



Competency-based Education in Grades K-12

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Key Points

Competency-based education (CBE) – also commonly referred to as proficiency-based or mastery-based education or learning – is a concept of allowing students to learn at their own pace and awarding credit for evidence of proficiency, not for the amount of time spent in a classroom. Although CBE is often linked to higher education, some states have adopted CBE practices in their K-12 education systems.

School implementation of CBE can be visualized along a spectrum. At one end, the most “pure” form of CBE is one in which students move to the next learning level only after demonstrating mastery of concepts; in this type of system, schools have no traditional grade levels. At the other end of the spectrum, schools retain some traditional school organization, including grade levels, but may adapt how they assess student learning by having courses with defined core competencies.

Tennessee does not have laws, rules, or policies that specifically address district development or implementation of competency-based education. There is evidence of some competency-based approaches in Tennessee K-12 school districts: the use of online credit recovery programs and the Seamless Alignment and Integrated Learning Support (SAILS) program, both of which employ competency-based approaches. These programs do not represent a comprehensive use of CBE, however, as they are designed for remediation purposes.

Because CBE is conceptual, states and districts that use a CBE approach vary greatly in their implementation of the practice. New Hampshire is the state most associated with instituting a CBE approach in its K-12 system. In 2005, the New Hampshire Department of Education amended its regulations, requiring districts to create their own competencies and begin awarding high school credits based on mastery by school year 2008-09. Other states reviewed in the report include Colorado, Oregon, and Kentucky.

Several states are working with Achieve and the Council for Chief State School Officers to develop competency-based K-12 approaches.

Recent research concerning CBE is scarce, but research studies conducted in the 1980s found positive results for some forms of CBE.

Competency-based education (CBE) is a concept of allowing students to learn at their own pace and awarding credit for evidence of proficiency, not for the amount of time spent in a classroom. The theory behind CBE is that all children can learn when provided with conditions that are appropriate for their learning.¹ CBE may also be referred to as mastery-based learning or proficiency-based learning. Although CBE is often linked to higher education, some states have adopted CBE practices in their K-12 education systems.

In CBE, teachers organize course content into learning units, which represent the important concepts and skills they want students to learn. Teachers provide instruction or instruction may be provided through online programs, after which students take a formative assessment that identifies what they learned and what they did not learn. The results of the formative assessment include explicit, targeted “corrective” activities about what each individual student needs to do to make corrections to their learning and master the desired learning outcomes. Students who have attained mastery by the first formative assessment can move ahead. Students who have not yet attained mastery must complete corrective activities before taking another formative assessment covering the same learning unit, but with different problems and questions to determine whether they have gained mastery. This pattern continues until each student acquires mastery.²

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Defining competency-based education

Competency-based education has no official standard definition. Participants in a 2011 summit, sponsored by the Council of Chief State School Officers (CCSSO) and the International Association for K-12 Online Learning (iNACOL), developed a working definition:

1. students advance upon mastery
2. competencies include explicit, measureable, transferable learning objectives that empower students
3. assessment is meaningful and a positive learning experience for students
4. students receive timely, 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

Source: KnowledgeWorks, Competency Education Series: Policy Brief One, April 25, 2013, p. 5.

This brief contains information about:

- Tennessee laws, rules, and policies that may affect the use of CBE in districts and schools
- competency-based approaches at the K-12 level taken in some other states and districts
- current efforts to assist states in developing competency-based K-12 systems and
- research studies concerning CBE.

Tennessee and CBE

Tennessee does not have laws, rules, or policies that specifically address district development or implementation of competency-based education. A State Board of Education rule, however, permits Tennessee students to earn credit for courses by passing written exams, and for out-of-school and work-based experiences.⁴ Because of this rule, Tennessee is sometimes grouped with states that allow students to complete coursework by demonstrating proficiency in lieu of completing seat time.⁵ But a 2014 Carnegie Foundation scan of state course credit policies places Tennessee in the category of states that give districts some flexibility yet define credit largely by seat-time.⁶

There is evidence of some competency-based approaches in Tennessee K-12 school districts: the use of online credit recovery programs and the Seamless Alignment and Integrated Learning Support (SAILS) program. However, these programs are for remediation purposes rather than using CBE comprehensively. With the assistance of the Tennessee Department of Education, in late October 2015, OREA requested information from all school districts regarding the use of any competency-based approach other than credit recovery and SAILS. No districts responded.

