CONNECT:
Making Learning Personal

An Issue Brief from the League of Innovators

This issue brief is the first in a series produced by the Center on Innovations in Learning's League of Innovators. The series will describe, discuss, and analyze policies and practices that enable personalization in education. Topics should be of particular interest to state education agencies and district and school personnel. This first issue overviews the complexities of implementing competency-based education, a component of personalization that has received growing attention.

Subsequent issues of the series will present either issue briefs, like this one, or field reports on lessons learned by practitioners recounting the successes and obstacles to success encountered in implementing personalized learning. Neither the issue briefs nor the field reports attempt to present in-depth reviews of the research; for those resources readers are encouraged to access the Center on Innovations in Learning's resource database.

### Competency-based Education: Supporting Personalized Learning
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In this era of federally mandated educational reform and concurrent state and local resistance to top-down government directives (e.g., the No Child Left Behind Act of 2002, the Common Core State Standards), a surprising consensus has arisen among state, local, and even federal education agencies in support of "competency-based" initiatives. Competency-based education (CBE) supports students' progression through their academic work toward proficiency and mastery—regardless of time, method, place, or pace of learning (U.S. Department of Education [USDOE], n.d.). For the purposes of this publication series, a competency may be defined as "a combination of skills, abilities, and knowledge needed to perform a specific task," which is tied to a specific goal or standard. As noted by Redding (2014b), competency entails a "general and evolving accumulation of related capabilities that facilitate learning and other forms of goal attainment" (p. 8); thus competency-based education stresses acquisition and demonstration of targeted knowledge and skills. Perhaps CBE garners advocates from all sides of the education debate because it fosters individualization and personalization (see Redding, 2014a, 2014c) while still requiring evidence of learning and accountability.

Competency-based education (sometimes referred to as "proficiency-based," "performance-based," or "mastery-based," or other terms) encompasses many useful components, making it both appealing and complex. As indicated by the list below, a comprehensive CBE plan has several components and can impact multiple levels of schooling. Full implementation may potentially involve systemwide change and thus requires careful consideration, planning, preparation, and monitoring. Basic tenets of a robust CBE model include:
- student advancement based upon demonstration of mastery, regardless of time spent in instruction or place in the academic calendar

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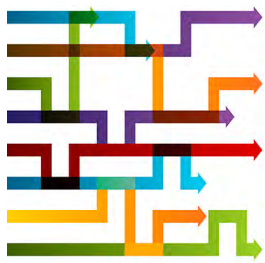
- mastery of competencies that reflect explicit, measurable, transferable learning objectives that have shared relevance
- learning outcomes that emphasize competencies, including the application and creation of knowledge, along with the development of important skills and dispositions
- meaningful assessment, often embedded throughout teaching and learning and used to inform progress and instruction
- differentiated individual support based upon student learning needs and interests
- technology used to make efforts feasible, scalable, actionable, and transparent

The predominant difference between CBE and most traditional education programs concerns how instructional time is viewed. Traditionally, time spent in learning is held constant (e.g., the 180-day school calendar or a year of Algebra I) and results in varied learning across students (e.g., letter grades A–F or other ratings). CBE inverts that traditional model, with "learning held constant, while time varies" (originally coined by Barr & Tagg, 1995, p. 19). Inherent in CBE is the notion that each learner demonstrates competency, regardless of the amount of time demonstration of that competency may take.

PATHWAYS TO ACHIEVING COMPETENCY-BASED EDUCATION

While the thought of each learner fully understanding content is inherently appealing, instituting CBE to achieve that goal would necessitate far-reaching changes in many long-standing education structures and operations. For SEAs and LEAs, policies concerning earning credits, funding, assessment, class/school structure, and even teacher preparation would all have to be significantly adjusted. These and certain other—by no means all—changes in structures and operations implicit in the change to CBE and their effect on states, districts, or schools, are briefly described below.

FUNDING. Perhaps one of the most far-reaching implications of CBE concerns funding and changes to long-held federal, state, and local school finance formulas. For decades, funding for elementary and secondary education has been primarily determined by formula, such as average daily enrollment of pupils in a district, average daily attendance, and various forms of "weighted" student enrollment (for example, additional allocations for English language learners [ELLs] or special education students). Each state distributes education funds to districts through the funding formula set forth in its state law (see Education Commission of the States, n.d.).

