re-engineer the learning infrastructure. The traditional system is based on three elements: a) time (days per year, hours per day, the time-based credit, semesters, agrarian schedule, promotion based on age); b) focus on curriculum and instruction; and c) A–F grading based on assignments, assessments, homework, and behaviors. If this system has been producing low achievement and inequity, what type of infrastructure and operations can be put into place to produce learning consistently with all students?

The following steps in developing what will be referred to in this paper as the Instruction and Assessment model (I&A model) are not necessarily done in a linear fashion. They actually require an iterative approach so alignment can be developed within the learning infrastructure. Whether you start from scratch or draw from other districts, you will find that the discussion takes you deep into the core of learning. You may also find that once you remove the infrastructure of the traditional system, the experience is like trying to "organize spaghetti," as described by Ty Cesene from Bronx Arena.[1] The options will feel infinite as you begin to question the pillars, customs, and operational procedures that hold the traditional system in place.

Most districts focus on the core changes needed to create a transparent, coherent system that empowers students and teachers. They want to focus the attention on what is needed to ensure learning and progress, knowing that parents and communities are comfortable with the traditional understanding of how schools operate, and that some of the traditional structures still have meaning in today's world. For example, in many communities, the agrarian schedule is now a tourist schedule in which employers rely on teenagers to join the labor market in the summer. Although this sounds like an adult issue, work experience is also a valuable component of helping students become college and career ready. Because each operational or policy change requires substantial leadership attention from district and school leaders as well as teachers, most of the districts that have converted to competency education continue to operate within a relatively traditional schedule for the first several years. It is later that they begin to move beyond the trappings of the traditional system.

Before beginning to design the infrastructure that will support your instructional model, take the time to consider the supports, the implications for student agency, your district's overall pedagogical approach, and how you plan to support teachers through the transition.

A. Investing in Student Agency

In traditional schools, students are passive, and many only attend school because it is compulsory. Or they come with the expectation that the school delivers the knowledge. However, information is now so readily at hand, teachers can't be the disseminators of knowledge. Our community told us they wanted their children to be lifelong learners. We had to ask ourselves, what are we doing in our classrooms to help them be lifelong learners? What structures and supports do our teachers need to help develop lifelong learners? It came down to needing to have an active learning environment. Students need to be able to seek out things they are personally interested in, create a plan, and find the resources. We are always looking for ways for students to learn beyond the classroom.

– Doug Penn, District Principal, Chugach School District

Research on motivation and engagement has established that creating opportunities for students to shape their educational experience (i.e., agency) is an essential ingredient for improving academic achievement.[2] Doug Penn, District Principal of Chugach School District in Alaska, referred to a Ted Talk by Dan Meyer that has sharpened his thinking about the relationship between active learning, deeper learning, and empowering students to take ownership of their learning. In wanting students not to be helpless, teachers need to help less. To accomplish this, schools will need to invest more in developing critical thinking and the habits of learning so students can help themselves.

Engagement and student agency always start with respecting and listening to the different perspectives that each student brings to the school. That's why creating ways for students to express themselves and have voice is central to the work of student agency. Offering choice is equally important. It may start with curricular choice and expand to co-designing learning experiences as students become more adept at managing projects. Most importantly, it is the habits of learning that undergird student agency. Students are not given agency; they need to build the skills to become lifelong learners with the support of teachers and other adults in their lives.

1. Enabling Agency through Transparency

In designing the new infrastructure to support teaching and learning, it is imperative to understand the importance of transparency in enabling student agency. It is by having absolute transparency about what students are expected to know and do, the criteria by which proficiency will be assessed, and a strong understanding of what proficiency looks like that students can begin to have the information they need to take ownership of their learning. The system of grading in competency-based schools indicates to students how they are progressing toward proficiency. It is equally important to be explicit about the habits of learning (those behaviors that contribute to learning).

Brian Stack, Principal at Sanborn Regional High School in New Hampshire, explained, "Competency education has helped the entire school and students get on the same wavelength. With transparency in competencies, conversations focus in on learning. Transparency allows for an entirely different type of relationship between

students and their teachers to form." To this end, as Sanborn develops an increased understanding of the changing power dynamics, teachers begin to treat students as colleagues. "We are creating a culture of learning," said Stack, "by eliminating the punitive responses that are found in so many high schools." Another teacher at Sanborn added to this by stating, "When the competencies are laid out in front for you, you can just get on with the learning. Everyone has a shared vision of why we are in the classroom together."

2. Creating Classroom Structures that Enable Student Agency

The classroom structures of empowerment are relatively similar across competency-based schools regardless of grade level. At RSU2 in Maine, teachers begin the year by facilitating the development of a shared purpose statement and guiding principles for the classroom. A culture of cooperation develops among students as they take ownership for their education as well as their peers. Oftentimes, the walls contain reminders that mistakes are part of the learning process.

Students know exactly what they are learning and what proficiency looks like. Rubrics are readily available, and there is usually an example of proficient work. There may be posters on the wall for students to indicate where they are on their learning continuum. Students and parents often have access to an information management system that provides information on student progress and what they need to do next to continue advancing. Students should be able to tell you what they are learning, why it is important, how they know if they have learned, and what they will do to access supports as needed.

Providing timely feedback is an important element of creating student agency. If students have to wait a week or more to get feedback, they are more dependent on the teacher to advance, thereby lessening the drive to learn and undermining agency. Self-assessment and peer assessment can strengthen students' abilities to reflect and revise their own work. Adaptive software can be very helpful, especially for providing rapid feedback.

An emphasis on process skills and reflection helps students become aware of how they are learning. At Making Community Connections Charter School in New Hampshire, students do End-of-Day reflections on their progress in meeting their daily learning targets and developing their habits of learning.[3] At Chugach School District, reflections are part of the cumulative assessment used to determine if students are ready to move to the next level. Increasingly, schools are enhancing their approaches to building habits of learning.

In competency education, students are often provided opportunity in choosing how they will learn, the context of their learning, and/or how they will demonstrate their learning. Blended learning can provide even more transparency for students to move to the next level of study by creating access to the next unit or course. In both of these settings, there are often opportunities for students to co-design their projects based on high interest inquiry. At Chugach, students can choose to learn through individualized learning plans, described by Director of Special Education Debbie Treece as, "Scaffolding, and then stripping away a little bit of the safety net on the way to independent learning."

Teachers will recognize that the practices described here to develop student agency are the same as those used in managing personalized classrooms. They are in fact entirely interdependent—it is unlikely that a classroom can become highly personalized if every student has to turn to the teacher for every bit of instruction, support, and direction.

3. Embedding Student Voice in Governance and Operations

In Pittsfield School District in New Hampshire, students are considered important partners. Students hold the majority of the seats on the Pittsfield Middle High School Site Council and participate in the development of school policy. In order to ensure students can fully participate, they are given clearly mapped responsibilities and guidelines. In this way, the council is authorized to review and approve proposals related to issues like open campus guidelines, rules, handbook revisions, and class meetings, so that before anything goes to the school board, it goes through them first.

Tobi Chassie, a project manager of the transformational process at Pittsfield, pointed out that students are now considered invaluable partners in addressing issues. For example, student participation in the revision of the disciplinary policy led to a different outcome than if it had only been adults making the rules. Students challenged the idea that suspensions were meaningful for improving behavior, learning, safety, or school climate. After student-led research was completed, Pittsfield adopted restorative justice practices. Student participation in the school council and other school governing efforts gave voice to students and built confidence. That confidence quickly spread from the students on the site council to other students.

LESSON LEARNED AND LEADERSHIP OPPORTUNITY

■ Remember to prepare students for the transition. Provide training to teachers to facilitate conversations that compare the past traditional system and the new competency-based system so that students can articulate how the new system more effectively meets their needs and guides them toward success. For example, you can use the "grading cookies" exercise to engage students in why a different grading system is needed.

Grading Cookies: Have students all eat a specific kind of cookie, and grade the quality of the cookie on a traditional A–F scale. Then collaboratively develop a cookie quality scoring guide with the students, and have a second round of eating a cookie to score its quality. Teachers then guide the students through a reflection process to compare the scores from the two scoring processes. This leads to deeper understanding for all students regarding how the new scoring process provides far more consistent, clear, and accurate input about their performance in all content areas, so they can use that feedback to accelerate their learning. Once students are comfortable with such an activity, they are often excited to facilitate the same activity with parents and community members during public meetings about the transition.

B. Clarifying the Overall Pedagogical Approach

Sure, we could make it easier for teachers, but then our students don't succeed. The other option is to admit that teaching is a complex system, invest in the systems, nurture the culture to support professional teachers…and have the kids actually learn. It's obvious which one is the better choice.

– Jed Palmer, Head Teacher, Tatitlek Community School, Chugach School District

Some districts and schools may already have a strong pedagogical approach in place, while others may find they need to think more in-depth about motivation, engagement, instruction, assessment, and the role of grading. If there isn't an explicit pedagogical approach in place, it should begin with a review of research and lead to the development of guiding principles about learning and teaching (as discussed in the section on shared purpose).