A majority of school districts in Tennessee with high schools use credit recovery practices that are largely online and competency-based, according to a survey conducted by the Offices of Research and Education Accountability in May 2015. Most districts use credit recovery programs that focus on developing students' academic skills only in the areas in which they are deficient rather than on having students retake entire courses.⁷

Tennessee is using the SAILS program, a competency-based program, to prepare high school students who are struggling in math to be college-ready before they graduate. The state's community colleges work with high schools to implement the SAILS program.⁸ The SAILS model uses software to provide continuous assessment and instant feedback, allowing teachers to focus on individual assistance to students. Students receive an individualized program of study, which allows them to concentrate on improving their academic deficiencies. Students successfully completing a SAILS class avoid the need for remediation in math when they enter college.⁹ In the 2014-15 school year, SAILS served almost 11,000 students in 179 high schools in 79 school districts across the state, and is credited with a 91 percent success rate.¹⁰

At the postsecondary level, WGU Tennessee, which opened in 2013, uses a competency-based approach.¹¹ WGU states that "each degree program is developed by a council of experts in the field who define 'competencies' students need to possess to graduate. These competencies form the curriculum." Students earn their degrees by demonstrating skills and knowledge in required subject areas through a series of assessments.¹²

CBE in select states and districts

Because CBE is conceptual, states and districts that use a CBE approach vary greatly in their implementation of the practice.

New Hampshire is the state most associated with instituting a CBE approach in its K-12 system. In 2005, the New Hampshire Department of Education amended its regulations, requiring districts to create their own competencies and begin awarding high school credits based on mastery by school year 2008-09.¹³ Regulations allow students to learn “anytime, anyplace, anyhow, and at any pace.”¹⁴ New Hampshire also allows districts to provide students with fewer than the traditional 180 days of instruction, as long as they meet the required number of hours of instruction.¹⁵

In practice, because local control is strong in New Hampshire, districts and schools continue to vary greatly in their use of CBE. Some have reportedly embraced CBE fully, such as the Virtual Learning Academy Charter School, an online charter school that opened in 2007. The school partners with every high school in the state and offers a variety of online courses, which students can access either from home or school. Students must demonstrate a proficiency level of at least 85 percent for each individual course competency before passing to the next level.¹⁶

Another school, Sanborn High School, looks more like a traditional school, with students still enrolled in traditional classes and still receiving credit for classes at the end of the year. All the school’s courses, however, have defined core competencies. If students are unable to demonstrate mastery of the competencies, they are required to do extra work to earn credit for the class instead of accepting a lower grade.¹⁷

Reports also indicate that some districts have gone no further than to adopt the required competencies at their high schools; they do not grade students using the competencies and do not allow students to move at a flexible pace.¹⁸ According to the former chair of the New Hampshire Board of Education, most learning in New Hampshire still occurs in traditional classrooms.¹⁹

Colorado’s Adams County District 50, after being on the state’s “Academic Watch” list at the close of the 2006-07 school year, decided to pilot CBE in one elementary school and in classrooms

Proficiency and CBE

Moving to a competency-based system requires states, districts, and schools to make a number of decisions about how proficiency is defined. In some traditional systems, students making a grade of 70 may pass to the next grade level, though few educators would equate a 70 with proficiency. In a CBE system, educators still must determine the set point at which a student has demonstrated proficiency of the competencies, such as 85 percent, as the Virtual Learning Academy Charter School in New Hampshire determined.

