



Going Beyond the Traditional

Next Gen Credentials and Flexible Learning Pathways



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A photograph of two students in a classroom setting. The student in the foreground is wearing a grey Adidas sweatshirt and is looking at a tablet. The student in the background is wearing glasses and a dark jacket, also looking at a tablet. The background is slightly blurred, showing a classroom environment. The text is overlaid on the image in white, bold font.

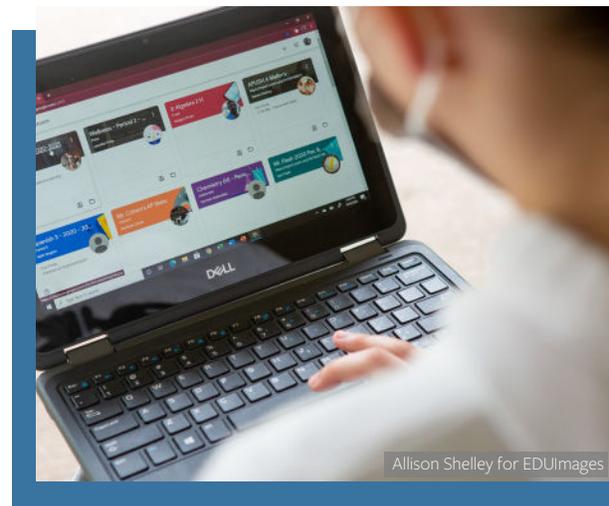
“Chances are your career looks nothing like the work of your parents. It may not look much like itself from even a few years ago... Today’s jobs are, by and large, transformed from those of a generation or even just a decade ago. As a result, the qualifications, credentials, and experiences needed to secure those jobs are similarly changed. There is an emerging recognition in U.S. education policy and practice that our schools can and should do a better job of equipping students with the skills and knowledge they need to succeed in a rapidly changing world of work.”

- Vicki Phillips, Forbes Magazine

Introduction

The new world of work demands not only academic knowledge and skills but also transferable skills such as communications, creativity, and collaboration—skills that are rarely captured formally. Meeting that demand will require a new approach to the high school diploma. The opportunity is ripe to redesign credentials to enable competency-based pathways and learning. The transcript for the next generation (“next gen”) of learning and work will better represent what individuals have actually learned, what they know, and what they can do. According to UNESCO (2023), next gen credentials will “record focused learning achievements. They will verify what learners know, understand, and can do. Learners will be assessed based on clearly defined standards and credits, badges or certificates awarded by a trusted provider. They have value and can also contribute to or complement other credentials, including through recognition of prior learning. They meet the standards required by relevant quality assurance.”

Imagine a next gen credential that recognizes learning that occurs inside and outside of formal school, such as through work-based learning opportunities, paid internships, online courses and blended learning opportunities, after-school programs, project-based learning, and contributions to or civic engagement with a students’ own community. It’s time to explore how all learners (adults and youth) could record and communicate their learning from a variety of powerful learning experiences using the next generation of credentials.



Allison Shelley for EDUImages

The goal of this report is to deepen state policy makers’ understanding of the changes needed to facilitate meaningful next gen credentials and advance state policy to support those changes. This includes building support to modernize education, opening pathways for learning and reskilling, and providing value for lifelong learning to both individuals and employers. Students, families, employers, and organizations focused on education and employment, as well as nations around the globe, are exploring how to ensure students receive a world-class education that builds knowledge and skills needed for the future. New models of credentialing knowledge, skills, and qualifications are emerging to help achieve this goal.

Background

From a dynamic workforce to emerging technologies such as artificial intelligence and robotics, combined with the globalization of industry and trade, learners are entering a new world of rapidly changing opportunities. Individuals must engage in more dynamic learning to build skills over a lifetime that emphasize problem-solving, build confidence and character, exercise adaptability, ensure resilience, and enable both specialization in some areas and a broad understanding of others. Next gen learning models move beyond one-size-fits-all experiences to provide more flexible learning, with student-driven pacing and anytime, anywhere learning. As a result, there is a growing call for policy to support next gen credentials, including new comprehensive learner and employment records that effectively document what students have learned and where they have demonstrated mastery.

Learning and employment records communicate the competencies that learners have demonstrated and how they have built knowledge and skills over a lifetime. They are already starting to change the way people access education and career opportunities around the world (Goger et al., 2022). The Pew Research Center reports that today’s learners must cultivate 21st-century skills, capabilities, and attributes (Rainie & Anderson, 2017, p. 17). New credentialing systems will arise as more personalized and self-directed learning expands. This is a growing reality for more learners throughout their lives, and policy must be modernized to both support competency-based demonstrations of skills and knowledge and recognize learning experiences across traditional K-12, career and technical education, college, workforce, and community settings. This will require building lifelong learning ecosystems that create more equitable learning and employment pathways. Student-centered, competency-based credentials and evidence-based learner records can better serve learners, schools, higher education institutions, and employers.

The Flaws of the Traditional System

The number of students who graduate high school without reaching a satisfactory level of literacy or mathematics proficiency is simply staggering. According to Sattem et al. (2021), “While the nation’s high school graduation rate has reached an all-time high of 85 percent, students are insufficiently prepared for post secondary education and the workforce. About 70 percent of entering students at public two-year colleges require remediation to master academic content they should have learned in high school, including nearly 80 percent of Black students, 75 percent of Latino students, and 64 percent of White students.” Similarly, employers report a huge skills gap for graduating high school students (Hansen, 2021). This is a major issue and shows how flawed the traditional education system is. There’s also a disconnect between the perception and reality of student progress—90 percent of parents and caregivers believe their child is at or above grade level in reading and math (Learning Heroes, 2018).

Our current high school transcripts are flawed. A report on redesigning education systems from Farrington and Small (2008) suggests:

The chronic academic underperformance and student failure of most American urban high schools are actually created by the antiquated way that schools evaluate student academic performance and award (or deny) course credits.... For all students, there are only time-limited incentives to learn course material and no opportunity or incentive to improve performance or learn more after grades are issued; no mechanism for recording student progress relative to learning goals; and a lack of connection between classroom grades, state learning standards, and standardized accountability measures. Students earning low but passing grades accumulate credits even in the absence of substantive learning. They earn a high school diploma without achieving a requisite level of skills and knowledge (p. 4).

Credits on a traditional high school diploma, or “Carnegie units,” are based on seat-time, or time spent in a classroom, and do not reliably capture the amount of knowledge gained. As illustrated in Figure 1, traditional diplomas share what subjects and courses students were exposed to for a fixed amount of time, but they tell us very little about what a student actually knows and can do. Traditional transcripts also do not report or reflect transferable skills or learning that happens outside of school. Today, all learners need a way to report their knowledge, skills, and abilities demonstrated through each stage of their life.