What are the research, beliefs, and assumptions that guide your pedagogical approach? Having a strong pedagogical approach isn't the same as saying you want all teachers to teach in the same way. Instead, it is a set of general principles that help answer questions such as:

- What do we know about the different ways to motivate and engage students?
- Where does student agency fit in learning?
- What role do habits of learning play, and how can they be developed in students?
- What does the research tell us about effective instructional practices?
- What are the types of assessment, and what role do they play in achievement?
- What types of learning experiences are needed to help students reach graduation goals?
- Given your current student population, their academic needs, and their life and learning experiences, how might this inform your school design or pedagogical approach?
- What challenges and educational needs can online and blended learning help you address?
- How do parents and the community at large think about these questions?

In Exhibit 1, Lindsay Unified School District organizes beliefs and guiding principles to emphasize the growth of all learners, learning facilitators, and the overall culture of learning.

What is the role of the district in ensuring schools can offer a mix of instructional approaches and modalities? As you begin to think about the role and balance of direct instruction, practical application, group projects, project- and problem-based learning, independent learning, and real-life applications, you will find that school design and capacity issues begin to emerge, including those related to existing schedules, calendars, and partners for extended learning. This is the point where it may be worth spending the time to determine how blended and online learning can best support your students and teachers. Have you had difficulty serving some of your students? Are there some ways that blended and online education can help you strengthen the learning experience for them?[4]

Is your pedagogical approach standards-driven or student centered? Many districts take a wrong turn by trying to create a competency-based system that emphasizes the standards without first putting a personalized orientation in place. The result is that classrooms may be heavily teacher-driven, with students expected to do learning tasks at a teacher pace. Lindsay Unified School District has redesigned the role of teachers into learning facilitators. Rebecca Midles, Proficiency-Based Learning Specialist, explained, "Learning facilitators guide learners through a journey that leads to self-directed learning, advocacy, and agency. Only in this way does a learning environment become truly learner centered."

One way to determine the degree to which you have become student-centered is to ask the question of who is doing the bulk of the work in the classroom. "Teachers are often doing all the heavy lifting in a classroom to give bite-size pieces to students," said Jane Bryson of Education Elements. "The alternative is for teachers to put their

Exhibit 1: Lindsay Unified School district's Beliefs/Guiding Principles

LINDSAY UNIFIED SCHOOL DISTRICT'S BELIEFS/GUIDING PRINCIPLES

About LEARNERS & LEARNING

1. All learners can learn

2. Learners acquire knowledge in different ways and timeframes

3. Successful learning breeds continued success which influences esteem, attitude and motivation

4. Mistakes are inherent in the learning process

5. Learning and curiosity are basic human drives

6. Learners require positive and validating relationships with learning facilitators

7. Learner wisdom is enhanced by meaningful, real-life experiences requiring complex thinking

8. Learning is fun

9. Learning is fostered by frequent, formative feedback

10. Learning is future-focused

About LEARNING FACILITATORS & TEACHING

1. Learning Facilitators are models of continuous learning and improvement

2. Learning Facilitators inspire, motivate & empower learners

3. Teaching is collaborative and involves on-going learning

4. Learning Facilitators set the conditions for a safe, welcoming, joyful classroom environment

5. Learning Facilitators are knowledgeable and competent in pedagogy and human development

6. Teaching reflects the current research on learning and cognition

7. Learning Facilitators relate to & connect with learners

8. Teaching and learning are a cause and effect relationship

9. Learning Facilitators are the single most important factor in learners understanding

10. Learning Facilitators are future-focused

About LEARNING COMMUNITIES

1. All stakeholders in the community are partners in educating Lindsay's Learners

2. Learning Communities (LCs) align all systems, policies, practices to support the principles that learners acquire knowledge in different ways and in different timeframes

3. LCs have high expectations for all learners and staff

4. Learning communities embrace accountability and strive for continuous-improvement

5. LCs encourages and supports risk taking and innovation

6. LCs have a clear, shared purpose and direction

7. All members of the LC are committed to the mission and vision and are empowered to achieve it

8. Communication in LCs is frequent, open, and transparent

9. LCs are inclusive and embrace diversity

9. LCs are future-focused

effort toward creating the structures to allow students to move more fluidly through the coursework. The goal is to ensure that teachers aren't bottlenecks to learning, but instead facilitate the learning process."[5]

How is your pedagogical approach taking into consideration the academic equity challenges in your district? The first step is to review patterns of academic achievement and benchmark yourself against the districts doing the best in the country in serving low-income students, English language learners, and special education. Consider academic achievement of different racial and ethnic groups, including disciplinary patterns of suspension and expulsion. As a district, identify where and why students are disengaging from school based on attendance and failing grades, as well as the level of access for students to re-engage in school to complete their diploma. Given that high schools are still somewhat time-bound by the tradition of graduating with peers, look at how many students enter more than two years behind academically and how many students become over-age and under-credit by the end of ninth grade. Then return to your pedagogical approach and consider how it can be strengthened to ensure that it is addressing the needs of the students who are the most underserved.

Competency education is designed to address inequity and low achievement by enabling personalization through a transparent and calibrated I&A model. However, producing improvements in student engagement and achievement is dependent on the degree that a school's pedagogical approach meets the needs

of students. For example, Harvey Chism, Senior Director of School Design at EPIC Schools in New York City, points out that in a competency-based environment, culturally relevant material can be embedded to respond to diverse classrooms by offering opportunity for student choice and co-design within units.[6] The data about patterns of inequity in academic achievement should drive the development of the pedagogical approach and the continuous improvement processes that are discussed later.

✔ LESSONS LEARNED AND LEADERSHIP OPPORTUNITIES

- As districts are guided by the beliefs and principles about teaching and learning, many find themselves turning to performance-tasks and assessments to help lift their instruction from the knowledge levels of recall and comprehension toward analysis, application, and evaluation. Several districts are now investing in strengthening their teaching capacity by providing training on learning progressions and formative assessment to better support students in mastering concepts.

- For districts operating in states that are implementing education policies, such as the Common Core and state accountability-driven assessments, without balancing them with an adequate investment in improving instruction, assessment for learning, and other capacity-building efforts, there will be substantial leadership demands to support teachers in reclaiming their role in teaching students (as compared to curriculum). District and school leadership will need to reinforce mutual accountability, the shared purpose, and collaboration at a time when state policies are emphasizing "blame and shame" accountability policies, narrow understanding of the purpose of schools, and individual teacher productivity.

- As districts establish information management systems to support student learning in competency-based environments, they will find they do not need elaborate tracking systems to monitor when students start to fall off-track. Management reports can be developed to provide nearly real-time data on how students are progressing and which students are not progressing as expected. Schools can respond in a matter of weeks to find more effective instructional strategies, offer coaching to build stronger habits of learning, and, if needed, engage parents and community resources.

C. Configuring the Instruction and Assessment Model

The minute we changed the equation of time and learning so that time became the variable and learning the constant, we immediately faced the question: "How do we manage when we are individualizing the educational experience for kids?" All the systems in the traditional system didn't help us anymore. We had to start from scratch.

– Dr. Bob Crumley, Superintendent, Chugach School District

There are several design decisions that need to be made to create a common language of learning, especially in the context of the district's overall pedagogical approach and belief about motivation and learning. In addition

to districts engaging the community in the process of developing a shared purpose and guiding principles, there are four core questions educators will need to drive the design and operations of any competency-based system:[7]

- What do you want students to know and be able to do?
- Why is this objective important?
- How are you going to know if students have learned it?
- What are you going to do if they don't (or they do)?

The following sections walk through the design decisions that will need to be made to answer the questions above. At this point in the development of competency education, there is no best model. Districts and schools are making decisions based on a number of considerations, including the availability of technology to support student learning.

1. Establishing Overarching Competencies and Proficiency-Based Graduation Requirements

What are the overall sets of skills, content, and traits you expect students to have upon graduation?

The initial work to determine the desired skills, content, and traits is done in partnership with community conversations. Later, districts facilitate conversations with their educators to further develop the goals for their students. Those districts that have fully engaged their communities often have shared purposes that are broader than the current policy of "college and career ready." The focus tends to be more on lifelong learners and

HOW ARE YOU DOING IN CREATING AN EQUITABLE COMPETENCY-BASED SYSTEM?

- Are students who need to strengthen foundational English language and mathematical skills, no matter what their grade level, offered a chance to fully develop their education with adequate instructional support and additional time to accelerate the annual pace of their learning?

- How rapidly are you identifying students who are struggling and providing them with additional support? Are you waiting for the end of the year? Semester? Month? Week? Day? Do you provide preparation time for students who may have gaps in skills before they start a course rather than waiting until they have troubles? Is online learning available to provide more efficient and differentiated support?

- Do students have to take assessments before they are ready, thereby increasing the likelihood of failure and the need for re-assessments, or are they expected to demonstrate proficiency before summative assessment? Are you offering "competency recovery" rather than expecting students to re-take entire courses?

- Are students who are academically behind or over-age and under-credit offered enriched educational experiences that help them build habits of learning, co-design their learning experiences, and apply skills, or are they being placed in front of a narrow online curriculum in order to complete a course?

- Do students have an opportunity for deeper learning and real-world application of skills no matter where they are on their learning continuum or how far they are behind or ahead of "grade level?"

- Most importantly, are you holding yourselves accountable by collecting data and developing management reports that can help you focus in on where groups of students may not be progressing by race, income, special education needs, language abilities, and gender?

preparing students for life. Thus, the set of learning continuums—the expectations for what students will be able to know and do—is much more comprehensive than just academic disciplines.