At the end of 2013, at least five states—Iowa, Maine, New Hampshire, Oregon, and Vermont—have revised their funding policies to support CBE initiatives.

When students are engaged in instruction outside of the traditional school day or location—such as online courses not in the "bricks and mortar" classroom, independent study, mentorship in business or trade, or even home-bound or hospital-based instruction—calculating funding becomes much more complicated. States have responded in various ways, such as requiring a student to be present at school for some minimum number of minutes to be counted in the funding formula or developing alternative mechanisms other than time in school to determine "attendance." A few states have passed laws which specifically exempt online students from time-based

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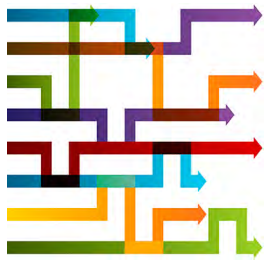
requirements stipulated in the school funding formula (Watson & Gemin, 2009), requiring instead that the online course be equivalent to a traditional course of study.

SEAT TIME. Underlying public school funding are requirements that specify the amount of time students are required to be in a course for completion (referred to as "seat time"). CBE models challenge the traditional method of seat time accounting by allowing flexibility in where, how, and when credits are earned, awarded, and counted. To date, 42 states have adopted policies that give schools varying degrees of flexibility in awarding credit to students, including waivers from time-based requirements and demonstration of proficiency (Stainburn, 2014). In 2005, New Hampshire removed seat time requirements altogether (Freeland, 2013). Currently, nine states do not allow districts flexibility and require the use of time-based credits (see Carnegie Foundation for the Advancement of Teaching, 2014).

Proponents of seat time flexibility regard it as a key strategy in the effort to increase graduation rates (National Association of Secondary School Principals, 2005). Flexibility in how and when credits are earned and awarded is often viewed as a necessity in the efforts to reduce the number of students at risk of dropping out or aging out of the K–12 system without graduating.

EARNING CREDIT. In most systems, secondary students earn credits (often required for advancement or graduation) upon completion of seat time and academic requirements. CBE has the potential to expand and enhance K–12 credit-earning opportunities in combination with strategies such as online and blended coursework, specialized courses, portfolios, early college credit, dual enrollment, internship, and paid employment, or home–hospital based instructional programs. For instance, Ohio's Credit Flex policy requires districts and schools to support alternative means (including CBE) to earn high school credit (Ohio Department of Education, n.d.), while New Hampshire is moving to make all high schools competency based (Freeland, 2013). For all states, tying the various pathways and programs to the credit-earning process will require broad-based efforts and substantial planning and coordination.

CREDIT RECOVERY. "Credit recovery" occurs when a student earns credit toward graduation for a course that the student previously attempted unsuccessfully. The credit earned in recovery differs from earning credit (the first time) in that often students have already satisfied seat time requirements—a situation perfectly suited to the CBE model. The flexible aspects CBE model may be especially beneficial, as students may need to recoup more credits than a traditional school semester or year would allow, thus supporting critical efforts toward both helping students stay in school and graduating on time. Either via a new modality of online instruction or in coursework that focuses solely on components missing from prior learning, CBE offers learners a more direct pathway toward credit recovery.

PERSONALIZATION. By definition, anything "personalized" implies variation across individuals. CBE programs are likely to support personalization as they are often crafted at the outset to provide students with individualized learning opportunities, not only with regard to time, place, and pace, but also in regard to tailoring instruction according to each student's unique needs and reflective of his or her particular interests—which
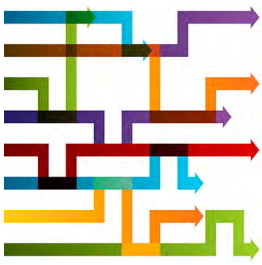
may lead to greater student engagement and outcomes (USDOE, n.d.). Because CBE and personalized learning overlap in several features, the term occasionally causes confusion.