In fact, the Carnegie Foundation for the Advancement of Teaching explains:

If you earned a high school diploma, or a certificate from a technical school, or any degree from any college or university in the United States, you served your time. You probably received grades for your performance, passed a variety of tests and exams, and hopefully learned something useful. But one thing is nearly certain: your progress through school or college was measured by the Carnegie Unit.

More commonly known in higher education as the “credit hour,” the Carnegie Unit is the standard time-based metric of student progress used by almost every K-12 and higher education system in the nation. The number of units and credits is not the same everywhere but the formula is simply and routinely applied: a certain number of hours equal a unit, a certain number of units equal a credit, and a certain number of credits produce some sort of credential or degree. The problem is that, while the universal and portable hour may make for a more efficient system, the unit also promotes the false perception that time equals learning, in the same way for all students (Silva, 2013).

To ensure readiness and to fully recognize the lifetime of learning an individual engages in, we need a new type of credential that grows and adapts as the learner progresses. We need modern ways to accurately report and communicate how young people are building knowledge and skills. In fact, the Carnegie Foundation has announced it is seeking to rethink the Carnegie unit from time to competencies: “It is time to fundamentally rethink how learning progressions and mastery are demonstrated, the methods of measurement used, and how attainment of skills is communicated throughout a learner’s journey” (Carnegie Foundation for the Advancement of Teaching, ETS Partnership, 2023). It’s time to move beyond the traditional diploma. Next gen credentials could offer more accuracy and transparency on reporting progress and achievement of defined outcomes.

Anytime, Anywhere Learning Is Possible: Competency-Based Pathways

Today’s graduates can learn anytime, anywhere. They can choose from a world of possibilities and pathways; any number of interests or educational opportunities can lead to a fulfilling life. To support these new pathways, replacing the high school diploma and industrial-age transcript with a next gen credential can offer students a better value proposition—a way to communicate more information about what they know and can do to support each step of their pathway to a prosperous future.

With the constantly changing world of work and economy, people will need opportunities to upskill and reskill to meet their personal and professional goals more than ever. In fact, fewer than one in five American students follow a clear and uninterrupted path from high school through college to career (Patrick & Casey, 2020), and research shows that around half of all workers will need to upskill by 2025 (World Economic Forum, 2021).

The Traditional System in the United States

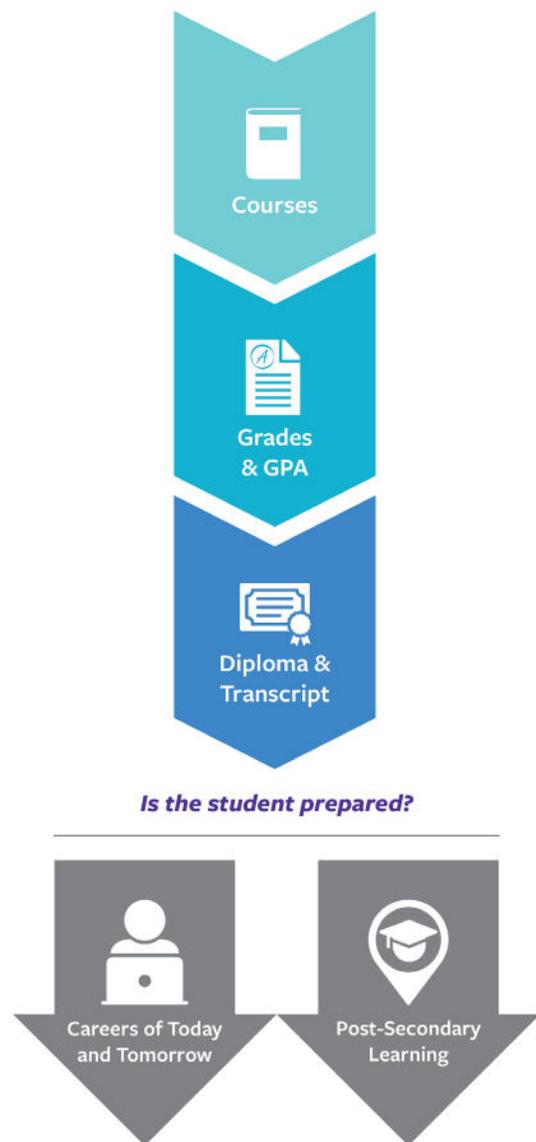


Figure 1. The traditional transcript and diploma system in the United States.

To ensure that every learner has access to meaningful pathways to success, we need to change the architecture of our one-size-fits-all education system to expand learner-centered pathways. There are many pathways for young people during and after high school to learn—through internships, after-school programs, clubs, independent study, and enrichment programs, for example. During and after high school, students can benefit from dual enrollment, career and technical education pathways, apprenticeships, post-secondary education opportunities, the military, or directly entering the workforce.

[Competency-based education](#) systems offer a new structure to these pathways by redesigning education to focus on assessing and recognizing what students have learned, not just how much time they have spent in a classroom. Competency-based learning, or mastery-based learning, requires students to advance upon demonstrated mastery. Student learning is guided by competencies—clear and explicit



learning goals—and progress is tracked based on mastery of those goals. There are clear standards. The focus is on the application of knowledge and skills. Competency-based assessment typically happens through the collection of authentic evidence and student work demonstrating mastery against clear standards and criteria. This evidence of student work is often from performance assessments and can include projects, reports, presentations, and competency-aligned tests. Strong competency-based learning systems also acknowledge that learning happens both within the classroom and beyond, in after-school programs, work-based settings, and other parts of the community.

More and more innovators in schools and states are beginning to question the status quo in education and embrace the shift toward new models of education with competency-based pathways. Competency-based pathways can support learning anytime, anywhere by recognizing education opportunities occurring

outside of school and offering multiple pathways to graduation. Learners need to know where they are in their knowledge and skill development to improve upon their areas of growth and continue to strengthen skills at which they already excel. Next gen credentials and comprehensive learner records can support learning both before high school graduation and beyond.

The next sections illustrate what the future could look like by examining promising examples of next gen credentials. Building from a shared understanding of what is possible, we can re-envision the high school diploma as next gen credentials that communicate the competencies an individual demonstrates in support of lifelong learning.

Features of Next Generation Credentials

Next gen credentials and learner records communicate the continuous nature of learning knowledge and skills and enable learners to gain recognition and validation of learning they do anywhere and anytime.

Next gen credentials are the competency-based diplomas and certifications of the future. They capture whether a student has demonstrated proficiency on a holistic set of competencies that are communicated and reported on a learner record. Leading to next gen credentials, learner records officially document the knowledge, skills, and competencies a student has demonstrated both inside and outside of the classroom. Learner records follow students as they learn, including through competency-based pathways of their choosing. Learner records are typically stored digitally so students can always access them.