Determining what a proficiency-based diploma means as opposed to one founded on time-based credits that have little meaning (and that require so many students to take remediation once they start college) is not an easy process. Is it a floor that everyone reaches and can go beyond? Is it a ceiling at which you have completed high school? Is there a point that it becomes personalized based on student goals?

Determining this meaning and value will raise questions about what it means to be college-ready when the higher education sector offers little agreement or transparency. It will also raise questions about equity—do we expect 100 percent of students to meet 100 percent of standards at 100 percent levels? Given that high school continues to be time-bound because of the importance of graduation as a significant benchmark on the way to becoming an adult, it will raise questions about how to help students who either started with gaps, need greater flexibility, or need more time. Do you build in more time during the four years of high school, or do you begin to plan based on student performance at the end of ninth grade for extended graduation? More than anything, determining the meaning of a proficiency-based diploma will open the door for deep discussion among teachers about whether they and/or the school offers the capacity for the necessary instructional support, and, if not, what needs to happen to build capacity.

Some districts continue to use number of credits to determine graduation, with the understanding that competency-based credits indicate success in learning the skills. Assuming there are mechanisms to calibrate proficiency and maintain quality control in place, this indeed should be the case. Others create specific levels of proficiency to determine graduation. For example, Chugach School District created ten domains with ten levels to describe what they expect students to know and be able to do upon graduation. They developed the Performance Snapshot to show student progress toward achieving the minimum graduation levels in each domain. It's now a reporting tool generated by their AIMS information management system to indicate how students are progressing. The light shaded boxes show the minimum graduation level for each standard. The darker shaded boxes show advanced levels. The district credentials that students are proficient as they move from level to level toward graduation, with teachers determining proficiency within the levels. When they complete the graduation requirements, students then present their School To Life Transition Plan to the School Board prior to graduating. See Exhibit 2 for the Chugach School District Performance Snapshot.

2. Constructing a Common Language of Learning

What are the explicit and measureable learning objectives to describe what students need to learn on their way toward meeting the graduation goals?

Districts and schools start with a different mixture of concepts and create a variety of structures to define the learning continuum. It is important to take your overall pedagogical approach into consideration when shaping the overarching competencies. As Kim Carter, founder of Making Connections Charter School, explains, "Designing competency frameworks is a creative process. We gather together the tools we will need the same way a painter might choose brushes and paints." For ELA and mathematics, most turn to the well-developed Common Core continuum of learning or their state standards. Others will start or embed the essentials of a discipline, asking, "What does it mean to be a mathematician, a historian, a writer, a scientist?" Still others may be designed around themes or career pathways that rely on a structure that starts with the needs of industry.[8] In some cases, states may have even already set a broad framework within which districts and schools can further structure their learning.

Exhibit 2: Chugach School District Performance Snapshot

Name:
John A. Student

Curriculum Name :
CSD 08 standards

School Name :
FOCUS Homeschool Anchorage

Standard Area	1	2	3	4	5	6	7	8	9	10	11	12
Mathematics						+ 01/20/13	✓ 01/20/13					
Technology					+ 08/27/12	✓ 08/27/12						
Social Studies					✓ 03/10/11							
Reading					✓ 03/10/11							
Writing					✓ 03/10/11							
Culture and Communication				✓ 03/10/1								
Personal/Social/ Service				+ 05/24/13	+ 05/24/13	✓ 05/24/13						
Career Development				+ 05/24/13	+ 05/24/13	✓ 05/24/13						
PE Health					✓ 03/10/11							
Science					✓ 03/10/11							
Early Childhood												

Key

	The level preceding the Advanced Level is the Graduation Level. Student must demonstrate proficiency in all the levels up to and including.
	Advanced Level. Student demonstrating advanced skills in that content Standard Area.
	No Chugach School District benchmarks have been identified for that level in that Standard Area.
−	Student is Emerging at that level. Emerging: Student is beginning to work on this level.
✓	Student is Developing at that level. Developing: Student is working on this level.
+	Student is Proficient at that level. Proficient: Student has met level expectations
✱	Student is Advanced at that level. Advanced: Student has exceeded level expectations.
PGP	Student has opted for Personal Graduation Program at that level.

There are five components that guide this work:

    a.   Knowledge Taxonomy

    b.   Structure and Characteristics

    c.   Developing the Continuum of Learning

    d.   Rubrics and Calibration

    e.   Habits of Learning

a. Knowledge Taxonomy: How do you know the depth of learning and that students are developing high order skills?

Knowledge taxonomies are a cornerstone of the learning infrastructure. If districts haven't already selected a knowledge taxonomy, it is important they do so in order to design their I&A model. There are a variety of taxonomies, each designed for different purposes and complexities, to choose from: Webb's, the New Taxonomy (often referred to as Marzano's), and Bloom's. (See Exhibit 3.) The knowledge taxonomy will provide teachers with a common vocabulary to talk about student work. It will also facilitate the introduction of higher order skills into conversation. Professional learning communities (PLCs) will be able to use the knowledge taxonomies to look closely at the level of instruction and assessments. In some cases, the decision about knowledge taxonomies may be considered a state decision. For example, in New Hampshire, the state selected Webb's and uses it as a foundation in creating a system of performance-based assessments.

As teachers become more comfortable with competency education, there will be more and more discussion about depth of knowledge. Rose Colby, a competency-based learning and assessment specialist, points out, "In many districts, teachers begin to realize they are not assessing at higher levels of knowledge. They begin to build their assessment literacy as well as create more performance tasks and assessments. Some realize that even though their assessments may be at higher levels of rigor, their instruction isn't. Thus the knowledge taxonomies create the conditions for a cycle of learning for teachers."[9]

With clear learning goals, teachers have flexibility in how they teach.

Exhibit 3: Knowledge Taxonomies

BLOOM'S TAXONOMY – Original (1956)

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation

REVISED BLOOM'S TAXONOMY – Anderson and Krathwohl (2000)

Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

WEBB'S DEPTH of KNOWLEDGE (1997)

Recall and Reproduction	Skill/Concept	Strategic Thinking	Extended Thinking

NEW TAXONOMY on EDUCATIONAL OBJECTIVES – Marzano and Kendall (2007)

Retrieval	Comprehension	Analysis	Knowledge Utilization

b. Structure and Characteristics: What are the units of learning and how are they organized?

The structure of the units of learning is the spine of the competency education system, enabling transparency and alignment between standards, instruction, and assessments. It has also been referred to as the "blueprint for personalized learning," as the explicitness and transparency of the learning objectives allow teachers and students to create highly personalized learning experiences. It is by having a unified, transparent system of what students are expected to demonstrate in order to advance that schools, teachers, and students can have the freedom to use different instructional approaches and ways to demonstrate learning. In competency education, with its emphasis on transparency, this becomes even more important. Students and parents are going to know when an assessment is assessing something beyond the standards and the curriculum. Some districts use the Common Core and state standards after rewriting them in user-friendly language. Some narrow the number of standards by focusing on the power standards, while others expand the structure to include bridging standards for even more specificity about what students will need to succeed in mastering a standard.

RSU2 and Lindsay have developed a three-level structure of overall competencies, measurable topics, and learning targets with the support of Marzano Research. Forming clusters of standards, or learning targets, into measurement topics focuses instruction and assessment and creates a "vehicle for learning" that teachers can use to keep track of the progress of individual learners.

Measurement topics clearly identify the level of knowledge that students need to be considered proficient. Students are expected to reach the designated level of knowledge to be determined proficient. Levels of knowledge are not synonymous with rigor. A student memorizing the alphabet is working hard at Level 1. However, as skills are developed, it is likely that the appropriate level of knowledge is Level 3 or above. Level 3 is what the New Taxonomy (Marzano & Kendall) would refer to as Analysis, including Matching, Classifying, Error

Analysis, Generalizing, and Specifying. Level 4 is considered to be Knowledge Utilization, in which students apply the skills in ways beyond what was taught in the classroom. All Level 3 knowledge and skills are formally assessed, scored, and reported, whereas Levels 1 and 2 may be tracked but not formally assessed when they are steps on the way to Level 3.

At this point in the development of competency education and the availability of technological tools to support it, there is little consensus about the level of granularity that should be used in organizing and assessing standards. Smaller learning targets may be easier to assess and provide students with a sense of progress. However, there is concern that the number of standards and the degree of granularity is unmanageable within the current budget and time designated for schooling. This line of thinking argues that teachers need to spend time on assessing at larger units of learning rather than every standard because it keeps the focus on the most important skills and creates the opportunity for deeper learning.[10] For example, at Sanborn Regional School District, competencies and essential standards are equal. Teachers design units based on Understanding by Design to identify the most important anchor standards and write them as "I can" statements. By focusing on the anchor standards in this way, they reduce the chance that the vast number of standards (kindergarten alone can have as many as 100) will become overwhelming.

Some suggest that it is the creative tension generated from holding ourselves accountable to teaching students the standards with greater granularity that will create the conditions for innovation, forcing us to seek other ways of organizing learning so students can learn more within the current frameworks, budgets, and timeframes. Certainly, with greater technological solutions designed for the competency-based classroom, we can imagine that one day teachers will be able to assess and track student progress in real-time.