Source: Fred Bramante and Rose Colby, *Off the Clock: Moving Education from Time to Competency*, Corwin, 2012, pp. 45-46.

throughout the district in 2008-09. In 2009-10, the district rolled out CBE to all elementary and middle level schools, and in the following school year, to all high schools.²⁰ The district, which has about 10,000 students (81 percent on free and reduced price lunch and 45 percent English Learners), eliminated traditional grade levels and required students to advance through academic levels once they demonstrated competency rather than at the end of the school year. Since the inception of CBE, the district has experimented with the number of academic levels through which students must progress, which have ranged from 10 to 14 – at present, the district uses 12 levels, which corresponds to the number of traditional grade levels.²¹

Teachers use a scoring guide to make sure students learn what they need to know and students also have a guide to help them track their own progress. Students earn scores of 1, 2, 3, or 4 that correspond with how well they know the material – a 3 is proficient and a 4 indicates advanced skill. Students must earn a 3 in each level and take a test to determine proficiency before advancing to the next level.²²

Oregon has been working toward the use of CBE since 2002, when the State Board of Education approved a policy allowing districts the option to award credit based on proficiency. In 2004, the Oregon Department of Education began a two-year pilot project with seven school districts to implement a credit for proficiency program. In January 2007, the State Board of Education extended the credit for proficiency policy as an option for earning credit to all districts. In 2009, the board adopted corresponding rules following recommendations from a task force. Prior to the 2009 rule changes, the focus was mainly on allowing credit for proficiency as an option for earning elective credit for out-of-school experiences; after 2009, more schools began implementing proficiency-based practices in the classroom in core content areas.²³

The Oregon Business Education Compact (BEC) works with the Oregon Department of Education to train teachers to use the state's credit for proficiency policy. The BEC estimates that it has trained more than 6,000 teachers in almost 90 percent of the state's 197 school districts.²⁴

In May 2012, the **Kentucky** Department of Education was awarded a technical assistance grant by the National Governors Association (NGA) “to provide support for the exploration of educational policies and practices related to the awarding of credit based on competency or mastery of a subject rather than for ‘seat time.’”²⁵ (Kentucky is also working with Achieve and the Council for Chief State School Officers to help the state develop its competency-based strategies. See the next section: “Efforts to assist states in developing competency-based K-12 systems.”) In 2012, the state legislature also passed a law allowing school districts to apply for exemption from certain administrative regulations and statutory provisions, as well as waiving local board policy, in an effort to improve the learning of students.²⁶ (Note that Tennessee has a rule that is similar to this in some respects: State Board Rule 0520-01-03-.05 allows districts, in cooperation with the Tennessee Department of

Education and the State Board, to initiate experimental projects to determine the effectiveness of innovations in content or in the administration of instructional programs. The rule does not exempt districts from other regulations or waive local board policy, however.) In 2013, Danville Independent Schools, a small, rural school district was designated as a District of Innovation and began a complete redesign focusing on competency-based learning and project-based learning. The district redesigned the core curriculum in grades 6 through 10 so students can meet college or career-ready benchmarks by the end of grade 10. Students control the pace at which they progress by demonstrating mastery. Students begin working toward high school level competency in grade 6 and can gain high school credit whenever they are ready.²⁷ At the postsecondary level, Kentucky is working to find ways to offer competency-based degrees.²⁸

Other states that are developing competency- or proficiency-based approaches at the K-12 level include Arizona, Iowa, and Maine.²⁹

Efforts to assist states in developing competency-based K-12 systems

At least two national education-related organizations are working with states to assist them in developing competency-based K-12 systems: Achieve and the Council for Chief State School Officers (CCSSO).

In 2012, Achieve initiated a Competency-Based Pathways (CBP) State Partnership, to provide policy, implementation, and communications support to 12 states developing competency-based pathways to advance college and career readiness for students. Participating states are Colorado, Connecticut, Delaware, Kentucky, Maine, Michigan, New Hampshire, Ohio, Oklahoma, Oregon, Rhode Island, and Vermont.³⁰ The CBP State Partnership has developed several resources, including a policy framework to help states on the path to adopting and implementing competency-based pathways for students. The framework focuses on graduation requirements, assessments, and accountability, three areas in which states have a substantial role. States working toward developing a CBE approach must make several key decisions in each of these areas.³¹

