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Blending toward competency

Early patterns of blended learning and competency-based education in New Hampshire

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EXECUTIVE SUMMARY

As the education field strives to differentiate and personalize learning to cater to each student, two related movements are gaining attention: competency-based education and blended learning. In competency-based models, students advance on the basis of mastery, rather than according to the traditional methods of counting progress in terms of time or credit hours. Blended learning is a method of delivering learning experiences; in essence, it is any formal education program that combines online learning and brick-and-mortar schools.

How can blended learning support competency-based education?

Blended learning stands to support competency-based education in at least four overarching ways. First, online content can offer a continuum of learning along which students can progress at a flexible pace. Second, when students learn through online learning, testing can occur on-demand—that is, when students are ready to be assessed, not before or after. Third, online content can be deployed in a more modular manner than traditional face-to-face instruction, which in turn offers students multiple pathways to mastery, as opposed to a single lesson or textbook. Finally, blended learning can support school systems attempting to take competency-based education to scale by providing tools to personalize learning for each student.

Findings from the field: New Hampshire

Although we can theorize about how technology could streamline competency-based practices, these hypotheses bear testing in real-school environments. This paper considers the role of blended learning in 13 schools in New Hampshire, where the New Hampshire Department of Education has mandated that high schools measure learning in terms of competency, rather than by credit hours. Some schools in New Hampshire have embraced this new policy by building competency-based models in their schools and classrooms, whereas other schools have remained tethered to time-based practices.

Many of these 13 schools have implemented blended learning in some form or fashion, however, and therefore offer a glimpse into which blended-learning models offer promising solutions for schools pursuing competency-based education. Based on this small, early-stage sampling, blended-learning models that tend to be disruptive relative to the traditional classroom appear especially well suited to support competency-based education at scale. The schools that were the furthest along in implementing competency-based education fell into two buckets:

small-scale schools that did not rely on blended learning or schools that used disruptive blended-learning models, namely the Individual Rotation, Flex, and A La Carte. On the other hand, the schools that were still tethered to time-based practices used sustaining blended-learning models, namely the Flipped Classroom and Station Rotation. Although far from a representative sample, these examples point to promising practices of how blended learning may support competency-based approaches.

Blending toward competency

Early patterns of blended learning and competency-based education in New Hampshire

New Hampshire is witnessing firsthand both the opportunities and challenges that schools face in transitioning away from time-based teaching and learning and adopting a competency-based approach to education. In parallel with these changes, a number of schools are also considering the role that blended learning should play in their instructional models. The variety of blended-learning models emerging throughout the state lends insights into how blended learning might support competency-based education. Based on a small, early-stage sampling, blended-learning models that tend to be disruptive relative to the traditional classroom appear especially well suited to support competency-based education at scale.

THE EMERGING OVERLAP OF BLENDED LEARNING AND COMPETENCY-BASED EDUCATION

Competency-based education—in theory and practice—predated the rise of blended learning.[1] More than 30 years ago, researchers like William Blank, professor emeritus at the University of Southern Florida, articulated the radical shifts in instruction that would be required to support competency-based training programs. In such programs, students would have to show what they knew, and only once they had demonstrated mastery of particular skills could they progress to new material. In his 1982 *Handbook for Developing Competency-Based Training Programs*, Blank emphasized the need for new learning paradigms in competency-based environments:

> Competency-based programs provide trainees with high quality, carefully designed, student-centered learning activities, media and materials designed to help them master each task. Materials are organized so that each individual trainee can stop, slow down, speed up or repeat instruction as needed to learn effectively. An integral part of this instruction is periodic feedback throughout the learning process with opportunities for trainees to correct their performance as they go.[2]

Blended curriculum may offer a continuum of learning along which students can move at a flexible pace.

As technology has dramatically improved over the past decades, today's blended-learning tools stand to perform precisely the complex array of tasks that proponents of early competency-based training models like those described by Blank.

Although competency-based education[3] began in teacher-education and corporate-training programs, it is gaining traction in the K–12 education space. In parallel with this movement, enthusiasm for blended learning[4] is growing in schools around the country as a new way to deliver content in a more personalized manner. Competency-based education presents a theory of how students ought to progress through material and what they should be able to demonstrate; blended learning is one means of personalizing learning through online learning in brick-and-mortar schools. For schools that are moving toward competency-based learning as their impetus to change, how and when can blended learning be a part of the solution?

Blended learning stands to support competency-based education in at least four overarching ways. First, a blended curriculum may offer a continuum of learning along which students can move at a flexible pace. This means that in a single classroom with one teacher, students are no longer confined to the boundaries of a traditional "course"; students who need more time to master concepts can do so, and others can move on to more challenging or different material. Second, when students learn through online learning, testing can occur on-demand, rather than be postponed until the end of an instructional module and then administered in a batch mode to an entire class. Third, online content can be deployed in a more modular manner than traditional face-to-face instruction, in turn offering students multiple pathways to mastery, rather than having a one-size-fits-all learning pathway contained in a single lesson or textbook. Finally, blended learning can support school systems attempting to take competency-based education to scale. Although a small school or classroom might manage to coordinate the competency-based system that Blank describes without technology tools, blended learning can allow educators to support and monitor numerous students who are progressing along individual learning paths at a flexible pace.[5]

Although blended learning stands to support competency-based education in *theory*, many K–12 blended-learning models today tend to support instructional practice in traditional time-based schools, rather than in competency-based systems.[6] This is because most states still require schools to report progress in terms of seat-time.[7] As the first state to have mandated that *all* high schools adopt competency-based learning, New Hampshire provides a compelling case study to understand the ability of blended learning to support competency-based education at scale.