Since "individualization" and "differentiation" are sometimes used interchangeably with "personalization," each term is reviewed below for greater clarity. Individualized (as in "individualized instruction") has historically stressed individual pacing according to learner needs and abilities (not simply preferences), with the instructional objective held constant across learners. It often encompasses alternative teaching strategies, whether they be additional instruction, more detailed or scaffolded instruction, or a different curriculum altogether. Differentiation is often used to imply a consideration of learning needs and what research suggests works best, as well as learner preferences. Personalization is now most frequently used to encompass each of these meanings, in that personalized instruction is paced to learning needs, tailored to learning preferences about what and how to learn, and reflective of the specific interests of different learners, across learning objectives, content, and instructional method (Redding, 2013; USDOE, n.d.).

COMPETENCIES. "Competencies" are what we (i.e., school systems, communities, society) want our students to be able to do, and ultimately do well (CompetencyWorks, n.d.). While often focused on academic and lifelong learning skills, Redding (2014a, 2014c) notes that metacognitive, motivational, and social/emotional personal competencies are also critical. States, districts, and schools are considering different models of competency frameworks, including those that emphasize college and career readiness (see Achieve, n.d.), global competency (see Partnership for 21st Century Skills, 2014), or statewide science standards (see New Hampshire Department of Education, 2014), to name a few. Tremendous pressure exists to identify competencies that are transparent, meaningful, and achievable for their learners today and those of tomorrow. Identifying competencies helps the entire education community share a common understanding about the specific skills and knowledge that students should master as a result of their educational experiences (Redding, 2013, 2014b). When competencies are specified, they provide guidance in the selection of curricula, the design of learning experiences, and identification of contexts that will help students gain practice in using and applying the competencies.

STANDARDS. While the Common Core State Standards (CCSS) have come under fire from states, districts, and schools across the nation, those same entities are increasingly aware of the potential of using standards to set goals, increase expectations, organize instruction, and redesign grading systems. When states and districts consider implementing any aspect of CBE, meaningfully linking competencies to standards is critical to fully aligning systems, policies, and practices. As states are considering, reconsidering, or implementing CCSS, they should also be considering what competencies reflect those standards (Sturgis, 2014). For example the New England Secondary School Consortium, a five-state partnership promoting innovations in secondary education, have created a set of "graduation standards"—the big concepts across eight content areas (ELA, math, social studies, science, arts, health & physical education, world languages, and career and education development) that students are accountable for demonstrating (Ruff, 2014; also see Stack, 2013).

ASSESSMENT. Educational assessment has a long, often contentious history in education. In CBE, assessment is geared towards providing information on progress or

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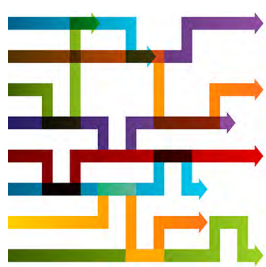
mastery of learning tied to some standard or objective. Adopting a CBE system places tremendous importance on monitoring and measuring a student's progress toward and mastery of the desired competencies. The ideas of mastery learning and curriculum-based assessment are not new, and several states and national organizations are taking on the work of designing and administering agreed-upon assessments that measure competencies. Two examples of the development of "next generation" systems of assessments aligned to national college- and career-ready standards are the federally funded Partnership for Assessment of Readiness for College and Careers and the state-led Smarter Balanced Assessment Consortium. These resources provide states with access to collaboratively developed assessment systems, information, and tools to improve instruction and help students succeed.

MEASUREMENT AND DATA. A CBE system compels a level of uniformity in the description of competencies in order to have common meaning across a variety of contexts (such as schools, districts, states, universities, or potential employers). If competencies are to be useful, some standardization of criteria or expectation is necessary, as well as some ability to transfer those competencies within and across entities (schools, districts, states, higher education programs, and even future employers). Agreed-upon measures serve as a way to achieve that commonality and transferability. As noted by Competency Works, a national collaborative project sponsored by the International Association for K–12 Online Learning , an integrated data system is fundamental to an effective CBE:

> Student-centered data systems should collect, report, and provide transparent information on where every student is along a learning trajectory based on demonstrating high levels of competency, to help educators customize learning experiences to ensure that every student can master standards and aligned competencies (Worthen & Pace, 2014, p. 11).