A second decision related to the structure that districts make is how they are going to talk about academic levels as being different from grade levels. If you are going to break the link with advancing students in age-based cohorts, regardless of their level of learning, then what type of language and construct do you need to determine advancement upon mastery? Most districts retain age-based grades for a number of reasons—parents are used to it, there are developmental issues that are logically related to age regardless of academic learning, there are some disciplines in which students can work together without concern for their academic levels, and there is a social context to learning, with students eager for a sense of belonging. Certainly, in high school there are a number of developmental benchmarks (getting a car, prom, and graduation) that are traditionally based on age.

Districts have organized academic levels in a number of ways. Some have the same number of academic levels as grades. Some have tried to create approximately two academic levels for any grade level to differentiate between the two as well as provide a greater sense of progress for students. Some use the Common Core academic levels for ELA and mathematics but organize social studies and science in age-based grade levels. As described previously, Chugach School District created a unique set of ten levels with very specific determinations for graduation requirements. Adams 50 in Colorado tried organizing academic levels so there were two for each grade level, but returned to alignment of academic levels to grade levels after finding that a separate structure of academic levels created confusion among parents. Now if a sixth grade student is reading at level 7 but doing level 5 math, parents have a very clear sense of how their students are doing.[11]

LESSONS LEARNED AND LEADERSHIP OPPORTUNITIES

- If your culture of learning is strong, students will be comfortable talking about their grade levels and academic levels even if they are on academic levels below their grade level. Pay attention to language about progress—emphasize efficacy, depth of learning, and working harder to tackle challenging material rather than falling into the trap of referring to students as fast or slow.

- Create an innovation opportunity for your organization by engaging a discussion around the questions, "What would your school look like if you did away with grade levels? How might you organize and flexibly group students? How might you deploy teaching staff differently?"

c. Developing a Continuum of Learning: How will content be organized within the structure?

Once a district has established what the structure will be, the next step is to organize the content areas or domains into the structure or a continuum of learning. The task at hand is to create a learning continuum for each domain that has been determined as important to graduation expectations, stretching from K through 12, with a clear indication of what it means to advance upon mastery. In thinking about the definitional elements of competency education, this is where districts create a transparent set of explicit and measurable learning objectives and a system of assessments that are designed to advance student learning.

The process of developing the learning continuum, defined as an aligned set of standards and rubrics, can be designed as embedded professional development. Working in groups, teachers unpack standards, share student work, and write the standards in user-friendly language. While a vital step, this can also become an overly iterative process when the focus turns to getting every word right rather than building a shared understanding, holding deep conversations about learning progressions that describe how students move from one concept to the next, and building assessment literacy. Schools may develop and review rubrics simultaneously or as a subsequent step. (The topic of rubrics and calibrating the determination of proficiency is discussed separately below.)

Much of the conversation in preparing learning continuums will be in the context of the specific discipline. Jeni Gotto of Adams 50 explained that in a competency-based school, it makes a difference when teachers really understand the content discipline. They aren't teaching ninth-grade curriculum anymore, they are teaching teenagers who may be at different places along a learning continuum. Teachers who can teach students at their grade level and diagnose why students are struggling are going to see their students make progress. Teachers with deep content knowledge will be valuable in determining which standards are worth tracking because they are pre-requisite skills for more advanced learning, rather than trying to track student progress on every standard.

Danielle Harvey, Dean of Instruction at Pittsfield, believes that writing competencies is primarily about communication. The personalized learning structure they've implemented helps both teachers and students recognize when the student isn't "getting it," thereby opening the doors for next steps. This kind of transparency carries over to the competency-based structure itself. Harvey recommends that schools should have an implementation plan and not try to tackle everything at once. There will always be refinements in improving and aligning competencies, rubrics, and assessments. For example, Pittsfield started with the standards they had rather than trying to operate on a blank slate. They relied on the Understanding by Design model to support teaches in identifying the essential learning components and designing a structure that would help students learn. They also found it helpful to make a distinction between closed competencies that are more time-bound and open competencies that might require a year to develop.

LESSONS LEARNED AND LEADERSHIP OPPORTUNITIES

- Districts should set the goal as creating continuums of learning across elementary and secondary schools, not just as segments for each grade level. It is important to think about vertical alignment. Once teachers have organized the learning continuums, be prepared for frustration that curriculum isn't designed well for the competency-based classroom. Publishers create curricular resources on specific grade levels, with different products for elementary, middle, and high school. Thus, a teacher in seventh grade trying to teach students with gaps at the fourth- or fifth-grade level may not have any resources within the middle school curriculum or be familiar with the elementary school curriculum. As a partial solution, Adams 50 turned to an open source curriculum, Progressive Math Initiative from the New Jersey Center for Teaching and Learning.

- Even though learning continuums may be organized in sequence, that doesn't mean students have to learn in a rigid linear fashion. There are some standards that are prerequisite for another and need to be taught sequentially. However, if teachers are using worksheet after worksheet in their first year of implementation, it is likely they need some help to transition to a personalized approach that creates more engaging learning experiences and embeds student choice into unit design. As teachers become more comfortable with the flexibility enabled by competency education, it is likely they will begin to use more creativity in how they design units.

d. Rubrics and Calibration: How will you know students are learning and what they need to reach proficiency?

As districts are designing the structure of learning, they are also thinking about assessment. Doug Penn points out, "We need to always know the purpose of assessment. It is to help students and the teacher understand what students know and what they don't know, and to provide insights into the steps that are needed to learn it. Too often, assessment is used as a hammer and a gateway. For us, we see it as a process of helping students get from don't know to knowing."

Thus, as teachers develop the learning objectives, they also consider how they will structure rubrics to provide meaningful feedback as well as determine that students have met appropriate levels of knowledge. The process of creating norms about what proficiency means at each unit of learning and determining when students should advance to the next academic level depends on four things: clear criteria or rubrics, calibration, assessment literacy, and quality control mechanisms. In the initial years, the primary focus tends to be on rubrics and calibration. Districts and schools invest in strengthening assessment literacy, specifically building capacity for formative and performance-based assessment, and design quality control mechanisms at a later date.

Rubrics

In the early days of the transition to competency-based education, many schools continue to rely on students taking tests and getting a number of the answers right. Over time, however, they increasingly turn to rubrics that provide more in-depth insight into how students are advancing toward proficiency. There are many ways these are structured—some indicate progress (emerging, proficient, beyond proficiency), while others are highly aligned with the knowledge taxonomy (recall, comprehension, analysis, knowledge utilization). Teachers may also take the language and create their own variations with student-friendly language or engage their students in creatively naming the levels of the rubric.

Given that grading systems are often developed on the backs of the rubrics, it is important to think about how parents will understand the language, as well. At Memorial Elementary School in the Sanborn Regional School District, they found the process of developing a system of grading and assessing was best described by the Goldilocks story, in which they had to search to find the perfect fit. At first, they moved from the 100-point scale to a four-point rubric, which included E (Exceeding), M (Meeting), IP (Inconsistent Progress), and LP (Limited Progress). However, some of the terms carried negative connotations, and most parents made a mental link between an E and the traditional A grade, even though the school considered M to be the goal and E to be a demonstration of rare and exceptional work. Over time, they had to adjust the letters to align better with what parents were able to understand and accept. They now rely on E (Exemplary), P (Proficient), IP (In Progress), and LP (Limited Progress).[12]

Calibration

Calibration is one of the core processes to ensure that competency education consistently produces higher achievement while also addressing achievement gaps. Without calibration, it is unlikely that your I&A model will be effective in ensuring all students are reaching proficiency.

The process of calibration (also referred to as norming, moderation, or tuning) is a conversation among teachers about student work and building agreement about proficiency. This is often done within PLCs. Over time, principals will want to organize opportunities for vertical and horizontal alignment within their schools while districts seek to build consistency across schools. This is an ongoing process, and larger districts will need to think more deeply about how to create ongoing mechanisms to ensure consistency and rigor across the district.

At Memorial Elementary School, a "writing wall" has been developed to enable teachers to develop a shared understanding of what grade-level writing looks like. Over a three-year process, the teachers at Memorial have devised a system to analyze student writing as a cohesive staff and with a focus on all grade levels at once. By making a large table that contains every student's writing and progress and placing it in a school-wide continuum, they are able to cluster data by grade level, by classroom, and by individual child growth. In this way, the entire staff can dissect results and come up with vertical teams to address strengths and weaknesses and share best practices. Currently, Memorial is also working to strengthen assessment literacy, specifically related to performance assessment, as part of its participation in New Hampshire's PACE initiative to design a statewide performance assessment system.

✓ LESSONS LEARNED AND LEADERSHIP OPPORTUNITIES

- In the early stages of implementing competency education, teachers will begin to recognize that they are teaching and assessing at levels of recall and comprehension rather than higher levels. This may cause frustration, disappointment, and even a bit of shame. This is an important point to instill the culture of learning—helping teachers to recognize the value of a transparency system, collaboration, and learning from mistakes. This can also be a place to develop teacher leaders who embrace the mantra of "doing right for our kids" to help move past the frustration, turning it into a drive to do better.

- Great professional development can take place when teachers talk about student learning, instruction, and assessment as they design and refine the learning continuum. However, watch out for constant re-writing of standards and rubrics. It is easy for this to become a bureaucratic process

rather than one focused on teaching and learning. Make sure teachers are spending time looking at student work, talking about what proficiency looks like, and building their assessment literacy. Manage refinements of documents on an annual basis so that it doesn't take up too much of teachers' precious time together.

e. Habits of Learning: What are the skills students need to manage their own learning, and how are they developed?