New Hampshire measures students' credits toward graduation in terms of mastery demonstrated, rather than by hours of instruction. As some schools shift away from time-based approaches, they are turning to blended learning as one tool to deliver content and assess students in a more flexible and scalable manner.

New Hampshire is witnessing firsthand both the opportunities and challenges of implementing a competency-based approach to education.

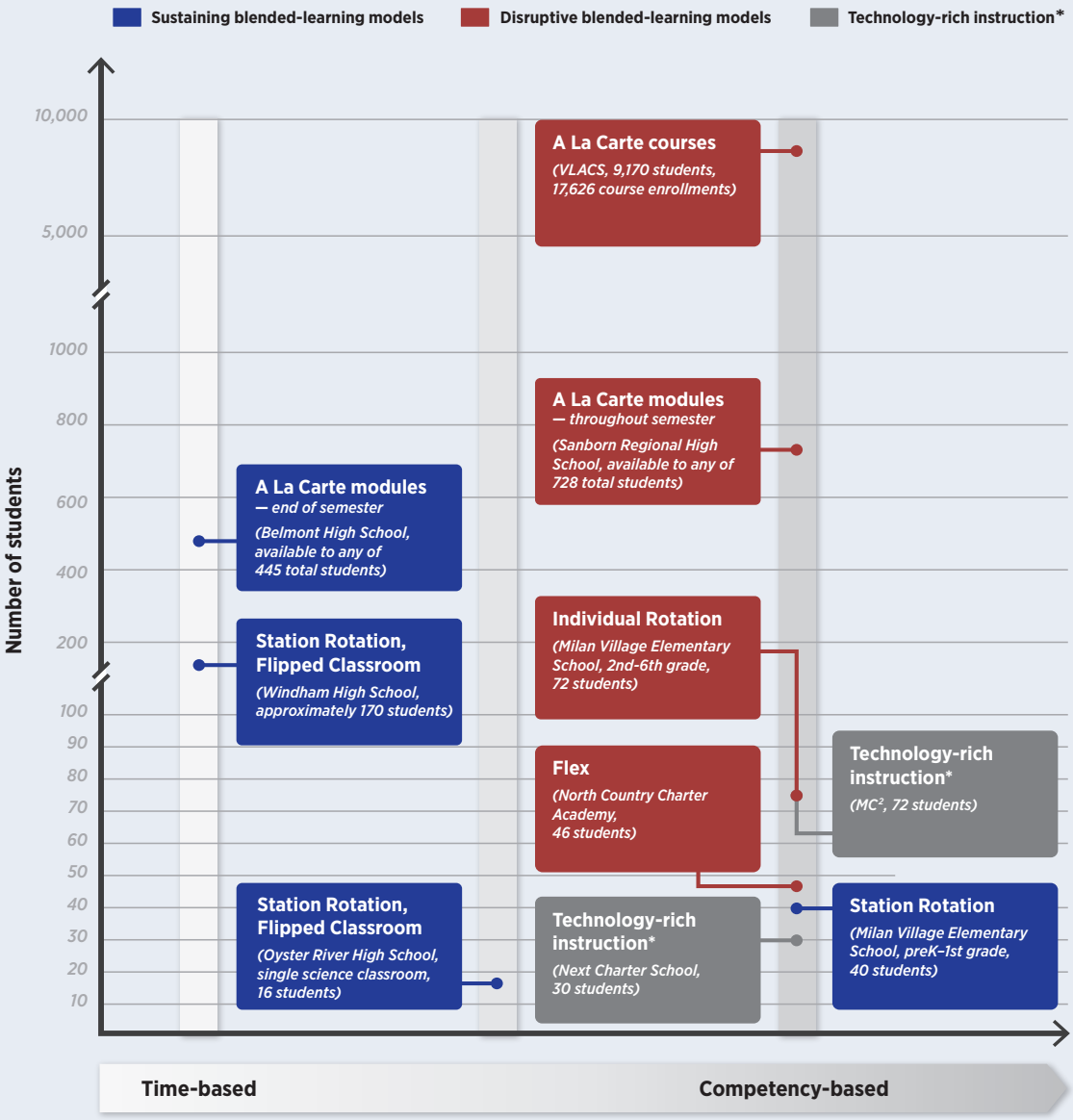
NEW HAMPSHIRE: A CLOSER LOOK

Starting in the 2008–09 school year, the New Hampshire Department of Education (NHDOE) mandated that all high schools abandon the Carnegie unit and instead count course credits based on students' competency, rather than on hours of instruction.[8] As schools transition away from time-based teaching and learning, New Hampshire is witnessing firsthand both the opportunities and challenges of implementing a competency-based approach to education. The first paper in this series, "From policy to practice: How competency-based education is evolving in New Hampshire," chronicled the strategies and challenges of 13 schools across the state when implementing competency-based education.[9] Evidence from those 13 schools suggests that as New Hampshire's policies have unlocked opportunities for innovation, some schools and districts have fully embraced competency-based education, whereas others have remained tethered to time-based methods of teaching and learning.