Data collected and used this way provide critical information that should guide teaching and ensure quality and accountability, and serve as a powerful instrument to personalize instruction and amplify learning. States and districts are increasingly aware of the dual power of measurement and standards made possible with technology, and are tackling issues such as data alignment and interoperability, the movement from compliance monitoring to defining measures of continuous improvement, and protecting student privacy.

GRADING. A true CBE system requires a rethinking of grading policies and practices, what they mean, and how we inform the student and others of an individual's progress towards competencies. Significant weaknesses abound in the traditional grading system used by most schools. Letter grades and corollary measures (e.g., satisfactory ratings) are highly dependent on many factors and thus are not reliable indicators of achievement. Letter grades have been found to be subjective measures and convey little about learning in a given subject (Bowers, 2011). Using grades to denote less-than-ideal knowledge (e.g., D or even C) that are still considered "passing" allows students to advance without full mastery. Grades have been shown to be a feeble strategy to
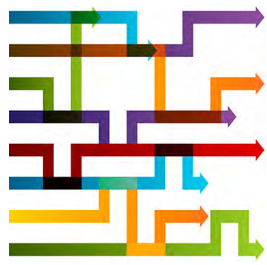
motivate students to learn, and the use of a grade to denote end-of-course learning (or term, unit, or class) ignores the real fact that not all students start at the same point (Sturgis, 2014). A competency-based system alleviates many of these issues by ensuring competent performance by all learners. The power to correct the faults of traditional grading promised by CBE is captured in the words of one student:

> Casco Bay High School is harder than other schools, but you learn everything. You can't pass by with a 78 and not know half the material. I used to pass by with a B-, but when I got to Casco I didn't know half of the material I was supposed to have learned in middle school because that was the half I didn't learn (Sturgis, 2014, p. 4).

The movement toward eliminating traditional grades and recognizing competency may be incremental. For instance, schools may reduce the range of what is considered acceptable by eliminating D's as a passing grade or eliminating norm-referenced or bell curve grading systems in favor of one that is criterion or standard based.

MASTERY AND RECYCLE UNTIL MASTERY. The extremely promising practice of mastery-based learning (Bloom, 1980) has as its cornerstone a belief that "if at first you don't succeed, try, try again." Known in education as "recycle until mastery," a true CBE system promotes persistence as a fundamental principle of learning and teaching. All students learn at different rates, and individual students learn differently based on what it is they are learning. The mastery principle of CBE is one for which personalization holds great promise even outside of traditional academic topics. CBE systems and mastery-based learning provide ample opportunity for students to learn about persistence, resilience, and grit (Shechtman, DeBarger, Dornsife, Rosier, & Yarnall, 2013), and the seemingly intangible "something other" (Redding, 2014c) essential to success in life.

ADAPTION. Recycling until mastery does not mean doing the same thing over and over again. In fact, CBE promises to end the practice of repeatedly failing and retaining students. Instruction that rapidly adapts based on successes and early failures is instruction that is perfectly honed to individual learning. Difficulties or errors in learning are not embarrassments, but instead "learning opportunities" or the opportunity to gain new knowledge or skill in different ways. Coupling this instructional mindset with personalization based on individual student interests and goals gives CBE great potential to transform education.

GRADE LEVELS. Abandoning the use of rigid, calendar-based grade levels may be the most visible change that accompanies a full CBE reform. While numerous schools have nibbled around the edges of modifying our current grade-per-year system (e.g., advanced college credit, ability grouping across grades), only a few schools and districts (and no states) have done away with a grade level system entirely. One district that has made the leap is Lindsay Unified in California, which is in its fifth year of completely restructuring its system, implementing a full CBE model, including eliminating seat time requirements, grades, grade levels, and focusing completely on a proficiency-based system designed to prepare learners for life. The district describes its promotion
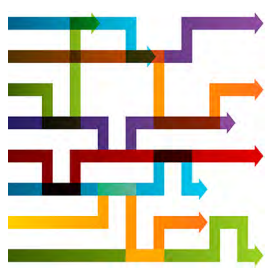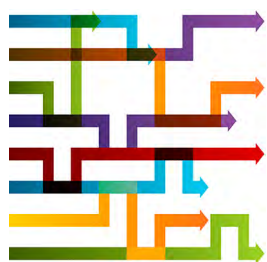
procedures in this way:

Students advance once they have demonstrated mastery of a specific content standard. Once they master the standards within a specific content level, they get to move up and start working at the next content level, regardless of their age or the time of year (Quattrocchi, 2014).

While removing the constraints of time-based grade levels gives schools greater flexibility in focusing on personalization within standards-based competencies, the overarching state and federal restrictions imposed by regulatory policies and accountability systems remain. The federal government and individual states need to respond quickly or, better yet, proactively to work with districts and schools to solve these issues.

TECHNOLOGY. Undergirding the promising potential of practically every component of competency-based education is technology. Educators at every level are recognizing that hardware, software, and digital instructional technologies are powerful tools to personalize instruction and amplify learning. Digital, connected, educational technology can be key when implementing personalized learning and emphasizing competencies, especially in larger systems (e.g., whole class, whole school, whole district, whole state). It increases anywhere, anytime access, and can simultaneously differentiate instruction in real time across numerous students, enhance communication and accountability, and support multiple methods of credit earning, assessment, and demonstrating competency.

Technology has already shown how it can increase personalization in practically all aspects of our lives. When used well, it has been shown to increase access and engagement by educators and learners (Swan, Hooft, Kratcoski, & Unger, 2005). Several digital learning technologies support automated, real-time instructional adaptation, or serve as a conduit for teachers to more easily do the same. Integrating educational data (both learner specific and in the aggregate) with systematic, precise, research-based, decision-making algorithms sets the stage for maximizing learning and improving educational outcomes. On an individual level, adaptive instructional programs not only ensure that each learner immediately receives what he or she needs (both instructionally and geared to his or her particular interest), but also provide a wealth of valuable information about how to design better programs (including what techniques work better for which students, in what contexts, and for what material), and provide both general and specific measures of effectiveness and accountability. Individualized, adaptive instruction becomes truly possible, finally on a large scale, with intelligent software technologies (Magoulas, Papanikolaou, & Grigoriadou, 2003).

POLICY. It is impossible to realize large scale or far reaching educational change without considering policy, including which policies are supportive and which hamper change. With regard to CBE, federal time-based accountability policies (e.g., seat time) are inadequate in reflecting continuous student improvement. Requirements for reporting student achievement focus on summative assessments emphasizing year-

end data collection (such as Annual Measurable Objectives) and often impede state or local efforts to address inequities and to drive improvement throughout the year (Worthen & Pace, 2014). Although the U.S. Department of Education's ESEA waivers now allow flexibility for states to use multiple measures of student data to demonstrate achievement, measure growth, and ensure accountability, this initial step is not yet written into federal law. Federal and state policy consideration is a required part of a fully functional CBE system.

SUMMARY

Competency-based education is a personalized learning approach that respects individual student differences and supports students in the mastery of standards and aligned competencies. As states, districts, or schools evolve toward competency-based education, they will necessarily make significant and systemic changes in operations, educational philosophy, instructional methods, standards and assessment, grading, reporting, promotion and graduation, and perhaps most of all, in culture. During the transformation, they will have to navigate the road of incremental steps to a full redesign, avoiding roadblocks, potholes, and other hazards along the way. How states, districts, schools, and even individual classrooms will make optimal use of CBE remains to be seen.

In the issues of *Connect* that will follow this brief, we'll learn from the perspectives of regional, state, local, and school-based administrators, educators, and individuals who care deeply about personalizing and improving education for all learners.

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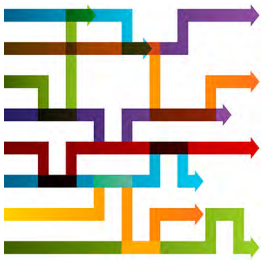
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