The Cambridge Dictionary (n.d.) defines a credential as “proof of someone’s abilities and experience” or a “right to credit.” We define a “next gen credential” as a modern, new type of credential that more accurately and transparently reports the knowledge, skills, and competencies attained by an individual, and often is digital. Over time, next gen credentials and micro-credentials communicate what individuals know and what skills they have attained in a lifelong learner education and employment record (LER). Think of a learner record as the backpack for a learner, while the next gen credentials are the verified certifications of knowledge, skills, credits, and competencies they can show to employers or future education and training providers. The examples below illustrate these ideas.

Learner records typically:

- Are accessible and useful to the learner for both guiding and communicating their learning in real time.
- Reference and align to a competency framework that outlines the learning goals, including the higher-order knowledge and transferable skills (such as those included in a state’s profile of a graduate).
- Capture anytime, anywhere learning.
- Communicate a student’s level of competency for each learning goal with transparent performance levels. Systems may use language like “proficient,” “mastered,” “advanced,” “acceptable,” and “needs work.”

Learner records offer numerous benefits:

- They provide students with their own personalized learning plan for communicating progress and next steps for the learner, families, and advisors/educators during the learning process.
- These records capture progress in real time. This progress can be accumulated for period reporting, such as weekly, quarterly, monthly, or annual progress reports and report cards, before earning a credential, such as a high school diploma. Some systems are fully designed around the competency requirements rather than time, measuring time to mastery, allowing credits to be certified according to the learner’s pace of demonstrating competence rather than by the time period of a course.
- They aggregate verifiable information from multiple sources of the acquired knowledge and skills as the basis for a competency-based transcript, such as when a learner meets the full set

of requirements for a larger credential. For example, they capture, record, and document how a student meets all graduation requirements identified by a state's [Profile of a Graduate](#).

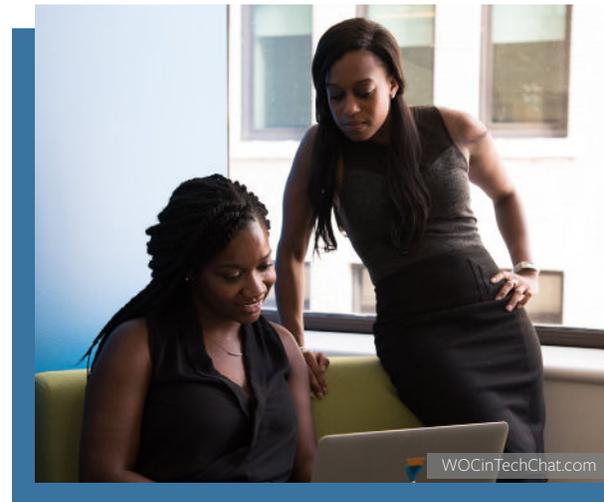
- They incorporate badges, micro-credentials, and other bite-sized formats for certifying learning beyond core requirements that are valuable for the learner to communicate. In some cases, these smaller formats are the building blocks on the learner record for core requirements of a next gen credential.

Beyond using learner records and competency-based transcripts, the idea of a digital learner wallet is also emerging. With this digital wallet, a student owns their own learner record beyond an individual educational institution. A digital wallet can be accessed on a student's cell phone, for example. Student ownership of their learning through digital wallets helps remove the boundaries of institutions to create a record that is learner-centered and learner-owned. Learner wallets:

- Represent and communicate student records, including next gen credentials and transcripts—across institutions and experiences, which enables lifelong learning.
- Display competency-based credentials, badges, micro-credentials, and other education provider and/or industry-earned, validated, evidence-based credentials, which could include endorsements such as bi-literacy seals for multiple language fluency; Career and Technical Education Industry-Recognized Certifications such as software certifications, coding, and CPR/first aid; and other recognized certifications, for example.

Whatever a learner's path, competencies, micro-credentials, courses, and other recognized certifications are represented on their learner records. These next gen credentials are essentially mastery-based transcripts. The New England Board of Higher Education approves of competency-based transcripts because they can truly “capture students’ mastery of habits of work and cross-curricular knowledge and skills” (Blauth & Hadjian, 2016, p. 2). In other words, this allows institutions such as universities and employers to see more transparently what students know and how they can apply their knowledge.

Figure 2 illustrates the key terms described above, which are also defined in the [glossary](#).



The Learner Pathway to Next Gen Credentials



Figure 2. The next gen credential and learner record ecosystem.

Examples: Case Studies in Next Generation Credentials and Learner Records

Schools and districts around the globe are beginning to implement next gen credentials and competency-based pathways. Examples from other countries and innovations within the U.S. show the potential for truly comprehensive transcripts and future-focused credentials that would enable student-centered, competency-based learning pathways to develop in the U.S. and serve learners through their post-secondary education and into a lifetime of learning, employment, and experience.



The case studies below illustrate different models of next gen credentials. First, the International Big Picture Learning Credential offers a research-based new approach to modernize the high school diploma. It is grounded in supporting students to engage in deeper learning through competency-based learning pathways, inside and outside of school, with the personalized approaches that are hallmarks of Big Picture Learning. Next, New Zealand has researched world-class credential systems and has operationalized a standards-based lifelong transcript called the New Zealand Record of Achievement. Finally, in the United States, the Mastery Transcript Consortium® created a competency-based transcript used by a national member network of schools and districts. Each example shows a new way of credentialing learning by documenting and communicating the specific competencies that a student has demonstrated that is accessible to the student and used to pursue future education pathways and future employment.

International Big Picture Learning Credential

The International Big Picture Learning Credential (IBPLC) is a next gen credential that is research-based. It supports students with a personalized approach to interest-driven learning in and out of school and enables multiple pathways for future success. Learning pathways are competency-based and unique for each learner. The IBPLC records knowledge, skills, competencies, and achievements across multiple learning environments and opportunities while highlighting each young person's goals and ambitions. The IBPLC was developed in Australia in partnership with researchers at the University of Melbourne who validated the competency framework and assessment processes to support quality assurance. The IBPLC is now available internationally.

The IBPLC is, at its heart, a graduate's learner record rooted in competency-based assessment of complex, real-world learning during their final years of schooling (see Figure 3). Everything included in the graduate profile is selected and curated by the student with their support team. It summarizes the student's learning, highlights their strengths, and presents a whole-student vision of themselves.