In addition to their transition to competency-based models, the schools in this sample were selected based on the fact that each was leveraging technology in some form or fashion.[10] Some appear to be using blending learning to support their competency-based approach, whereas others are using blended learning within more time-based structures. Looking across this small sample, an early pattern in the overlap of blended learning and competency-based education has emerged: some of the schools that are the furthest along in implementing competency-based education are using models of blended learning that tend to be disruptive to the traditional classroom, namely the A La Carte, Flex, and Individual Rotation. On the other hand, some of the schools that have remained rooted in time-based practices amidst the state's policy shifts are implementing models of blended learning that are sustaining innovations, or hybrids, relative to the traditional classroom, namely the Station Rotation and Flipped Classroom. The exception to this pattern occurs within the smaller schools that are moving aggressively toward competency-based learning. Because of the small scale of their efforts, teachers in these schools can regroup and reorganize small groups of students in a flexible manner. Rather than deploying disruptive models of blended learning, these schools are personalizing learning pathways for each student in a face-to-face manner and do not need to rely on blended learning to escape the time-based system.

Figure 1 illustrates the various blended-learning models that some schools in New Hampshire are using, whether these models are sustaining or disruptive, where these models fit along time- and competency-based continuums, and the scale at which these examples of implementation are taking place.

Figure 1. Time- vs. competency-based blended-learning models in New Hampshire, 2013–14 school year



*In technology-rich instruction, students may use computers and high-tech gadgets to do research and access some online tools and content. These online activities, however, are offered on an informal basis, rather than as a formal school- or classroom-wide blended-learning model.

The distribution of these school and classroom models aligns to a hypothesis presented in our prior research on sustaining versus disruptive blended-learning models. These categories are described in greater depth in Clayton M. Christensen, Michael B. Horn, and Heather Staker's paper, "Is K–12 blended learning disruptive? An introduction of the theory of hybrids." As the authors of that paper describe, a *sustaining* blended-learning model maintains and improves upon the structure and methods of a traditional classroom and makes those practices more effective and efficient. This means that sustaining blended-learning models can enhance a school or teacher's ability to deliver content in a time-based manner. Sustaining blended-learning models include the Station Rotation, Lab Rotation, and Flipped Classroom. Schools and classrooms that are employing these models still tend to follow time-based models such as bell schedules, class-wide assessments at the end of units, and more uniform pacing across whole classes or groups.

Disruptive blended-learning models—by design—mark a departure from time-based traditional school structures and may fit better within the goals and structures of competency-based education.

Disruptive blended-learning models, on the other hand, do not subscribe naturally to the traditional metrics for schooling. They offer the new technology of online learning, but have little that resembles the old, traditional classroom. Their facility requirements, bell schedules, staffing, and other operations differ significantly from the traditional model. These models excel at allowing students to move through content at a flexible pace, making seat-time variable. These models include the Flex, A La Carte, Individual Rotation, and Enriched Virtual. It follows then that disruptive blended-learning models—by design—mark a departure from time-based traditional school structures and may fit better within the goals and structures of competency-based education.

Appendix 1 provides definitions of each of these sustaining and disruptive blended-learning models.

To illustrate the findings described above and provide a layer of depth in exploring why this phenomenon is occurring, the following section profiles five New Hampshire schools that are in various stages of implementing a competency-based model and are using blended learning to deliver content either in particular classrooms or school-wide.

FIVE EXAMPLES OF BLENDED LEARNING IN NEW HAMPSHIRE

Virtual Learning Academy Charter School

A La Carte, Enriched Virtual

The Virtual Learning Academy Charter School (VLACS) has likely had the greatest impact on the spread of blended learning in New Hampshire. In 2007, Exeter Region Cooperative School District (SAU 16) in Exeter, N.H., applied for a statewide charter to launch VLACS, New Hampshire's first fully virtual charter school. Steve Kossakoski, the district's then assistant superintendent of technology and research, took the helm as CEO of VLACS in 2008. Under his guidance, VLACS has grown into the leading competency-based online course provider in the state. Most VLACS courses are implemented as an A La Carte blended-learning model. Students move through VLACS courses at their own pace, and courses include competency assessments that require students to not only complete coursework, but also demonstrate mastery of each competency associated with a given course, as aligned with New Hampshire's state competencies.[11] VLACS's enormous growth in serving full- and part-time students throughout New Hampshire reflects its great strides in competency-based online education: in January 2008, it enrolled 710 students; by June 2013, that number had risen to 9,170 individual students enrolled in 17,626 VLACS courses.

VLACS has established partnerships with every high school in the state and is increasingly serving middle schools as well. Some schools, such as Belmont High School in Belmont, N.H., have created blended-learning labs to deliver VLACS courses on-site. Belmont High School assigns students to a computer lab for a period or block to work on the online course while a paraprofessional supervises. To support these learning lab models, VLACS now offers online training for on-site principals, guidance counselors, technology integrators, and facilitators who can support students as they work through courses in labs.