CCSSO has been working with the International Association for K-12 Online Learning (iNACOL) and other education organizations to help states in its Innovation Lab Network develop approaches to ensure student college and career readiness, including developing CBE. Member states are California, Iowa, Kentucky, Maine, New Hampshire, New York, Oregon, West Virginia, and Wisconsin. CCSSO has also developed a tool, the Roadmap for Competency-based Systems, to assist state and district policy makers in determining the steps needed to progress toward a competency-based system.³²

Research about CBE

Most CBE approaches in use today stem from work undertaken by Benjamin S. Bloom beginning in the 1960s. Bloom developed a strategy called Learning for Mastery meant to improve student learning in general education classrooms. The approach was group-based and teacher-paced, requiring that

learning objectives be well defined and appropriately sequenced; it emphasizes that student learning be regularly checked and immediate feedback be given; and it stresses that student learning be evaluated in terms of criterion-referenced, rather than norm-referenced standards.³³

Researchers noted that a group-based approach to mastery learning “is generally more easily adapted to classroom situations where a single teacher has charge of 25 or more students and both instructional time and the curriculum are relatively fixed.”³⁴

A synthesis of research studies published in 1986 found “that group-based applications of mastery learning have consistently positive effects on a broad range of student learning outcomes, including student achievement, retention of learned material, involvement in learning activities, and student affect.”³⁵ Previous studies cited in the synthesis also found that “in quantitative terms, nearly all programs produced greater student learning than nonmastery approaches, and also produced less variability in that learning.”³⁶

Another approach, called Keller’s Personalized System of Instruction, stemmed from the same basic theory, but was individually based and student-paced.

Lessons in PSI [Personalized System of Instruction] are presented largely through written materials, and students move through these lessons at their own rates. Students who fail unit quizzes in PSI courses must restudy material and take tests on the material until they are able to demonstrate mastery.³⁷

A meta-analysis published in 1990 looked at both the group-based and personalized approaches and found positive effects on student achievement using both models. “Although PSI and LFM [Learning for Mastery] strategies differ on several points and the two teaching methods have been studied in distinct ways, studies of PSI and LFM report similar results,” with both raising test scores by significant effect sizes.³⁸

The RAND Corporation undertook a more recent study of CBE in three pilot programs (including Adams District 50 in Colorado) and published results in 2014. The pilot included 11 high schools across five school districts in four states; most were urban or suburban schools serving a large

percentage of low-income and minority students. The grant funded the development of technology-enhanced tools, including curriculum materials and online learning management systems. Although the study summarizes the estimates found in each program, researchers were unable to make “definitive or final pronouncements about the effects of competency-based education on students’ achievement or rates of learning.” The study also makes recommendations concerning the methodology of future studies of competency-based education models.³⁹

Resources for further information

Achieve, *Advancing Competency-Based Pathways to College and Career Readiness: A State Policy Framework for Graduation Requirements, Assessment and Accountability*, <http://achieve.org>

Adams County School District 50 Competency-Based System Wiki, <http://wiki.adams50.org>

Competency-based Education: Helping All Kentucky Students Succeed, Jan. 2013, <http://education.ky.gov>

Council for Chief State School Officers, *Roadmap for Competency-based Systems: Facilitator’s Guide*, <http://www.nxgentechroadmap.com>

Fred Bramante (former Chair of the New Hampshire Board of Education) and Rose Colby, *Off the Clock: Moving Education from Time to Competency*, Corwin, 2012

National Governors Association, *Expanding Student Success: A Primer on Competency-Based Education from Kindergarten through Higher Education*, Oct. 27, 2015, <http://www.nga.org>

North Carolina New Schools, *Competency-Based Education: A Conceptual Framework*, <https://s3.amazonaws.com>

North Carolina New Schools, *Progress Based on Mastery, Not Time: Starting the conversation about competency-based learning in North Carolina*, <http://ncnewschools.org>

North Carolina State Board of Education Policy Manual, *Course for Credit Policy GCS-M-001 (includes Credit by Demonstrated Mastery)*, <http://sbepolicy.dpi.state.nc.us/>