International Big Picture Learning Credential (Australia and International)

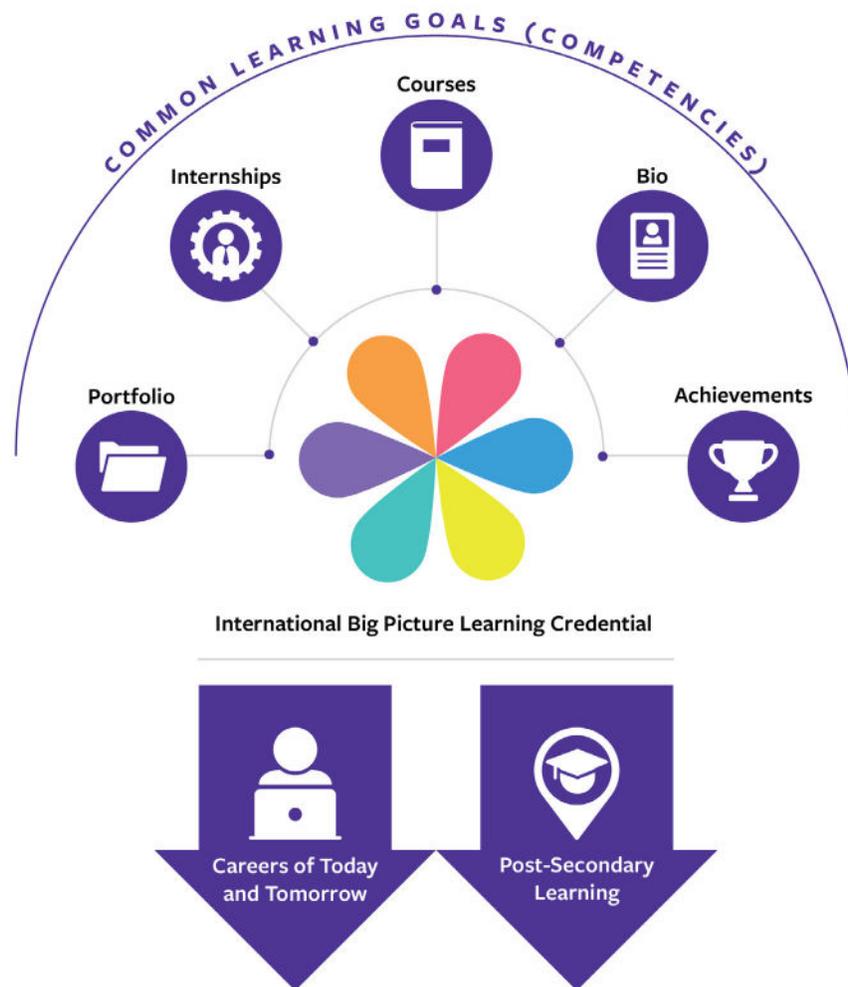


Figure 3. The International Big Picture Learning Credential system.

With the IBPLC, each learner builds a Learner Profile (see Figure 4), with the functions of a digital learner wallet. The Learner Profile contains important elements, including:

- Portfolio
- Learning Goals
- Skills and Proficiencies
- Personal Statement
- Accreditation
- Evidence of Learning
- Videos
- Advisor Statement

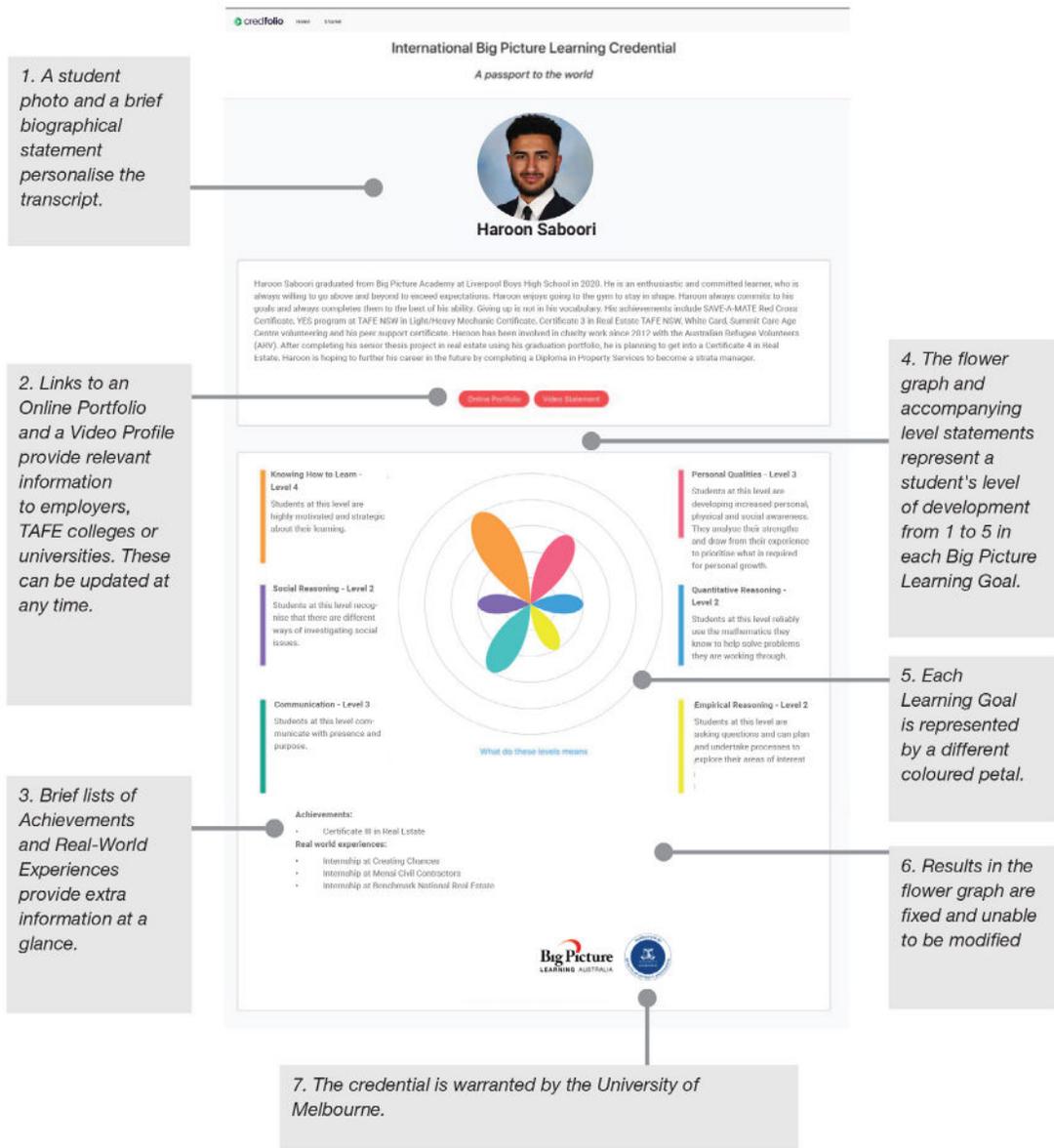


Figure 4. Excerpt of the IBPLC Learning Credential.
 By Pettit & Hill, Big Picture Learning Australia, 2023, p. 8.

Design of the IBPLC and Elements of Big Picture Learning

The IBPLC is a natural extension of the Big Picture Learning design (see Figure 5), which began at the Met School in Providence, Rhode Island. Central practices in the design implementation include advisories and internships in competency-based environments designed to see each learner as an individual.