In addition to offering supplemental online courses, VLACS offers more modular content that schools can use for competency recovery. Competency recovery gives students opportunities to revisit discrete competencies that they have failed to master. As VLACS's website says, "If, for example, a student mastered and passed eight of the 10 key concepts or competencies for a course, he/she can re-learn just those two key competencies, rather than repeating the complete course."[12] Competency-recovery modules are likewise aligned to the state's competencies. At different high schools in the state, teachers may assign VLACS modules based on areas where students have struggled in formative or summative assessments.

Students engage in online competency recovery at varying times and frequency depending on how a school has structured its schedule. For example, at Belmont High School, where students still move through courses on a relatively time-based schedule, students who are on the verge of failing a class can take end-of-semester competency recovery. In other words, the school uses VLACS modules after gaps in learning have accumulated over the course of an entire semester. On the other hand, Sanborn Regional High School in Kingston, N.H., which is further along in designing competency-based pathways for all students, has designed its schedule to accommodate daily opportunities for students to engage in competency recovery; the school has set aside time for teachers to help students fill in learning gaps as soon as they emerge or for students to move ahead to more challenging material if they have already demonstrated mastery on a given competency or set of competencies. Students who need extra support will sometimes receive face-to-face help from teachers, and other times they will use VLACS online modules to "recover" topics with which they are struggling.

Students engage in online competency recovery at varying times and frequency depending on how a school has structured its schedule.

One blended-learning model not observed in the small sampling of 13 New Hampshire schools is the Enriched Virtual blended-learning model. In 2013, VLACS received a Next Generation Learning Challenge (NGLC) grant to fund the development of VLACS Aspire, which may eventually resemble an Enriched Virtual blended-learning model. Like VLACS, VLACS Aspire will be fully competency-based. This new school model, which launched in early 2014, aims to provide what Kossakoski calls an "experiential blended-learning" model. As the program evolves, VLACS Aspire plans to build on the growing trend among schools in New Hampshire to offer extended learning opportunities (ELOs) for credit. These opportunities will typically involve outside-of-school projects, such as internships, based on students' interests. As part of VLACS Aspire, students will have the option to supplement online VLACS courses and modules with learning experiences in real-world, community-based settings. For both coursework and experiential learning, the students' teachers of record will be online and will administer performance assessments for both online and community-based learning.

"Our students can move as quickly as they can, and we're confident that we know what they're doing."

North Country Charter Academy

Flex

North Country Charter Academy is a competency-based alternative high school that serves students who either are at risk of dropping out or have already dropped out of high school. The school runs learning centers in Lancaster and Littleton, N.H., and accepts students from 10 districts in the North Country region. At North Country Charter Academy, online learning is truly the backbone of student learning to support a competency-based progression. Students rely primarily on Edmentum (formerly called PLATO Learning), an online course provider, for their instruction and content delivery. The school has used this company's curriculum for over a decade. Students are required to be on-campus every day of the school week—with some special exceptions depending on extenuating circumstances—for three hours per day. Each learning center can accommodate up to 15 students at a time and has two on-site teachers who serve as the students' teachers of record.

Students spend 75 percent of that time learning online or using educational software on personal desktop computers. Students have control over not only the pacing of their learning, but also what Edmentum subject material they work on during a given school day. As students move on an individually customized schedule through their online courses, the teachers monitor their progress through the backend of the Edmentum software. The teachers provide face-to-face support on a flexible basis by identifying students who are struggling with the online curriculum and targeting them for individual or small-group, face-to-face tutoring. Additional offline components include small-group instruction with a teacher, some project-based assignments, and some pen-and-paper worksheets that North Country Charter Academy's teachers have designed to support and supplement the online curriculum. If a student fails to demonstrate mastery on an Edmentum exam at the end of a unit or course, then he can go back and practice the material and retake the exam at a later date; because the Edmentum curriculum provides additional assessment items to create new tests, students are tested using new materials and therefore cannot memorize the exam.

As Lisa Lavoie, the principal of North Country Charter School, explained, online curriculum and blended-learning models have come a long way from placing kids at the back of the classroom on a computer. In her opinion, the school's Flex blended-learning model is well suited to track students in a competency-based progression. "Our students can move as quickly as they can, and we're confident that we know what they're doing," she said.

Milan Village Elementary School

Station Rotation, Individual Rotation

Milan Village Elementary School is a competency-based (also called "skills-based") K–6 school located in the northern region of New Hampshire called the North Country. Six years ago, Milan Village Elementary School was classified as a school in need of improvement. As part of a whole-school redesign, David Backler, the principal of Milan Village Elementary School, aimed to build a model that would ensure that students would be able to progress at a flexible pace and access much of their academic content online in a blended-learning environment. As Backler explained:

> …the skills that these kids are going to need to succeed in the North Country are directly related to the blended-learning approach… In the past, all our high school programs were geared toward the idea that 80 percent of students would go work at the mill [Milan and the surrounding area were home to a number of saw mills throughout the 19th and 20th centuries]. That's completely changed. Blended learning is at the core of what these kids need to become engaged learners.

In the younger grades, students engage in a Station Rotation blended-learning model. For math, kindergartners and 1st graders rotate at the teacher's discretion between online learning using Khan Academy and a variety of offline-learning modalities, including whole-group, teacher-led instruction and individual or small-group collaborative work.