Oregon Department of Education, *Proficiency-Based Teaching and Learning in Oregon: An Evolution from State Policy to Practice*, Sept. 1, 2011, <http://www.ode.state.or.us>

Endnotes

- ¹ Thomas R. Guskey, "Lessons of Mastery Learning," *Educational Leadership*, Vol. 68, No. 2, Oct. 2010, pp. 52-57, <http://www.ascd.org> (accessed Nov. 30, 2015).
- ² *Ibid.*
- ³ Anika Anand and Ann Schimke, "Grade levels could be a thing of the past in schools focused on competency," *PBS Newshour*, May 13, 2015.
- ⁴ Rules of the State Board of Education, Chapter 0520-01-03-.06, Minimum Requirements for the Approval of Public Schools, Graduate Requirement E, Item 2: Testing for Credit, Item 3: Work-Based Learning Experiences, Nov. 2015 (revised), <http://share.tn.gov> (accessed Nov. 30, 2015).
- ⁵ Education Commission of the States, State Notes, Additional High School Graduation Requirements and Options, Tennessee, last update: Feb. 28, 2007, <http://mb2.ecs.org/> (accessed Nov. 30, 2015).
- ⁶ Carnegie Foundation for the Advancement of Teaching, 50 State Scan of Course Credit Policies, May 2014, <http://cdn.carnegiefoundation.org/> (accessed Oct. 19, 2015).
- ⁷ Tennessee Comptroller of the Treasury, Offices of Research and Education Accountability, *Credit Recovery Practices in Tennessee High Schools*, Sept. 15, 2015, p. 8, <http://www.comptroller.tn.gov> (accessed Dec. 7, 2015).
- ⁸ Tennessee Higher Education Commission, *Seamless Alignment and Integrated Learning Support (SAILS)*, <https://www.tn.gov> (accessed Dec. 1, 2015).
- ⁹ Southwest Tennessee Community College, *Seamless Alignment and Integrated Learning Support (SAILS)*, <http://www.southwest.tn.edu/> (accessed Dec. 1, 2015).
- ¹⁰ Chattanooga State Community College, *SAILS*, <https://www.chattanoogaastate.edu> (accessed Nov. 30, 2015).
- ¹¹ TN.gov, Newsroom and Media Center, "Haslam Launches Western Governors University Tennessee," July 9, 2013, <https://news.tn.gov> (accessed Oct. 20, 2015).
- ¹² WGU Tennessee, *Our Competency-Based Approach*, <https://tennessee.wgu.edu/> (accessed Nov. 30, 2015).
- ¹³ Julia Freeland, "New Hampshire's Journey Toward Competency-Based Education," *Education Next*, Feb. 1, 2015.
- ¹⁴ Fred Bramante and Rose Colby, *Off the Clock: Moving Education from Time to Competency*, Corwin, 2012, p. 47.
- ¹⁵ New Hampshire Statutes, Title XV: Education, Chapter 189, Section 1, Days of School, effective July 8, 2011, <http://www.gencourt.state.nh.us> (accessed Nov. 30, 2015).
- ¹⁶ Julia Freeland, "New Hampshire's Journey Toward Competency-Based Education," *Education Next*, Feb. 1, 2015.
- ¹⁷ Anika Anand and Ann Schimke, "Grade levels could be a thing of the past in schools focused on competency," *PBS Newshour*, May 13, 2015.
- ¹⁸ Julia Freeland, "New Hampshire's Journey Toward Competency-Based Education," *Education Next*, Feb. 1, 2015.
- ¹⁹ Fred Bramante and Rose Colby, *Off the Clock: Moving Education from Time to Competency*, Corwin, 2012, p. 48.
- ²⁰ Adams County School District 50, "How Far We've Come," <http://www.cbsadams50.org> (accessed Dec. 2, 2015).
- ²¹ Lark Turner, "Four years later, a district's standards-based reform evolves and pays off," *Chalkbeat*, May 23, 2013, <http://co.chalkbeat.org> (accessed Dec. 2, 2015).
- ²² Adams County School District 50 Competency-Based System Wiki, last modified Sept. 21, 2015, <http://wiki.adams50.org> (accessed Oct. 19, 2015).
- ²³ Oregon Department of Education, *Proficiency-Based Teaching and Learning in Oregon: An Evolution from State Policy to Practice*, Sept. 1, 2011, <http://www.ode.state.or.us> (accessed Oct. 19, 2015).