Creating empowered students isn't about moving them through a curriculum. It requires schools to organize their learning experiences to help students build all the skills (referred to by many terms, including habits of learning) to become independent learners ready to pursue college and careers.

In order to separate out academics from behavior in the grading system that indicates how students are progressing in reaching proficiency (i.e., a progress monitoring system), competency-based districts and schools must establish a set of skills or behaviors that are important for learning or are needed for college and career readiness. For example, at the Sanborn Regional School District, teachers have learned that assessing behaviors in elementary school students is an important step in helping students make academic progress. The Responsive Classroom CARES (Cooperation, Assertion, Responsibility, Empathy, and Self-Regulation) project focuses on developing work-study habits early on.

The most advanced competency-based districts have discovered that these skills and behaviors are in fact an essential element of creating student agency and improving academic achievement. They are beginning to think about what the habits should be developmentally and how they interact with efforts to address social-emotional learning and the school culture.

Helping students stay on a meaningful pace toward graduation goals, regardless of their grade and academic levels, requires attention to students' strengths in the habits of learning as well as adequate coaching from teachers. Jaime Robles explains Lindsay Unified School District's approach as, "Our lifelong learning competencies have been developed around our strategic design for graduate outcomes. We have created a school-wide focus on progress. This starts with frequent check-ins. We do not wait until the end of the semester; we are constantly checking. We review learner progress and indicate whether they are at a 3 (on pace), 2 (indicating they can catch up), or 1 (indicating that the student needs additional support). However, we do more than look at learner pace, we are also reviewing their scores in lifelong learning and seeing what areas need to be addressed and supported by learning facilitators or in advisories."

LESSONS LEARNED AND LEADERSHIP OPPORTUNITIES

- Only after defining the knowledge taxonomy, structure, and continuum of learning should districts seek out the Learning Management Systems and digital infrastructure to support learning. Some districts make that decision too early and are then constrained by the existing product architecture. It will help to include the chief technology officers and/or technology department in the early conversation around structure and the learning continuum so they can understand the vision and begin to seek out potential technological solutions.

- Districts and schools can save time by adopting approaches developed by other schools or working with vendors. However, invest time and resources to support the process of calibrating the determination of proficiency, as it is part of the process for creating a competency-based system. The process of creating the I&A model can also help educators shake off the beliefs of the traditional education system and embrace the assumptions underlying competency education.

- Also remember that the work of developing the I&A model is never fully completed in the first attempt. Even the most developed competency-based districts tend to have some but not all of this in place, or they are continuing to refine. Thus, it's best to think of this as a work in progress. It's a meaningful process for educators to unpack the standards, think about the level of knowledge, turn it into user-friendly language, and discuss how they would know if a student had mastered the skill or content. Make sure that realistic goals are set. Learn as much as you can from other districts so that not everything is built from scratch.

D. Forging Policies and Operating Procedures for Personalization

Our goal at Making Community Connections Charter School is to develop graduates who are empowered with the knowledge and skills to use their unique voices effectively and with integrity in co-creating their public global world. This is, in effect, our One Big Competency.

       – Kim Carter, QED Foundation

If a district puts into place all the pieces described above, they will be well on their way to creating a strong standards-referenced system—but not a student-centered one. The new value proposition is based on an integration of personalized learning that takes into consideration students' needs, interests, and aspirations along with a competency-based infrastructure focused on proficiency, pace, and progress.

The following discussion is on the policies and procedures that need to be in place to ensure that the system you are implementing has students and their academic success—not the standards themselves—at the center.

1. Student Agency

Personalization and student agency go hand in hand—it is nearly impossible for teachers to manage a personalized classroom if students are constantly turning to them for direction. Thus, as schools move toward personalized, competency-based education, they will also want to create the conditions for students to take ownership over their education (i.e., student agency). There are a number of essential ingredients required to create an environment and learning experiences that help students build the skills they need to have agency: a school culture that is grounded in a growth mindset, strategies to help build habits of learning, opportunities for choice and co-design, transparency of learning objectives with well-developed assessments, and high levels of teacher autonomy.

As schools commence on the journey toward competency education, they are likely to find themselves thinking more and more deeply about the implications of student agency in practice, operations, school design, and policy. Below are three areas that schools will encounter and want to begin to create policies, guidelines, or operating procedures for.

How are you going to develop habits of learning? Habits of learning are an important ingredient in building student agency. Habits of learning cannot be taught only by talking about the habits—students must have the opportunity to develop, practice, and reflect upon them. Thus, districts will need to think about offering a mix of developmentally appropriate project-based and experiential learning opportunities. This may require thinking about the school calendar, changing the schedule, and/or committing resources to develop and sustain partnerships in the community.

Pittsfield School District has created a dynamic extended learning program that enables students to build skills, demonstrate competencies, earn credit from experiences gained outside of the school environment, and even partner with higher education institutions to gain college credits. These Extended Learning Opportunities (ELOs) integrate with the competency-based structure by connecting the learning experience to core content areas. Each ELO is different based on student interest and the skills they are developing, but shares a commonality of involving research, reflection, and a presentation or project that links to the Common Core standards.

In what way will you offer students voice, choice, and opportunities to co-design their learning experiences? The transparency of the learning expectations enables teachers to create choice about how students learn, the context of their learning, and how to demonstrate learning. It may be a discrete choice, such as selecting which animal to investigate when looking at an aspect of biology or selecting which poet to learn about in English. In many cases, teachers provide options with the caveat that students may suggest alternatives. Choice in how to demonstrate learning will require schools to have well-developed rubrics that focus solely on the specific skills to be assessed so that students may submit written materials, presentations, or more creative products such as a play or 3-D model to demonstrate their learning.

Rose Colby has observed that teachers are changing some of their practices for unit planning to provide more of this kind of choice. In the teacher- and time-driven practices of the traditional education system, teachers often spend Fridays going over their plans for the next week's curriculum. In a personalized, competency-based environment, this curriculum serves as a basic roadmap, but teachers make room for flexibility. This way, when students raise unexpected issues, want to explore an area more deeply, or simply need additional learning support, there is room already built in. As Colby explains it, "There is a resiliency that develops in order for educators and administrators to respond to student agency in the moment."

Transparency empowers students to have voice and choice.

Schools are also creating opportunities for students to co-design their learning with teachers. This entails creating the structures for students to identify areas of inquiry and then organize the learning goals as defined by the standards and habits they intend to fulfill. The I&A model becomes a common language that allows students, teachers, and any partners in the community to discuss the projects and learning expectations.

What are the skills and autonomies teachers need to nurture student agency? Teacher autonomy and student agency go hand-in-hand. In order for teachers to be able to be responsive to students' learning, they need to be able to have some degree of autonomy in terms of pacing and their professional judgment. Kim Carter notes, "Teachers need to know how to manage motivation—when to push, when to pull, when to pause. They need to know how to give feedback that helps students navigate the gaps between where they are and where they are going in terms of their learning targets. Equally importantly, teachers need to know how to solicit and receive feedback *from* students about which instructional practices are helpful and which aren't. One of the most important skills for teachers to nurture in themselves and in their students is metacognition."

Don Siviski, previously the superintendent of RSU2 and the Maine Department of Education's Superintendent of Instruction, currently at the Center for Secondary School Redesign, spoke on this point with, "Everyone in the education system has to model 'agency' and the empowerment of others. The superintendent has to honor agency with principals, principals with teachers, and teachers with kids. Remember—kids learn from what we do, not from what we say."

Most importantly, districts and schools need to think strategically about what supports teachers need to help build student agency. Most teachers have not received training about assessing or helping students to build strong habits of learning. They will need support in learning how to manage a personalized classroom rather than a teacher-driven one. Some teachers may find themselves outside their comfort zones when trying to empower students or discover they don't possess adequate assessment literacy needed to manage a wide range of choice in how students demonstrate learning.

2. Levels, Pace, and Progress

Districts will need to develop a set of policies or guidelines regarding pace. The function of keeping students learning at a meaningful pace (as compared to delivering curriculum) is one of the most important and challenging aspects of the conversion to competency education. As a field, we have yet to create new language, concepts, or metrics that help us understand pace and progress. As you consider the following questions, understand that you are on the edges of the frontier.

What academic level are students? As students enter a competency-based school, teachers will need to know their academic levels. Some schools do formal assessments using an array of formats. Some turn to one assessment system, such as NWEA Map or Scantron. Others have found that this can be off-putting for students, and look to teachers to use their professional judgment in leveling students. Teachers continue seeking understanding of the skills and knowledge students bring into the classroom by using pre-assessments to assess what students know or don't know so they can respond more quickly to students who need extra help.

What is a meaningful pace? Flexibility in pace and pacing is one of the most important concepts in competency education and also one of the most challenging. Kim Carter explains, "One of the most significant distinct aspects of a personalized competency-based system is the ability to adjust pacing to meet every learner's needs. This shouldn't be construed to mean that each learner gets to set his or her own pace. At MC² we rely on

'negotiated pacing with gradual release.' This is an integral aspect of developing student agency and the central role of managing motivation in an educational system designed to create proficiency not just in facts and skills, but in habits and dispositions to be critical thinkers and lifelong learners. Determining progress is very clear in a competency-based system because of the transparency of the learning objectives. Pace is the progress (amount of learning) divided by an amount of time. Depending how a district has developed their academic levels, competency-based schools can determine the expected annual rate of learning."