In the older grades, Milan Village Elementary School uses an Individual Rotation blended-learning model. Starting in 2nd grade, every Milan Village Elementary School student has her own computer and moves between online and offline learning at the teacher's discretion. For example, the entire Milan Village Elementary School math curriculum is available as online playlists that students can access on their computers. The students do not rotate through concrete stations. Instead, teachers are responsible for prescribing online or offline learning to students depending on how each student learns best and how far each student has progressed through the course. For example, within one classroom, some students may spend the entire day working on online courses, whereas others may spend the majority of the day working offline and receiving face-to-face instruction. Teachers have autonomy to decide which students use online learning and for how long and therefore have full discretion to direct students' individual schedules.

Windham High School

Flipped Classroom, Station Rotation

From its inception in 2009, Windham High School, located in Windham, N.H., has focused on building a technology-rich learning environment. It was the first 1-to-1 high school in the state, meaning that the school provides a computer for every student, and it specifically recruits teachers

Videos allow students to access the different teaching styles that each teacher offers according to their learning preferences.

who are enthusiastic about the power of technology in education. Because the school is still focused on its New England Association of Schools and Colleges (NEASC) accreditation process, its emphasis on competency-based education remains fairly limited, and teachers still use traditional grading methods and curricula.

Given the school's focus on technology, a number of Windham High School's teachers and departments have adopted blended-learning models to support its more time-based practices. Kathy Weise, the school's technology integration specialist, estimates that 170 of the school's 745 students engage in the Station Rotation or Flipped Classroom blended-learning models. For example, 9th- and 10th-grade specialized reading classes use a Station Rotation blended-learning model to provide structured face-to-face and online instruction. Students spend the online portions of the class working on Reading Plus, a web-based product designed to help students develop reading skills.

Other teachers use a Flipped Classroom blended-learning model. The school's two Algebra I teachers have each produced video content for their students to watch at home and made these videos available to students in both teachers' classes. These videos allow students to access the different teaching styles that each teacher offers according to their learning preferences.

Notably, the school is using the Station Rotation and Flipped Classroom blended-learning models to support its current system of time-based instruction, in which students still move through courses at a class-wide pace and are assessed in batch mode. Although the school has not yet fully adopted a competency-based model, these blended-learning tools are still supporting Windham High School's teachers in exposing students to a wider range of tools and helping teachers deliver material more efficiently and effectively in their classrooms.

Oyster River High School

Flipped Classroom, Station Rotation

Oyster River High School created and maintains documents about competencies, but according to one teacher, different departments and even different teachers have different levels of investment in implementing competency-based pathways at the school. Students still move through most courses in a time-based manner and are graded in a traditional manner as well.

Individual teachers who are interested in trying new instructional models on their own have embraced blended learning. For example, in 2008, Celeste Best, an award-winning[13] science teacher at the school, noticed that her students lacked ownership of their learning. Best decided that instead of teaching all of her students at once, she would assign them to different projects—

either online or offline—depending on how they were progressing through the material. After seeing the role that technology could play in engaging students, Best has been awarded numerous grants to integrate technology into her classroom. Depending on what lesson she is teaching, Best may use the Station Rotation or Flipped Classroom blended-learning models to provide students with online activities and explanations of the material. During a given class period, Best may assign students to watch Khan Academy videos; complete exercises from CK-12 Flexbooks, a platform that creates and aggregates curated online STEM content; assign students to use Gizmos, an online repository of science and math simulations, to do online simulations of science experiments; or assign YouTube videos or videos that she has created herself to flip the classroom. By leveraging these various models and tools, Best has been able to differentiate students' pathways in her classroom. With these online tools, some students can move ahead or more deeply in the material, whereas others can access reviews and extra support when needed.

BLENDED LEARNING AND COMPETENCY-BASED EDUCATION: LOOKING AHEAD

As ***Figure 1*** illustrates, the various blended-learning and competency-recovery models found in New Hampshire schools can be categorized in terms of type, scale, and the degree to which the schools and classrooms where they are being implemented are geared toward time-based versus competency-based learning. Categorizing New Hampshire's blended-learning in these terms suggests five hypotheses about the relationship between blended learning and competency-based education. These five hypotheses present questions for further research as blended learning and competency-based education continue to evolve and complement one another throughout New Hampshire as well as nationally.

- ***Disruptive blended-learning models may be better suited to supporting competency-based education at scale.***

  The Flex, A La Carte, Individual Rotation, and Enriched Virtual blended-learning models all offer promising approaches for schools and systems that are implementing competency-based education. All four of these blended-learning models can allow students to move at a flexible pace, in turn ensuring that students advance only upon mastery. VLACS courses, North Country Charter Academy, Sanborn Regional High School, and Milan Village Elementary School's older grades all demonstrate the power of online content delivery to unlock competency-based progressions. Such models may be vital for schools attempting to operate competency-based education at a large scale, as these models in essence aim to operationalize individualization, flexible pacing, and learning progressions

that students can move through as they master material. This requires further research, however, as even though both Milan Village Elementary School and North Country Charter Academy are implementing competency-based education school-wide, they are both serving relatively small student populations.