Each student has an Individualized Learning Plan with goals and objectives, created each term by the student with the aid of teachers, family members, mentors, and community members. From there, learners take courses, work internships, engage in external learning opportunities, and build knowledge and skills to meet their goals and objectives.

What is the Big Picture design for learning?

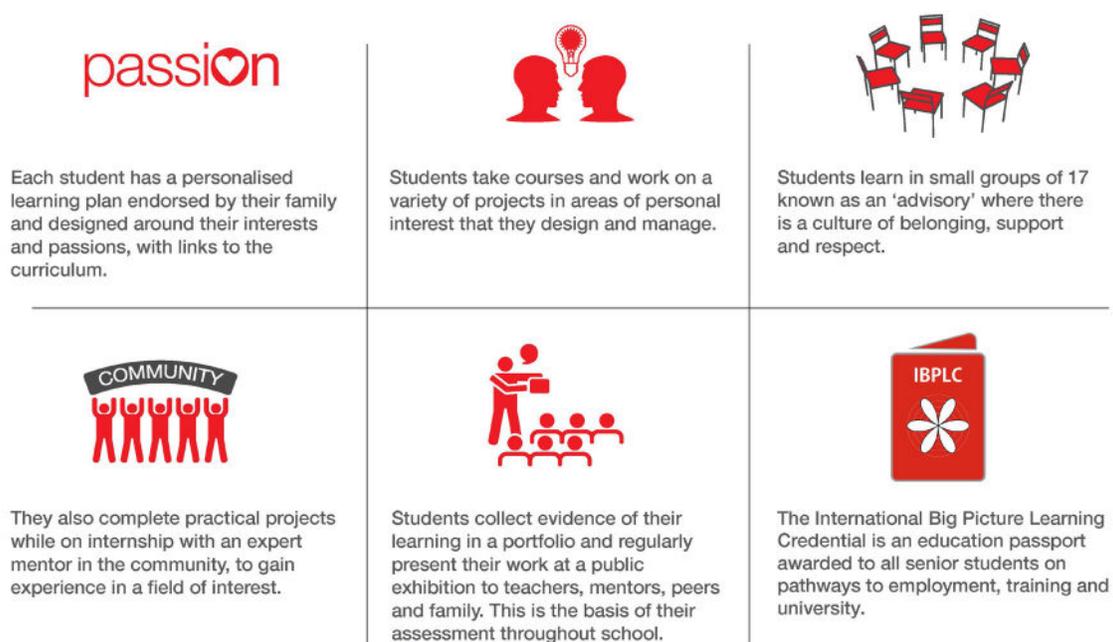


Figure 5. What is the Big Picture design for learning? By Big Picture Learning Australia, 2022, p. 3.

Students collect substantial evidence for their portfolios and present that evidence each term to their community. Assessment is competency-based—students are judged on their mastery. Students can achieve each level of proficiency through multiple methods of innovative assessments that include “observation, discussion, demonstration, and exhibition” (Big Picture Learning Australia, 2023).

In their final year of school, prospective graduates also complete a capstone project, such as a Senior Project or Senior Thesis. The IBPLC moderation process is quality assured through the University of Melbourne and requires students to demonstrate each competency to evaluate their learning.

The Resulting Credential: International Big Picture Learning Credential

The IBPLC launched in Australia in 2020 and is beginning to scale internationally, including to the United States. In Australia, public universities recognize and accept the IBPLC as equal to the traditional diploma for admissions consideration. Today, IBPLC partners with 44 schools and over 800 students. In the United States, 150 students are in the second year of the current IBPLC pilot program.

IBPLC is an exemplar for next gen credentials because:

- It focuses on learners as drivers of their own journeys and pathways through education.
- Students have voice and choice in what is included on their Learner Profiles.
- It documents complex learning within and outside of the school setting.
- Its multi-faceted, innovative assessments guarantee that learners of all types can show what they know to earn proficiency.
- It offers a new concept of a high school credential that provides greater value to the learner in showing what they know and can do (compared to the traditional diploma).

The New Zealand Comprehensive Record of Achievement

New Zealand is an early adopter of world-class competency frameworks for credentialing across education and employment. As part of this Qualifications Framework, which was progressively implemented over the 1990s, New Zealand provides the most thorough and comprehensive nationally scaled example of a next gen credential with its competency-based learner record of achievement. It is formally called the New Zealand Record of Achievement (ROA) (see Figure 6).

New Zealand Record of Achievement



Figure 6. The New Zealand Record of Achievement and diploma system.

New Zealand’s education system has several components to ensure the quality of credentials. The Ministry of Education (like a state education agency in the United States) sets standards and competencies for achieving each level of educational attainment. The New Zealand Qualification Authority (NZQA) sets qualification requirements (degree requirements for each level of schooling through tertiary education and into workforce training and licensure for every profession) based on world-class licensure and qualifications frameworks. Following that, the NZQA also created the ROA for each student to document achievements as they move through school and training opportunities based on mastery at each level.

Before the early 2000s, New Zealand followed a more traditional system for education. The high school qualifications system was remodeled in 2002 with the establishment of the National Certificate of Educational Achievement (NCEA), which streamlined secondary educational certificates while providing multiple pathways for student success. It was developed because of the country’s need to prepare for a new generation of workers, starting with giving students multiple pathways toward their goals.



New Zealand Record of Achievement Design

In New Zealand, each student has a learner record where evidence of building knowledge, skills, and competencies is recorded in the ROA at each step. New Zealand maintains each student’s ROA, which is an official transcript of competencies, standards, and qualifications achieved, including the National Certificate of Education Achievement, Vocational Pathways Awards, and University Entrance (see Figure 7). The ROA grows as students gain new skills through further post-secondary study and industry training. It is part of New Zealand’s goal of making learning accessible to future employers and providing open access to pathways for students. It aligns secondary schooling to higher education and the workforce in competency-based pathways.

Student records are maintained by the NZQA, which manages both secondary and post-secondary credentials up to universities and focuses on quality assurance for high-quality records and assessment. Students access their ROA digitally through their learning portal on the NZQA website anytime, anywhere.

Design of the System: Standards, Assessment, and Credits

In New Zealand, students complete both achievement standards and unit standards, which are both listed on the student’s ROA. When they have mastered a standard, they earn credits at the level demonstrated on their assessment. Achievement standards are focused on academics, while unit standards are based on skills. Both types of standards are marked on a student’s record with a proficiency-based measurement.

Proficiency is determined by high-quality, competency-based assessments, including performance assessments, which are administered either internally or externally. Internal assessments address skills that cannot be tested in a traditional sit-down exam. Examples of internal assessments include speeches, science labs, and theatrical performances, and they are designed and scored by individual educators who are trained assessors and who demonstrate assessment literacy. External assessments include sit-down exams and portfolios that demonstrate mastery of knowledge and skills. These types of assessments are offered across courses and NCEA levels to maximize flexibility in a student’s learning. NZQA’s formal quality assurance program guarantees that assessment is fair and valid for all students across New Zealand through careful monitoring and evaluation (New Zealand Qualifications Authority, 2022).