The term *pacing* is sometimes used to talk about the planning and supports needed to help students make progress. When learning is a constant and time is a variable, more instructional supports and more time on the part of the student and teachers will be needed when students are not "keeping pace." If pacing is not adequate, schools need to engage students and their families, seek out additional resources, or plan for more time for the students to make adequate progress. If there is an issue at play that is preventing the student from advancing at an adequate pace, then individual plans can be created.

The issue of pace, progress, and pacing is made more complex by the fact that students in the same grade may enroll in school with a difference of two, three, or even more academic levels in their skills. Thus, one student may not yet be proficient but learning at a more rapid pace than the student who entered on academic/grade level. Schools develop individual plans to support students who are substantially behind academically, setting a path to keep them on a pace that makes sense for them.

How will you ensure consistency in determining students have acquired the level of proficiency to advance to the next level (i.e., quality control)? Districts will need to decide how students are determined to be ready to "advance upon mastery." Is it based on units, courses, academic levels, or major benchmarks such as the transition into high school? In many cases, the authority to credential students rests with teachers. The performance-based system at Chugach School District has developed over time, with the district taking responsibility for ensuring students are proficient before advancing to the next level by relying on cumulative assessments. Teachers have autonomy and use their professional judgment to determine proficiency within levels. At Making Community Connections Charter School, teachers and students determine when students are ready for the four gateway performance assessments of which the last one is graduation. Students prepare a portfolio and present to a review panel that includes community members.

Some schools that convert to competency education find that after leveling, they have many secondary school students who are two or more academic levels behind their grade levels. This same situation exists in the traditional system, but competency education makes it explicit and demands a response. Schools are using a variety of techniques, including ninth grade academies, creating a schedule where students spend time building their foundational skills, after-school tutoring, and adaptive learning that provides rapid feedback. Adaptive software can be very helpful when students have foundational skills but lack fluency. Teachers can then focus their attention on working with students on higher level thinking skills while students continue to strengthen their skills with digital support. Schools may also set the expectation that middle school students will need to strengthen reading, writing, and mathematics before entering high school, assuming it makes sense developmentally. In partnership with students and parents, plans may be developed for how students will advance on an individualized plan that may depend on a steep learning trajectory to graduate with their cohort or plan for an extended graduation date.

How will you monitor and communicate student progress? Transitioning from traditional A–F grading and the 100-point system to monitoring and communicating student progress is one of most important implementation

steps—and one that is loaded with pitfalls.[13] Many districts start off with a hybrid model, attempting to join a standards-referenced system with the elements of the grading system that are most well-known by teachers and students. Over time, however, this can cause ongoing headaches. One teacher at Sanborn High School described this dilemma, "If you are going to be rubric-based, then you have to have a rubric grade. Trying to marry the 100-point scale to rubrics doesn't work. The 100-point scale just has to go away. It's a hindrance."

At the high school level, it may be harder to break away from traditional grading because the point system is the basis of the GPA. Using a hybrid grading system may make it even more difficult to create a shared focus on learning, as some students will be more focused on how points are distributed than learning. Be prepared to engage educators, students, and families about the limitations of the traditional grading system for "college-bound" students, in that they may have a high GPA within their own school but still not be college-ready or competitive on a national or international level.[i] Make sure you offer ways for students to advance beyond twelfth grade skills and build an academic résumé through deeper learning projects that will help them in the college admissions process.

Even with these precautions in place, parents and students will naturally worry about competency-based grading and college admissions. Thus far, this has not been a problem, as colleges are used to receiving a wide variety of transcripts. In general, schools should prepare an attachment that explains the school and its grading process. Great Schools Partnership has engaged college admission officers in the New England region to ensure that there are no obstacles. To date, fifty-five colleges, including the public university and community college systems, have agreed to accept proficiency-based transcripts.[14] Worst case scenario, schools can translate back into the point system if needed.

LESSONS LEARNED AND LEADERSHIP OPPORTUNITIES

- Conversations about grading among educators are an opportunity to look at the underlying assumptions of the traditional system and how it compares to research on teaching and learning. Is competition really motivational? What are the implications of adding or deducting points for behavior? What are the implications and reasoning for advancing students to the next course or grade level without adequate skills?

- Once districts establish the level of proficiency for learning objectives based on a knowledge taxonomy, the question arises of what "beyond proficiency" means. It doesn't mean advancing to the next standard, as a separate rubric would be used. It doesn't mean extra credit or extra points. So what does it mean? This can lead to a rich conversation about what happens when students reach proficiency: creating opportunities for working on further application, creating capacity to advance to the next level, or going deeper.

- Guard against language of students being "fast learners." It is a red flag for two different reasons. First, it is possible that students are not being offered enough opportunities for deeper learning, which generally takes more time. They may be fast only because the level of knowledge is closer to recall and comprehension than it is to knowledge utilization. Second, the term "fast learner" implies a fixed mindset—you are or you aren't. To keep your culture of learning robust, focus on effort rather than comparison.

i   According to an international study by the Education Testing Service, American millennials (those born between the 1980s and early 2000s) are lacking literacy, math, and problem-solving skills.

3. Not Yet Proficient

The phrase "not yet proficient" illustrates how competency education shifts the focus to students and their needs. Students are not going to be passed along without adequate skills. Instead, schools will continue the instructional cycle with students who are not yet proficient until they are successful. Brian Stack reflected on the experience in Sanborn by stating, "In a competency-based school, the bar is getting raised. For the first time, we expect students to understand and be able to apply the curriculum. At first, teachers were worried about a higher failure rate. But that doesn't happen because of our design to provide intensive support to students during the ninth grade, the combination of students taking more responsibility for their learning, and structuring adequate level of supports into the school day and year."

When and where will students be able to access additional supports? All students, whether in AP physics or at an academic level lower than their grade level, will struggle with material at some time or another. The most important thing schools can do is offer daily flex time for students to get the help they need, when they need it. It is not sufficient to rely solely on after-school or lunch periods—dedicating time for getting help reinforces a school culture that sometimes it takes extra effort and asking for help to be successful.

At Memorial Elementary School, teachers found that they had to build greater flexibility into their lessons and units to respond to students who needed more time. The school created LEAP (Learning for Each And every Person), a time scheduled each day for students to get help through re-teaching, reinforcement, or enrichment. As they realized the amount of extra support students needed, they began to use student data as a starting point to search out root causes. For example, teachers realized that they had a curriculum problem in fourth grade that was creating a wider skills gap. In the short run they strengthened word study, and in the long run began the ongoing conversation that revolved around, "What do you do when students aren't reading well?" This conversation opened the door for collaborative efforts to better serve students needing help with phonics.

The common language of the I&A model can improve the effectiveness of systems of support as well. Teachers at Gonic Elementary School in New Hampshire's Rochester School District found that their tutoring program was greatly enhanced by being able to use the standards to focus in on specifically where students needed help. When tutors felt that students had become proficient, students were able to bring back evidence of their learning to their teachers.

Online curriculum that can be designed to be highly modularized can be very helpful in helping students target specific areas of weakness. New Hampshire's open-enrollment online school, Virtual Learning Academy Charter School, offers competency recovery that can be made available to students the minute they are having difficulty. Jane Bryson of Education Elements suggests selecting a portfolio of two to three types of providers that students can turn to when they need support based on what works best for them. Students should know that when they are struggling with a concept, they can turn to a provider like Khan Academy for a quick tutorial video or a more interactive step-by-step provider like I-Ready. Another useful strategy is the flipped classroom approach of teachers recording themselves giving a mini-lesson using videos that students can watch as needed. Bryson goes on to recommend that students be offered choices to come at concepts from different angles. It may be that they find one tool more effective than another, which builds awareness about their learning process and increases their ability to make better choices for themselves as learners. However, it's important to note that, to date, there are more digital content options in math and literacy than in other subjects that support this type of student usage. When selecting digital content, it's imperative to understand how students can navigate material in competency-based environments before making final selections.

How can districts support the transition to high school for students who may be behind? Some schools are beginning to invest in time upfront rather than waiting for students to have troubles. At EPIC Schools, an

initiative of the New York City Department of Education, ninth grade students participate in a three-week session before school starts to address habits of learning, build a sense of community, and brush up on basic academic skills. Harvey Chism explains, "We wanted to help students prepare for taking ownership of their education. Unfortunately, many have been used to a culture of compliance and were subject to punitive disciplinary policies that undermine their motivation, engagement, and learning. We wanted to work with our students closely to build their self-awareness, ownership, and efficacy as learners. Relationships are invaluable to the risk-taking and persistence involved in competency-based learning environments. Therefore trust, confidence, curiosity, and belonging must be called out and valued as factors that inspire and support learning."

Sanborn High School created a transition year for ninth graders, assigning them to an interdisciplinary Freshman Learning Community (FLC) of five teachers, a literacy coach, and a special education teacher. Teams of teachers operate as a PLC, with a great deal of autonomy to respond to the needs of their students in their learning community. They focus on data about student progress to make sure students are getting what they need to be prepared for the transition into high school. When students aren't making progress, teachers immediately intervene to find out what is happening. Essentially, Sanborn has created a structure in which a team of teachers is responsible for ensuring that each and every student gets off to a good start when they enroll.