- ***Small schools may be able to operate a competency-based model without implementing disruptive blended-learning models.***
  In some small-school settings, administrators and teachers can provide significant individualized support and direction to each student on his own learning pathway. Two schools surveyed—Making Community Connections (MC^2) and Next Charter School—currently serve fewer than 75 students each and use a project-based curriculum through which they aim to personalize the path and pace of each student's learning through face-to-face meetings. Neither school relies heavily on technology for content delivery, with the exception of some students taking fully online VLACS courses in subjects not offered by the schools, such as Astrophysics. In both schools, online modules, exercises, or videos are assigned on a more one-off basis depending on individual students' needs, based on their learning progressions and interests. This way, students can determine their own learning path and move at a flexible pace through an iterative one-on-one process with the continuous support and guidance of their teachers. The fact that other small schools, such as North Country Charter Academy, have elected to use an online curriculum in a Flex blended-learning model, demonstrates that small competency-based schools do not—as a rule—avoid disruptive blended-learning models. Rather, a school's small scale appears to make disruptive blended-learning models an optional infrastructure investment, rather than a vital engine for operating competency-based practice at scale. Of note, the larger schools surveyed either relied on disruptive blended-learning models to support competency-based pathways or remained time-based and used sustaining blended-learning models.

- ***It may be difficult to support competency-based models for very young children using disruptive blended-learning models.***
  Milan Village Elementary School's approach suggests that in some cases the blended-learning models appropriate to supporting competency-based education may vary with age. Although Milan Village Elementary School has attempted to build competency-based progressions for its youngest students, it uses a sustaining blended-learning model (Station Rotation) for these students. Only when the students are older does the school deploy a disruptive blended-learning model (Individual Rotation) in service of competency-based progressions. Still, nationally there are examples of disruptive models,

such as Acton Academy's Flex blended-learning model, deployed in very young grades.[14] Understanding the role of blended learning and the degree of structure needed to support the youngest grades of a competency-based model requires further research. This is a promising question to explore in New Hampshire in the coming years, as districts are starting to lead competency-based reforms across elementary and middle schools.

- ***The blended-learning models available to students may vary depending on who implements them and whether they are offered as classroom-based, school-wide, or A La Carte course models.***

  The range of possible blended-learning models available to individual classroom teachers is likely more limited than when blended-learning models are endorsed school-wide. An individual classroom teacher, like Celeste Best of Oyster River High School, may be able to operate a blended-learning model in her classroom with some flexible pacing for students, but it may be difficult to implement a fully blended competency-based model if there is not school-wide support of disruptive blended-learning models and competency-based progression. Teachers in this position will likely only be able to implement sustaining blended-learning models—like the Station Rotation or Flipped Classroom—which are not as clear of a fit for truly allowing students to move at a flexible pace. On the other hand, for an entire school that is attempting to build a competency-based model at scale, disruptive blended-learning models may be best suited to support this goal because they can integrate resources across the school to create learning environments that escape the confines of the traditional classroom. This is how schools like North Country Charter Academy were able to align their entire blended-learning curriculum to a school-wide, competency-based approach.

  VLACS's A La Carte courses offer a fully competency-based course option for students who are attending schools that are still tethered to time-based practices. VLACS's scale largely reflects its ability to grow by supplementing existing course offerings at traditional brick-and-mortar high schools. In this sense, and because of VLACS's autonomy from the traditional classrooms in a school, VLACS courses effectively circumvent the limitations of a given school's willingness or hesitation to adopt competency-based education. Notably, when schools deploy VLACS competency-recovery courses within their classrooms, these modules may be used in either a sustaining or disruptive manner depending on the frequency with which students access them. End-of-semester, competency-recovery A La Carte modules appear to sustain traditional time-based models, much like unit recovery has. Competency-recovery modules offered throughout the semester on an as-needed basis, on the other hand, may serve as just-in-time supports integral to a well-functioning competency-based system.

- ***Policies and regulations may unlock the potential of disruptive blended-learning models to individualize students' learning pace and pathways.***

  The power of abolishing the Carnegie unit means that there need not be disruptive time-based models in New Hampshire. Therefore, all VLACS courses that are themselves competency-based are poised to provide competency-based learning options both in schools that have moved away from time-based approaches and in more traditional time-based schools. Their ability to do so, however, is driven largely by the fact that high schools are at liberty to award credit for competency-based courses. Conversely, using disruptive blended-learning models, like VLACS's A La Carte courses, in time-based settings may inhibit the potential for these models to truly personalize education. For example, virtual schools offering A La Carte blended-learning courses in numerous locations outside of New Hampshire are required to report out on student seat-time even if the technology they have in place could allow students to move at a more flexible, individual pace.

CONCLUSION

Studying early blended competency-based school and classroom models is a starting point to understanding how to support personalization in 21st-century schools. Just as New Hampshire has blazed new territory in creating competency-based policies, its schools are facing the key question of how competency-based education and blended learning can and should operate in concert. This small sample suggests that the A La Carte, Individual Rotation, and Flex blended-learning models may be particularly powerful tools in competency-based high school environments. Significantly, this suggests that blended learning, as a relatively new tool, may have the power to unlock the instructional model and progression that competency-based models have long called for. Describing earlier attempts to implement competency-based education, education sociologist William Spady wrote in 1977:

> What most of these new [competency-based education] policy adoptions seem to overlook is the fact that improving the social utility of student outputs may require a reconsideration of the kinds of goals around which the instructional program is built and the structures and mechanism it creates to achieve them.[15]

Spady's insights ring true even today, nearly 40 years later. As competency-based policy and implementation comes to the fore, states and schools should be prepared to reconsider the structures and mechanisms of their instructional programs—and certain blended-learning models may be poised to fill this need.