- ^{2 4} Business Education Compact, BEC-ODE Grant Partnership, <http://www.becpdx.org> (accessed Oct. 19, 2015).
- ^{2 5} Kentucky Department of Education, *Competency-Based Education: Helping All Kentucky Students Succeed, Final Report*, Jan. 2013, p. 2, <http://education.ky.gov> (accessed Nov. 9, 2015).
- ^{2 6} Kentucky Department of Education, *Districts of Innovation*, <https://www.google.com> (accessed Dec. 2, 2015).
- ^{2 7} Educause, Danville Independent Schools: Bate Middle School and Danville High School, *Personalized Learning Pathways Built on a Redesigned Core Curriculum*, 2015, <http://net.educause.edu> (accessed Nov. 9, 2015).
- ^{2 8} R. Laine, M. Cohen, K. Nielson and I. Palmer, *Expanding Student Success: A Primer on Competency-Based Education from Kindergarten Through Higher Education*, National Governors Association Center for Best Practices, Oct. 27, 2015, p. 9, <http://www.nga.org> (accessed Nov. 9, 2015).
- ^{2 9} Competency Works, Wiki, *State Policy Resources*, <http://competencyworks.pbworks.com> (accessed Dec. 3, 2015).
- ^{3 0} Achieve, *About Competency-Based Pathways*, <http://www.achieve.org> (accessed Oct. 20, 2015).
- ^{3 1} Achieve, *Advancing Competency-Based Pathways to College and Career Readiness: A State Policy Framework for Graduation Requirements, Assessment and Accountability*, not dated, <http://achieve.org> (accessed Oct. 20, 2015).
- ^{3 2} Council of Chief State School Officers, *Resources, Roadmap for Competency-based Systems: Leveraging Next Generation Technologies*, <http://www.ccsso.org> (accessed Nov. 30, 2015).
- ^{3 3} Thomas R. Guskey and Sally L. Gates, "Synthesis of Research on the Effects of Mastery Learning in Elementary and Secondary Classrooms," *Educational Leadership*, May 1986, p. 73, <http://www.ascd.org> (accessed Nov. 30, 2015).
- ^{3 4} Thomas R. Guskey and Therese D. Pigott, "Research on Group-Based Mastery Learning Programs: A Meta-Analysis," *Journal of Educational Research*, Vol. 81, No. 4, April 1988, p. 197.
- ^{3 5} Thomas R. Guskey and Sally L. Gates, "Synthesis of Research on the Effects of Mastery Learning in Elementary and Secondary Classrooms," *Educational Leadership*, May 1986, p. 78, <http://www.ascd.org> (accessed Nov. 30, 2015).
- ^{3 6} *Ibid.*, p. 74.
- ^{3 7} Chen-Lin C. Kulik and James A. Kulik, "Effectiveness of Mastery Learning Programs: A Meta-Analysis," *Review of Educational Research*, Vol. 60, No. 2, Summer 1990, p. 265, <http://www.ic.unicamp.br> (accessed Nov. 30, 2015).
- ^{3 8} Chen-Lin C. Kulik and James A. Kulik, "Effectiveness of Mastery Learning Programs: A Meta-Analysis," *Review of Educational Research*, Vol. 60, No. 2, Summer 1990, p. 285, <http://www.ic.unicamp.br> (accessed Nov. 30, 2015).
- ^{3 9} Jennifer L. Steele, Matthew W. Lewis, Lucrecia Santibañez, Susannah Faxon-Mills, Mollie Rudnick, Brian M. Stecher, Laura S. Hamilton, *Competency-Based Education in Three Pilot Programs: Examining Implementation and Outcomes*, RAND Corporation, Prepared for the Bill and Melinda Gates Foundation, 2014, pp. iii., 2-3, and 98, <http://www.rand.org> (accessed Nov. 9, 2015).



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