New Zealand Record of Achievement



Justa Student

NSN: XXaXXX
Issued: 25 May 2023

✉ : 72B Opal Drive
Favona
Auckland

Qualification summary					Date
National Certificate of Educational Achievement (Level 3)					22 Dec 2022
New Zealand Qualifications Authority					
National Certificate of Educational Achievement (Level 2) achieved with merit					21 Dec 2021
New Zealand Qualifications Authority					
National Certificate of Educational Achievement (Level 1) achieved with merit					20 Dec 2020
New Zealand Qualifications Authority					
University Entrance					22 Dec 2022
Components of learning					Date
English		Level	Credits	Result	
91472	Respond critically to specified aspect(s) of studied written text(s), supported by evidence	03	4	E	23 Nov 2022
91474	Respond critically to significant aspects of unfamiliar written texts through close reading, supported by evidence	03	4	M	23 Nov 2022
91475	Produce a selection of fluent and coherent writing which develops, sustains, and structures ideas	03	6	E	20 Oct 2022
91476	Create and deliver a fluent and coherent oral text which develops, sustains, and structures ideas	03	3	A	4 Jul 2022
91480	Respond critically to significant aspects of visual and/or oral text(s) through close reading, supported by evidence	03	3	E	31 May 2022
91098	Analyse specified aspect(s) of studied written text(s), supported by evidence	02	4	M	1 Dec 2021
91100	Analyse significant aspects of unfamiliar written text(s) through close reading, supported by evidence	02	4	M	1 Dec 2021
91101	Produce a selection of crafted and controlled writing	02	6	M	13 Sep 2021
91105	Use information literacy skills to form developed conclusion(s)	02	4	E	23 Sep 2021
91107	Analyse aspects of visual and/or oral text(s) through close viewing and/or listening, supported by evidence	02	3	E	8 Apr 2021
90052	Produce creative writing	01	3	E	26 Jun 2020
90053	Produce formal writing	01	3	E	7 Sep 2020
90849	Show understanding of specified aspect(s) of studied written text(s), using supporting evidence	01	4	A	25 Nov 2020
90851	Show understanding of significant aspects of unfamiliar written text(s) through close reading, using supporting evidence	01	4	E	25 Nov 2020
90852	Explain significant connection(s) across texts, using supporting evidence	01	4	E	5 Jun 2020

Figure 7. Excerpt from an example of a New Zealand Record of Achievement showing NCEA results. By New Zealand Qualifications Authority, personal communication, June 5, 2023.

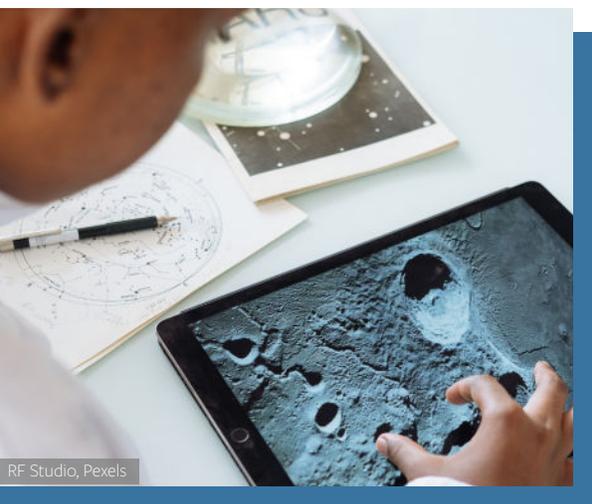
The system allows students to create their own journeys and competency-based learning pathways and gives students agency, because students can “choose which standards to attempt, and choices can be made as to the number of externally-assessed versus internally-assessed standards that will be attempted” (Yates, 2018, p. 4).

After an assessment is completed, the resulting proficiency measurement is entered into a learner’s ROA. Unit standards are listed as A (Achieved) or N (Not Achieved). Achievement standards are more complex, with scores of N (Not Achieved), A (Achieved), M (Merit), or E (Excellence). For example, the achievement standard for mathematics with the credits and level of achievement on the ROA would read: “Apply linear algebra in solving problems, 3 credits, M (Merit).”

Levels of achievement on the transcript can be based on demonstrating basic understanding, student work from performance assessments that show application and creation, and more. Records can also include student work in either core courses or vocational pathways that connect academic learning and workplace skills and expand options without limiting pathways for any individual student. Competencies are cumulative and build over a lifetime on the Record of Achievement.

The Next Gen Credential: Record of Achievement Illustrates Meaningful Qualifications

The high school credential, called the NCEA Qualification, consists of a student’s proficiency levels reported on each achievement standard and unit. Students may complete NCEA Qualification at Levels 1, 2, or 3, each of which has different requirements. Levels 1 and 2 require demonstrated mastery of literacy and numeracy, with academic domains illustrating the knowledge, skills, and competencies that are appropriate for career readiness. Beyond NCEA Level 1 and 2, learners must also achieve Level 3 for entrance into a New Zealand university. All students have a core set of literacy and numeracy requirements they must achieve through demonstrating mastery. Learners pursue the level of certificate they would like to achieve and have flexibility as they may take a mix of levels during their studies.



Although education is compulsory in New Zealand through age 16, the government aims for all students to finish their secondary education at a minimum. Most learners typically complete their NCEA qualification at age 16 or 17 before moving on to university or the workforce.

After graduation, students may choose any number of pathways. Learners with Level 1 qualifications tend to enter the workforce. Level 2 graduates often choose to enter a job or continue learning through apprenticeships. Level 3 graduates usually attend university to further their studies. However, learners’ pathways are flexible and not rigidly set. Their NCEA qualification is not the end of their learning journey. Learning is a lifelong process that the NZQA continues to monitor. The international Organisation for Economic Co-operation and Development (OECD), which studies high-performing education systems across the world, reports that New Zealanders score significantly above the OECD average in literacy, numeracy, and problem solving in technology-rich environments (Organisation for Economic Co-operation and Development, 2016).

Learners in New Zealand can continually add to their ROA post-graduation through state-recognized micro-credentials that are reviewed and approved by NZQA. Micro-credentials are completed at accredited learning institutions and can be based on both seat hours and competencies. Once a student registers and completes the course or competencies sufficiently, it is added to their record. This allows

the ROA to travel with learners throughout their lives and gives them agency to determine how they want to present their education to employers, colleges, and more. The system offers all students a broad education that “makes links within and across learning areas, provides for coherent transitions, and opens up pathways to further learning” (New Zealand Ministry of Education, 2015).

New Zealand Record of Achievement as an Exemplar

New Zealand is both an early adopter and an innovator in competency-based credentials. Its system of tracking student achievement is an exemplar for several reasons:

- The system opens learning along multiple pathways for students to choose their own futures.
- The ROA presents a holistic view of learner achievement beyond core competencies.
- The ROA grows with the student as they continue to upskill and reskill for lifelong learning.
- The ROA is clear and concise for employers, higher education, or any other readers.