APPENDIX A. DEFINITIONS OF BLENDED LEARNING MODELS

The majority of blended-learning programs resemble one of four models: Rotation, Flex, A La Carte, and Enriched Virtual. The Rotation model includes four sub-models: Station Rotation, Lab Rotation, Flipped Classroom, and Individual Rotation.

1. **Rotation model** – a course or subject in which students rotate on a fixed schedule or at the teacher's discretion between learning modalities, at least one of which is online learning. Other modalities might include activities such as small-group or full-class instruction, group projects, individual tutoring, and pencil-and-paper assignments. The students learn mostly on the brick-and-mortar campus, except for any homework assignments.
    a. **Station Rotation** – a course or subject in which students experience the Rotation model within a contained classroom or group of classrooms. The Station Rotation model differs from the Individual Rotation model because students rotate through all of the stations, not only those on their custom schedules.
    b. **Lab Rotation** – a course or subject in which students rotate to a computer lab for the online-learning station.
    c. **Flipped Classroom** – a course or subject in which students participate in online learning off-site in place of traditional homework and then attend the brick-and-mortar school for face-to-face, teacher-guided practice or projects. The primary delivery of content and instruction is online, which differentiates a Flipped Classroom from students who are merely doing homework practice online at night.
    d. **Individual Rotation** – a course or subject in which each student has an individualized playlist and does not necessarily rotate to each available station or modality. An algorithm or teacher(s) sets individual student schedules.
2. **Flex model** – a course or subject in which online learning is the backbone of student learning, even if it directs students to offline activities at times. Students move on an individually customized, fluid schedule among learning modalities. The teacher of record is on-site, and students learn mostly on the brick-and-mortar campus, except for any homework assignments. The teacher of record or other adults provide face-to-face support on a flexible and adaptive as-needed basis through activities such as small-group instruction, group projects, and individual tutoring. Some implementations have substantial face-to-face support, whereas others have minimal support. For example, some Flex models may have face-to-face certified teachers who supplement the online

learning on a daily basis, whereas others may provide little face-to-face enrichment. Still others may have different staffing combinations. These variations are useful modifiers to describe a particular Flex model.

3. **A La Carte model** – a course that a student takes entirely online to accompany other experiences that the student is having at a brick-and-mortar school or learning center. The teacher of record for the A La Carte course is the online teacher. Students may take the A La Carte course either on the brick-and-mortar campus or off-site. This differs from full-time online learning because it is not a whole-school experience. Students take some courses A La Carte and others face-to-face at a brick-and-mortar campus.
4. **Enriched Virtual model** – a course or subject in which students have required face-to-face learning sessions with their teacher of record and then are free to complete their remaining coursework remote from the face-to-face teacher. Online learning is the backbone of student learning when the students are located remotely. The same person generally serves as both the online and face-to-face teacher. Many Enriched Virtual programs began as full-time online schools and then developed blended programs to provide students with brick-and-mortar school experiences. The Enriched Virtual model differs from the Flipped Classroom because in Enriched Virtual programs, students meet face-to-face with their teachers every weekday. It differs from a fully online course because face-to-face learning sessions are more than optional office hours or social events; they are required.

Source: "Blended learning definitions and models," Clayton Christensen Institute, http://www.christenseninstitute.org/blended-learning-definitions-and-models/ (accessed April 25, 2014).

ENDNOTES

[1] The specific use of the term "competencies" first appeared in the early 1960s in U.S. teacher preparation programs that were focused on imparting specific skills to teachers in training. Much more recently, blended learning came about over the past two decades. Early on, online content providers like Apex Learning and Florida Virtual School offered supplemental online courses to traditional schools.

[2] William Blank, *Handbook for Developing Competency-Based Training Programs* (Englewood Cliffs, New Jersey: Prentice Hall, 1982), pp. 3–27.

[3] According to CompetencyWorks, a high-quality competency-based system is one in which: 1) Students advance upon demonstrated mastery; 2) Competencies include explicit, measurable, transferable learning objectives that empower students; 3) Assessment is meaningful and a positive learning experience for students; 4) Students receive rapid, differentiated support based on their individual learning needs; 5) Learning outcomes emphasize competencies that include application and creation of knowledge along with the development of important skills and dispositions. See Chris Sturgis, Susan Patrick, and Linda Pittenger, "It's Not a Matter of Time: Highlights from the 2011 Competency-Based Summit," iNACOL, July 2011, p. 6, http://www.inacol.org/cms/wp-content/uploads/2012/09/iNACOL_Its_Not_A_Matter_of_Time_full_report.pdf.

[4] The Clayton Christensen Institute defines blended learning as a formal education program in which a student learns: at least in part through online learning, with some element of student control over time, place, path, and/or pace; at least in part in a supervised brick-and-mortar location away from home; and the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience. See Clayton M. Christensen, Michael B. Horn, and Heather Staker, "Is K–12 blended learning disruptive? An introduction of the theory of hybrids," Clayton Christensen Institute, May 2013, http://www.christenseninstitute.org/wp-content/uploads/2013/05/Is-K-12-Blended-Learning-Disruptive.pdf.