LESSONS LEARNED AND LEADERSHIP OPPORTUNITIES

- Schools will find that the areas in which students struggle also provide feedback about where educators can build up their instructional skills. In some schools, teachers are turning to the research based on learning progressions "rooted in coherent and well specified conceptions of how students' knowledge and skill in particular subjects should develop over the school years"[15] to help them better understand how students move from one conceptual idea to another.[16]

- District and school leaders should pay close attention to the language and procedures used to describe what happens when a student doesn't reach proficiency. Educators use a variety of terms, including re-teaching, re-assessment, re-take, and competency recovery, while others see it as a continued cycle of instruction that doesn't end until the student reaches proficiency. Some of the differences in terminology are based on whether teachers are giving scheduled assessments, such as a test to the entire class all at the same time (thus some students need to have a re-assessment), or if the classroom is more personalized with just-in-time assessment when students have shown evidence that they have reached proficiency.

4. Advancing Upon Mastery

Eventually competency-based schools will want to create the capacity for students to able to immediately advance upon mastery. Although most schools aren't ready to address this in their first year, this will be an eventual point along the path. It may start by enabling students to move onto units within a course, the next level of study, or to the next grade level. Online and blended learning can be invaluable for creating just-in-time learning so that students can advance beyond the "teacher pace."

Issues may develop if students are learning at levels beyond their grade level and the expertise of the teacher. Schools find that frequent grouping/regrouping can be beneficial for students to advance beyond their grade level. The A La Carte model of blended learning can be particularly helpful for students who are advancing well beyond their grade level but want to stay with their peers. Finally, dual enrollment college courses allow students to remain with their peers in high school while advancing academically.

E. Empowering Teachers

At Sanborn, we believe that great leaders are not great because of their power but because of their ability to empower others. Administrators at the district and school level worked shoulder to shoulder with teachers as we became a competency-based district. Our students have benefited as well as our teachers. We have developed a cadre of teachers who are always seeking to build their expertise in instruction, assessment, grading, and technology. We are drawing on the collective expertise across the district as we constantly improve our ability to support our students.

– Ellen Hume-Howard, Director of Curriculum, Sanborn Regional School District

In competency-based schools, a collaborative and empowered cadre of teachers is the engine that drives learning. Student learning depends on a strong adaptive instructional cycle that, in turn, depends on skilled teachers using their professional judgment that, also in turn, depends on the structures and cultures of the organization. Missy DeRivera, a homeschool teacher at Chugach, explained, "The leadership question is always central to our work. Is this best for kids? That is at the core of our entire district. We identify what is best for kids and then we figure out how to make it happen."

1. Strong Professional Learning Communities

It is difficult, if not impossible, to build the calibration mechanism that is essential for competency education to be effectively implemented without strong professional learning communities. It is also an ingredient for an empowered cadre of teachers. Sanborn Regional School District placed PLCs as core to operations right from the start. Their administrative team recognized that reorganizing in the district would require an investment of time, and opted for Professional Learning Community meetings over weekly informational staff meetings. As Ellen Hume-Howard, Director of Curriculum and Instruction, stated, "Doing this has been challenging and the administrators have worked hard at communicating to staff in other ways, but we believe PLC time is important and our calendar reflects this belief."

Jonathan Vander Els, Principal of Memorial Elementary, emphasized that 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. "Principals and district leaders have the power to make sure there is freedom to have hard conversations in safety," he said. "It starts with distributed leadership models that understand and value teacher leadership in creating a dynamic learning culture within the school."

2. Aligned Human Resources System

Soon after converting to competency education, many districts find that they need to modify their human resources operations, including hiring, orientation, professional development, and evaluation.

a. Hiring and Orientation

Competency education is changing the way districts think about hiring. In the traditional model, they searched for teachers who had experience in teaching the curriculum for a specific grade. "Now we look for teachers

who are interested in teaching students and know the discipline so they can help students who are in different places along their learning progressions," explained Ellen Hume-Howard. Doug Penn, Districtwide Principal at Chugach, emphasized this with, "We don't hire teachers, we hire members of a team. We don't want people to compartmentalize."

At Lindsay Unified School District, the hiring process is more robust now than it has been in years past. Prospective employees are introduced to the model ahead of time to gauge their interest, and the final step is an in-depth conversation with the principal regarding the district philosophy. "We always empower our staff," said Jaime Robles, "so we need to make sure we hire individuals who share our belief systems on how students learn and what motivates them." At Sanborn, much of the orientation takes places within PLCs, while new teachers at Pittsfield are assigned a mentor to help them align competencies, rubrics, and assessments, as well as learn how to manage a personalized classroom.

b. Professional Development

In the well-developed competency-based districts, student learning is the driving force behind professional development. Teachers pursue opportunities that build the skills they need to be more effective in helping students to learn and to pinpoint those areas where learning isn't yet taking place. Professional development takes place within the classroom as teachers use formative assessment to inform their own instruction. It takes place within PLCs and in designing individual professional development plans. When teachers work together collaboratively, knowledge is constantly being exchanged. The ongoing process of calibration and discussion of student work builds assessment literacy so teachers are better able to provide feedback to students. According to Doug Penn, "Performance-based approaches encourage collaboration. Once we became performance-based, the teacher retention rates shot up. It helped us to create the conditions to pursue professional development."

At Lindsay Unified School District, attention is also paid to educator learning through the development of a set of adult competencies. Rebecca Midles explained it as, "At Lindsay, we are growing mastery at all levels, supporting adults in the system as respectfully and as meaningfully as we support our learners in the K12 system." The district's work on adult learning is considered part of a continuum, not a static curriculum. The topics covered include focus areas such as leadership (purpose, vision, mindset, capacity building, and relationships), personalized mastery, instructional and assessment strategies, and data driven cycles of improvement. These adult learning opportunities are role-specific so principals can use this information to determine needs of their staff and highlight strengths."

Exhibit 4 provides a quick look at the types of rubrics Lindsay is developing to support the development of the adults in the system—especially as it pertains to developing a learner-centered environment.

c. Evaluation

Chugach has developed an evaluation system that reflects the organization-wide focus on learning. The staff development and evaluation process is remarkably similar to how students are assessed, in that it's all about learning. It's based on standards wherein staff provide evidence of their learning. The evaluation has several components, including self-evaluation; comments and observations from students, parents, coworkers, and community members; individual meetings with the administrative supervisor; development of individual goals and action plans; collection and presentation of artifacts to support self-evaluation; and assistance in meeting district goals.

Exhibit 4: Lindsay Unified Adult Learning Continuum

LINDSAY UNIFIED ADULT LEARNING CONTINUUM
LEARNING FACILITATOR

		1	2	3	4
Building Capacity: Quality Leadership		**Target 1: Empower learners to develop a learner centered environment.**			
	Terminology	**Know and use the terms**: shared vision, Code of Cooperation (Code), standard operating procedures (SOP), learner centered, learning environment			
	Physical Environment	Establish a physical learning environment that is organized and **supports learning potential** (learners are able to see, hear and participate in learning opportunities on their own or with groups).	Establish a physical learning environment that **optimizes learning potential** (flexible seating for individual, small group, and whole group instruction, and well organized learner resources).		
	Standard Operating Procedures	**Establishes** standard operating procedures for routine procedures. Demonstrates **awareness** for the need for SOPs to support self-directed learning.	**Co-create** standard operating procedures to **guide learners in navigating** the learning environment (flowcharts, steps, pictures).	Co-create with learners, standard operating procedures that support a **learner centered and learner directed** environment.	**Empower** learners to initiate or assist with the creation of SOPs in the learning environment that **support self-directed learning.**
	Vision	**Publish** a vision for learners in the learning environment. Demonstrate **awareness** of the need for a shared vision.	**Directs** a vision for how learners will be defined as a group.	**Unpack** the site/district shared vision **or co-create** a shared vision for how learners wish to **define** their learning environment.	**Empower** learners to lead the creation of a shared vision.
	Code of Cooperation	**Direct and post** the Code in the learning environment. Through monitoring, guide learners to think about their use of the posted Code.	**Unpack the Code** for the learning environment expectations that is clear and user friendly. **Create opportunities for learners to reflect** on their behavior in class.	**Create a learner friendly tool** (rubric, pictures) that unpacks expectations in the Code of Cooperation and supports learner self-evaluation and goal setting.	**Empower** learners to lead the creation of a Code to support the achievement of a shared vision. **Empower** learners to create an assessment tool that unpacks the Code of Cooperation to support self-evaluation and goal setting.
	Goal Setting and Data	**Demonstrate awareness** for learners to self-reflect on personal behavior using collected data points.	**Guide learners** to review data from self-reflections of the Code and guide them to create a group goal for improvement.	**Support and monitor** learners using data from SV/Code self-assessments to **set SMART goals for personal growth**.	**Empower** learners to use data from SV/Code self-assessments to set **short and long term SMART goals** for personal stretch goals and refinement.
	Culture	**Manage** the classroom culture to support a cooperative climate.	**Monitor and adjust** the learning environment culture to **align** with a shared vision and the code of cooperation (realization of purpose, cooperative climate, and learner voice).	**Continuously monitor and adjust** the learning environment culture to **ensure** alignment with the shared vision and the Code of Cooperation.	**Empower learners to continuously monitor and adjust** the learning environment culture to ensure alignment with the shared vision.