Mastery Transcript Consortium ®

The Mastery Transcript Consortium ® (MTC) in the United States is building a movement to reinvent the high school transcript to better reflect what students know and can do, in contrast to the traditional transcript that offers a list of courses students have taken at a moment in time (see Figure 8). Designed as a membership organization, MTC is building a network of member schools working toward a Mastery Transcript ® that “authentically and holistically captures student learning, progress, and interests” (Mastery Transcript Consortium, 2023). It offers a platform for creating a competency-based transcript and, in the past year, has provided the new MTC Learning Record tool to extend or supplement a traditional transcript by communicating knowledge, competencies, and skills. MTC also builds understanding of next generation mastery transcripts with higher education professionals.

Mastery Transcript ® Design

The MTC Mastery Transcript ® is designed to be dynamic and interactive. As shown in Figure 9, the design provides more transparency and information about a student’s learning experiences as they build knowledge, skills, and competencies, while remaining digestible to the user.

- Students create their own profiles, where they include a short biography.
- The profile displays a list of skills or competencies that a learner has demonstrated, which can be designated as foundational or advanced credits, including the level at which they demonstrated it.
- The Mastery Transcript ® also includes:
 - A list of courses or learning experiences completed to indicate how a student meets the competencies and the state requirements, where applicable.
 - Evidence and artifacts from the student’s actual projects with competencies.
 - Skills mastered from each course.

The Mastery Transcript ® and MTC Learning Record: Competencies and Mastery Credits

The Mastery Transcript ® and MTC Learning Record tools provide an end structure for network schools to backwards design a competency-based learning system. MTC articulates five elements in a school’s journey toward adopting a Mastery Transcript ® (Bell et al., 2019):

Mastery Transcript[®]

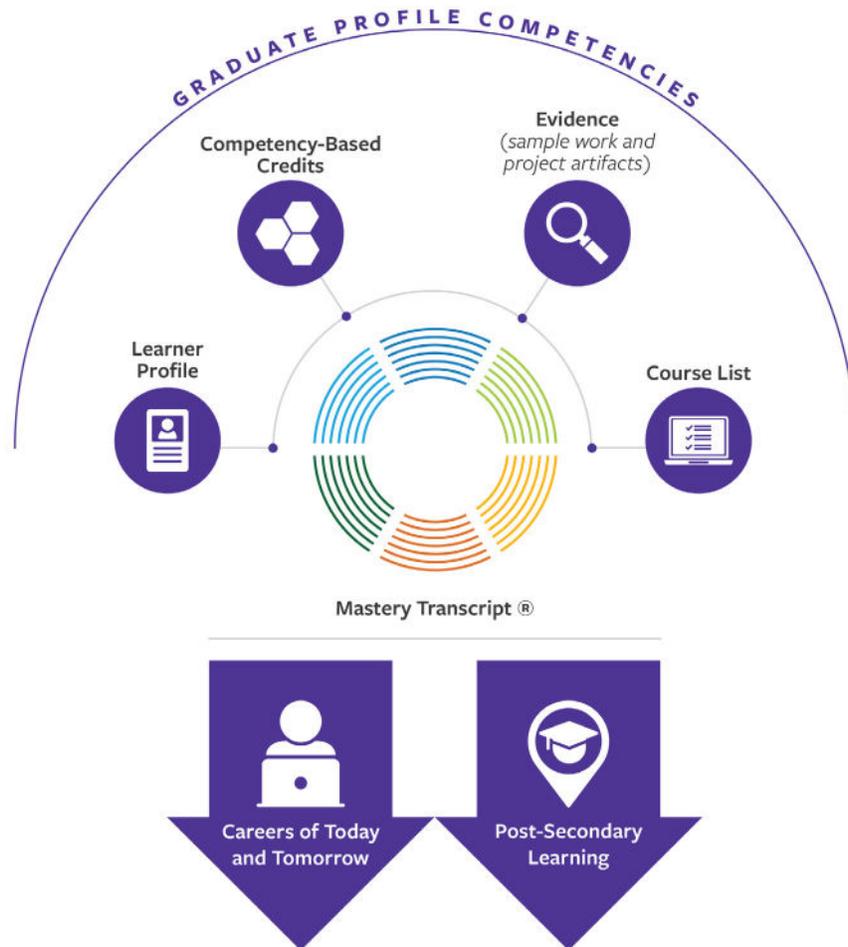


Figure 8. The MTC Learning Record and Mastery Transcript[®] system.

- Purpose & Vision: Draft your Call to Action and create your school Vision Statement.
- Graduate Profile: Create your Graduate Profile that describes graduation requirements for what students will know and be able to do in order to succeed in college and career.
- Learning Model: Create your Framework for Mastery Learning that establishes shared pedagogy grounded in research.
- Alignment: Define Building Blocks, including Mastery Credits, that support mastery for all.
- Sustainability: Create an Implementation Plan to build and sustain capacity for mastery learning.

MTC members determine their own set of competencies based on their vision and graduate profile. Schools and their local communities determine the competency framework design and graduation requirements, assessments, pedagogical model, and supporting structures and systems to maintain local control. The five elements of the journey framework for school change parallel the competency-based structure of the Mastery Transcript[®] and MTC Learning Record. The MTC has digital tools that allow schools to examine and document development of competencies, much like a student does, as they transform their systems and implement instructional models.

Tou Pointoh
 ID: 1
 DOB: 04/01/2002
 Graduation: 06/05/2022
 Address: 1 Main St., Burlington, VT, 05401
 School: Centerville High School - Tou MTC
 Demo Transcript
 Published: 03/29/2023

Student Statement
 "I believe in the principle of choosing one's own path. Driven by the notion of making the world a better place, my strengths lie within the places I can help others succeed and realize their importance."

Centerville High School - Tou MTC Demo Transcript
 340 Students in the high school
[More](#)

Evidence ⓘ
 Featured work selected by the student.

Credit Profile

Tou's Foundational Credit Distribution ⓘ
 40 completed | 1 in progress

— Earned In progress

Foundational Credits (FCs)
 Advanced Credits (ACs)
 All Required FCs
 All Available ACs

Communication and Collaboration (7)
 Applied Analytical and Critical Thinking (7)
 Self Directed Learner (7)
 Adaptive Learning (7)
 Leadership, Civic Engagement, and... (6)
 Creativity and Innovation (6)

Tou's Credit List
 + Advanced Credit
 ○ Credit In progress
 ▲ Includes evidence

Tou's Credit Summary
 FOUNDATIONAL CREDITS

Applied Analytical and Critical Thinking
 Problem Solving
 Evaluating Evidence
 Ideation
 Iteration

Communication and Collaboration
 Responsible Contribution
 Academic Conversations
 Articulation in Writing
 Creative and Formal Written Expressions

Advanced Credit
CADCA Leadership Forum
 Credit: Emergent Leadership / Leadership, Civic Engagement, and Social Influence
 A multi-page reflection of my first trip to Washington D.C. and the national CADCA conference.
 Course Mentions: Leadership & Empowerment

Foundational Credit
Physics in Movies: Batman's High Dive
 Credit: Scientific Reasoning & Process / Adaptive Learning
 A physics report that unravels the possibility of performing the famous Batman High Dive in reality.
 Course Mentions: Physics of

Figure 9. Key features of the Mastery Transcript ®. By Mastery Transcript Consortium ®, 2023.