[5] For more on the distinctions and relationships between competency-based education, blended learning, and personalization, see Susan Patrick, Kathryn Kennedy, and Allison Powell, "Mean What You Say: Defining and Integrating Personalized, Blended and Competency Education," iNACOL, October 2013, http://www.inacol.org/cms/wp-content/uploads/2013/10/iNACOL-Mean-What-You-Say-October-2013.pdf.

[6] Some corporate training programs have embraced e-learning and competency-based progressions, as summarized in Elwood F. Holton III, Mary Leah Coco, Janis L. Lowe, Jacqueline V. Dutsch, "Blended Delivery Strategies for Competency-Based Training," Advances in Developing Human Resources, Vol. 8, No. 2, May 2006, pp. 210–228, http://id697-f12-bateman.wikispaces.umb.edu/file/view/Blended-Competency-Based-Training.pdf/366335966/Blended-Competency-Based-Training.pdf.

[7] Only 10 states require credits to be awarded based on students' mastery of content and skills, rather than on seat-time. See "Digital Learning Report Card 2013," Digital Learning Now, 2014, p. 32, http://reportcard.digitallearningnow.com/wp-content/uploads/2014/02/DLN_ReportCard_20140313.pdf.

[8] These rules implement the NHDOE's rule-making responsibilities as defined in Chapter 186 of RSA Title XV, including defining the minimum curriculum and educational standards for all grades of the public schools. See "Part Ed 306: Minimum Standards for Public School Approval," New Hampshire Department of Education, 2011, http://www.education.nh.gov/legislation/documents/ed306-2011.pdf. Among other things, the amended regulations require local school districts to identify or develop high school course competencies, decide on appropriate ways to assess competency, and define sufficiency (identifying necessary and sufficient evidence for students to demonstrate mastery). The regulations state that by the 2008–09 school year, the local school board shall require that a high school credit can be earned by demonstrating mastery of required competencies for the course, as approved by certified school personnel.

[9] Julia Freeland, "From policy to practice: How competency-based education is evolving in New Hampshire," Clayton Christensen Institute, May 2014, http://www.christenseninstitute.org/wp-content/uploads/2014/05/From-policy-to-practice.pdf.

[10] Because our surveys typically consisted of discussions with school and district leaders, few of our findings highlighted teacher-initiated blended-learning models. Although these 13 interviews focused primarily on school-wide transformations, individual teachers in New Hampshire, like Celeste Best, a science teacher at Oyster River High School, are also initiating blended learning in their classrooms. Last year David Hobbs, an English teacher at Winnacunnet High School and the recipient of the 2012 Christa McAuliffe Sabbatical, published *Digital Literacy NH,* a book on the expansion of digital learning in New Hampshire's classrooms. Hobbs stressed that he wrote the book in part to highlight that blended learning is not always a school- or district-wide initiative, but may be the result of a single teacher or group of teachers deciding to integrate online learning into their practice. "I wanted to celebrate what was already happening and connect teachers," Hobbs said. "Teachers get in a position with respect to technology: it's either some day or Monday. We're sick of saying some day. Now some teachers are actually leapfrogging districts." See David Hobbs, *Digital Literacy NH,* July 11, 2013, http://digitalliteracynh.org/ (accessed April 28, 2014).

[11] On February 20, 2013, the New Hampshire State Board of Education approved competencies in English language arts and mathematics aligned to the Common Core College and Career Ready Standards for statewide use. These competencies were developed by teams of New Hampshire educators under the guidance of the National Center for Improvement of Educational

Assessment (NCIEA). See "College and Career Ready Competencies aligned with Common Core State Standards," New Hampshire Department of Education, http://www.education.nh.gov/competencies/ (accessed April 11, 2014).

[12] "Competency Recovery," Virtual Learning Academy Charter School, http://vlacs.org/index.php?Itemid=236 (accessed April 23, 2014).

[13] "Celeste Best National Award Winner," Oyster River Community School District, http://www.orcsd.org/index.php/orcsd-all-articles/5-front-page-news-rotator/422-celeste-best-national-award-winner (accessed April 23, 2014).

[14] Acton Academy, which uses a Flex blended-learning model, is an anomaly in terms of offering a disruptive blended-learning model to very young students. Notably, the school currently serves only 42 students in grades 1–8. For more on Acton Academy, see "Acton Academy," Blended Learning Universe, Clayton Christensen Institute, http://www.christenseninstitute.org/acton-academy-2/ (accessed April 28, 2014).

[15] William Spady, "Competency-based education: A bandwagon in search of a definition," *Educational Researcher,* Vol. 6, No. 1, 1977, pp. 9–14.

About the Institute

The Clayton Christensen Institute for Disruptive Innovation is a nonprofit, nonpartisan think tank dedicated to improving the world through disruptive innovation. Founded on the theories of Harvard professor Clayton M. Christensen, the Institute offers a unique framework for understanding many of society's most pressing problems. Its mission is ambitious but clear: work to shape and elevate the conversation surrounding these issues through rigorous research and public outreach. With an initial focus on education and health care, the Institute is redefining the way policymakers, community leaders, and innovators address the problems of our day by distilling and promoting the transformational power of disruptive innovation.

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