The evaluation process feeds directly into a performance pay policy structured in alignment with the district's shared purpose and team spirit. The individual evaluation scores are averaged across the workgroup each year, and the average score is used as the multiplier for performance pay. Bob Crumley notes, "We've balanced individual improvement with incentives to support each other. While the score and the performance pay are significant, even more significant is the process of holding deep reflection-based discussions about our work; what is going well and what are our individual and organizational opportunities for improvement."

At Sanborn Regional School District, Superintendent Brian Blake expanded the evaluation system to focus on the domains of learning communities, student engagement, and climate and culture as well as classroom competencies focused on instruction. They continue to explore how to build in more formative assessment that can help improve practice and what it means for teachers to become master teachers when they exceed the standards of the evaluation system.

LESSON LEARNED AND LEADERSHIP OPPORTUNITY

- More advanced competency-based districts find they need to rethink teacher evaluation to be consistent with the organizational culture and guiding beliefs about learning and motivation. There are likely to be inconsistencies between the values and beliefs undergirding the personalized, competency-based approach and those informing the state teacher evaluation systems and state professional teaching standards. These are opportunities to engage state leadership as well as reflect more deeply upon and re-commit to the shared purpose and guiding principles focused on helping students learn.

d. Autonomy and Creativity

Doug Penn suggests understanding the role of educators by thinking about "a triangle surrounded by an enormous circle of students' ever-changing interests and passions." In his description, the triangle sides are made up of a) the standards that define what students need to know, b) how they consider the assessment in the design process, and c) instruction that identifies how the students are going to learn it. There is ample room for creativity in this model, as it can be co-designed with students and act as an iterative process that takes time to fully align. "The opportunity for creativity can be intimidating," Jed Palmer, head teacher at Tatitlek Community School, adds. "We are open about it—it can be scary when you know you need to do better, but it's not exactly clear how... It may feel like a teacher is walking on a tight wire without a net, but our job is to not let each other fall off. It can be really rewarding." Thus, supporting teachers requires conditions that provide collaboration, coaching, and supporting professional development as educators.

Teachers in competency-based environments have significantly more autonomy than those in traditional schools to be creative in how they engage and design learning experiences for students. In return, they have the responsibility for helping students reach proficiency. Teachers often have the primary responsibility of credentialing students based on the demonstration of mastery of the learning objectives, although districts may have other mechanisms in place to manage quality assurance. Thus, teachers are often asked to use their professional judgment in facilitating student learning and progress, providing additional instructional support when needed, and credentialing that students have reached proficiency.

In describing how Chugach provides autonomy for teachers, Doug Penn explained it as, "You can't empower people by just saying it. We have to create the conditions for our teachers to succeed. We foster a culture where

teachers can find success through networks and structures, and where they have the freedom to work together to find solutions and make decisions. We also have systems in place. You need both a strong culture of learning and the systems to support it."

MANAGING THE PROCESS OF TRANSFORMATION

Any district involved in large-scale transformation needs to build its capacity to manage the change process. Several aspects of the change process that districts will want to consider in preparing for the transformation to competency education include:

1. **Decentralize District Operations:** In order to respond to the changing needs of students, schools require greater school autonomy. Increased access to data and responsibility in the hands of teachers means they must be able to use their professional judgment, and schools must have the flexibility to quickly respond to the needs of their students. In turn, this requires districts to shift their culture from compliance to support.

   Structural changes within districts can clarify autonomy and accountability between districts, schools, and teachers. With well-defined competencies, learning progressions, and systems of assessments, there is greater autonomy on the part of schools, teachers, and students. It also makes sense at this time to explore changes in the structures and policies of finance, human resources, procurement, technology, building design, calendars, scheduling, and professional development around designing new school models. By maintaining open processes for identifying barriers and supports, school-level leadership can better manage school cultures in which both students and teachers are empowered.

2. **Define District Staff Roles:** As the locus of control shifts toward schools, teachers, and students, district staff will find themselves wondering what their new roles should be. In general, the shift will be one that moves from compliance to problem-solving, which will include listening to what the needs are, identifying common issues, engaging the appropriate stakeholders, providing differentiated support, and facilitating the development of competency frameworks and systems of assessments.

3. **Create an Overall Transition Strategy:** Leaders who have advanced through the transformation to a personalized, competency-based system describe the importance of starting with commitment first. This differs significantly from a pilot-first program begun with the hope that it will eventually scale. Districts commit to competency education with the understanding that they will have to make many mid-course corrections along the way.

   Within the transition strategy, districts will also need to clarify accountability for managing change. Districts invest in a leadership team, building their capacity for project management, familiarity with how other districts are implementing competency-based models, and distributed leadership approaches. The team creates timelines, benchmarks, and metrics to hold themselves accountable. Embedding an iterative planning process so that problems can be quickly identified and resolved can be helpful in managing the change process.

   Adapted from Maximizing Competency Education and Blended Learning: Insights from Experts.[17]

Endnotes

1 *Bronx Arena: Organizing Spaghetti*, CompetencyWorks (December 10, 2014). Retrieved from: http://www.competencyworks.org/case-study/bronx-arena-organizing-spaghetti-part-1/.

2 In the paper *Motivation, Engagement, and Student Voice*, the authors find that "Providing opportunities for choice, control, and collaboration are potent strategies for increasing academic achievement. Young people are likely to be more motivated and engaged in an activity when they feel they have a voice in how it is conducted and can affect how it concludes." Retrieved from: http://www.studentsatthecenter.org/topics/motivation-engagement-and-student-voice.

3 Insight from Making Community Connections Charter School and references to Kim Carter were provided by a site visit in February 2014. For more information, see the site visit overview beginning with *Igniting Learning at the Making Community Connections Charter School*, CompetencyWorks (April 1, 2014).

4 The following resources can be helpful in beginning to develop a strategy for leveraging blended learning to improve and expand learning experiences for students:

>   Allison Powell, Beth Rabbitt, and Kathryn Kennedy. *Blended Learning Teacher Competency Framework*, iNACOL (October 2014).

>   Rob Darrow, Bruce Friend, and Allison Powell. *A Roadmap for Implementation of Blended Learning at the School Level: A Case Study of the iLearnNYC Lab Schools*, iNACOL (October 2013).

>   John Bailey, Carri Schneider, and Tom Vander Ark. *Navigating the Digital Shift: Implementation Strategies for Blended and Online Learning*, Digital Learning Now! (2013).

5 All references to Jane Bryson of Education Elements are based on an email exchange that occurred in March 2015.

6 All references to Harvey Chism, Senior Director of School Design at EPIC Schools, are based on an email exchange that occurred in March 2015.

7 The four questions are based on the work of Richard and Rebecca DuFour, with adjustments made for the emphasis on competency or the application of skills to new contexts.

8 Sturgis, Chris. *The Art and Science of Designing Competencies*, CompetencyWorks Issue Brief (July 2012). Retrieved from: http://www.competencyworks.org/wp-content/uploads/2012/08/CompetencyWorks_IssueBrief_Design Competencies-Aug-2012.pdf.

9 Please visit Rose Colby's contributing author posts on CompetencyWorks to find the insights and blog posts on which all references to her in this paper are based.

10 Ruff, David. *Thoughts on Grain Size*, CompetencyWorks (May 27, 2014). Retrieved from: http://www.competencyworks.org/analysis/thoughts-on-grain-size/.

[11] All Adams 50 quotes are based on an interview with Oliver Grenham and Jeni Gotto, found in *A Conversation with Adams 50*, CompetencyWorks (March 12, 2014). Retrieved from: http://www.competencyworks.org/uncategorized/a-conversation-with-adams-50/.

[12] Please visit Jonathan Vander Els' contributing posts on CompetencyWorks to access his experiences and insights at Sanborn Regional School District and Memorial Elementary.

[13] For resources on why the traditional grading system is ineffective and how to develop standards-referenced and standards-based grading, see *Progress and Proficiency: Redesigning Grading for Competency Education*, CompetencyWorks Issue Brief (January 2014). Retrieved from: http://www.competencyworks.org/wp-content/uploads/2014/01/CW-Progress-and-Proficiency-January-2014.pdf.

[14] All the public institutions of higher education in Connecticut, Maine, New Hampshire, Rhode Island, and Vermont and three private institutions have endorsed proficiency-based learning in partnership with the have joined the New England Secondary School Consortium. See http://www.greatschoolspartnership.org/55-new-england-colleges-and-universities-support-stronger-student-preparation/ for more information.

[15] *Center on Continuous Instructional Improvement*, Consortium for Policy Research in Education. Retrieved from: http://www.cpre.org/center-continuous-instructional-improvement.

[16] Heritage, Margaret. *Learning Progressions: Supporting Instruction and Formative Assessment*, National Center for Research on Evaluation, Standards, and Student Testing (2008). Retrieved from: http://www.ccsso.org/Documents/2008/Learning_Progressions_Supporting_2008.pdf.

[17] Susan Patrick and Chris Sturgis. *Maximizing Competency Education and Blended Learning: Insights from Experts*, International Association for K–12 Online Learning (March 2015) Retrieved from: http://www.competencyworks.org/wp-content/uploads/2015/03/CompetencyWorks-Maximizing-Competency-Education-and-Blended-Learning.pdf.

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