Authentic performance assessment is key in assessing the higher-order skills of typical competencies defined by MTC members. The MTC platform offers flexibility for a student to curate the evidence they include. MTC is currently designing a progress report tool to continue to support student agency over their Learning Record and their learning pathways and experiences.

The Resulting Credential: The Mastery Transcript ® and MTC Learning Record

MTC has shown steady growth, with around 400 member schools, since its founding in 2017 (Mastery Transcript Consortium, 2021). It has added an additional 75 schools to its membership and more than tripled the number of public schools participating in the consortium since 2019 (Mastery Transcript Consortium, 2019), including a state partnership with Utah to provide access to the Mastery Transcript ®, MTC Learning Record, and resources in support of shifting to personalized, competency-based learning (PCBL).

Mastery Transcript ® as an Exemplar

MTC offers a model of what student transcripts and learner records should contain. The most important aspects include:

- The Mastery Transcript ® and MTC Learning Record allow for personalization of both the student's pathways and presentation of work.
- The student profile supports a learner showcasing mastery of knowledge and skills, plus their unique interests, skills, and talents.
- The interface provides a thorough, clear profile view to see what is most important.
- The Mastery Transcript ® and MTC Learning Record can be continually updated as a student makes progress in demonstrating competency to earn mastery credits.

State Policy Infrastructure Needed for Next Generation Credentials: Competency Frameworks, Performance Assessments, and Quality Assurance

There are critical elements where state policy makers need to recognize what they can do to help build the infrastructure for next gen credentials. Competency frameworks and credentialing systems need to be in place to ensure that the information represented in a competency-based next generation learner record is valid and fair. The recent publication *Credentialing Learning for All* identifies the building blocks that need to be in place for a credentialing system, including articulating, designing, validating, badging and credentialing, documenting, and matching/aligning credentials to needs (McClennan, 2023).

Innovative assessments are necessary. These assessments measure mastery and are competency-based and performance-based as well as valid and reliable, through moderation and calibration processes. A key to ensuring quality is clear scoring guidelines for calibrating mastery and proficiency ratings across settings and raters. Systems can combine internal and external systems of assessment and calibration processes. New Zealand has a highly functioning quality assurance system. New Zealand emphasizes assessment literacy across the education and employment training systems to focus on ensuring high-quality, competency-based assessments that support recording transparent and accurate data on learning in real time. The IBPLC is externally validated through research, and the rating process has processes and checks to verify and validate outcomes.

State Examples: Pathways to the Future

Competency-based next gen credentials are being initiated around the world, including in the United States. Localities and states are beginning to understand the value proposition of mastery transcripts and next gen credentials. Transforming from a one-size-fits-all education system to learner-centered, competency-based pathways requires new policies and practices to modernize education. Below, we highlight three U.S. states that have begun the transition of policy and practice.

Vermont: Proficiency-Based Learning Systems and Proficiency-Based Graduation Requirements

Vermont is a recognized national leader in K-12 competency-based education. The state has been working on creating a thoughtful and comprehensive state policy approach to ensure students demonstrate mastery of knowledge and skills.

The Vermont General Assembly's passage of Act 77 and the Board of Education's approval of the Education Quality Standards have made Vermont a national leader on proficiency-based (or mastery-based) learning and have set the stage for advancing education transformation while honoring local control.

Less than a decade in, Vermont is making significant progress, supported by sustained leadership in the legislature and the Vermont Agency of Education to advance more flexible, student-centered, proficiency-based graduation pathways.

At the forefront of state-led efforts are Vermont's Proficiency-Based Graduation Requirements (PBGRs) which are being updated in 2023 to better reflect what every student should know, understand, and be able to do upon graduation. Through this competency-based system that allows progress based on evidence of proficiency, learners are able to excel by fully demonstrating what they know and can do. With PBGRs, anyone can look at a student's record and understand what they learned and at what level they are proficient. Universities and organizations support proficiency-based diplomas, including the New England Board of Higher Education and New England Secondary School Consortium (Blauth & Hadjian, 2016).

Here are a few highlights from Vermont's state policy (Vermont State Board of Education, 2013):

1) Vermont Proficiency-Based Graduation Definition: *“Proficiency-based learning’ and ‘proficiency-based graduation’ refers to systems of instruction, assessment, grading and academic reporting that are based on students demonstrating mastery of the knowledge and skills they are expected to learn before they progress to the next lesson [or unit], get promoted to the next grade level, or receive a diploma.”*



Allison Shelley for EDUImages

2) Graduation Requirements: Vermont makes it clear that graduation is based on proficiency: “A student meets the requirements for graduation when the student demonstrates evidence of proficiency in the curriculum outlined in 2120.5, and completion of any other requirements specified by the local board of the school attended by the student.”

State policy leaves room for local supervisory unions and districts to have the flexibility to meet the needs of their students, families, and communities and move to an entirely proficiency-based structure. For example, “Schools may or may not use credits for the purposes of demonstrating that a student has met the graduation requirements. When used, credits must specify the proficiencies demonstrated in order to attain a credit and shall not be based on time spent in learning. Further, students may receive credit for learning that takes place outside of the school, the school day, or the classroom. Any credits earned must occur under the supervision of an appropriately licensed educator.”

3) Personalization: Students receive personalized services based on their needs and their interests, including personalized instruction, flexible pathways, and personalized learning plans.

a) Personalizing Instructional Practice: “Instructional practices shall promote personalization for each student and enable each student to successfully engage in the curriculum and graduation requirements. Classroom instruction shall include a range of research-based instructional practices that most effectively improve student learning, as identified by national and Vermont guidance and locally collected and analyzed student data.”

b) Flexible Pathways: “Students are expected to demonstrate learning through flexible and multiple pathways, including but not limited to career and technical education, virtual learning, work-based learning, service learning, dual enrollment and early college. Learning must occur under the supervision of an appropriately licensed educator. Learning expectations must be aligned with state expectations and standards.”

c) Personalized Learning Plans: “As required in 16 V.S.A. 941, schools shall ensure all students in grades seven through 12 shall have a Personalized Learning Plan, which shall be a written document developed by the student, a representative of the school and, if the student is a minor, the student’s parent or legal guardian. The Personalized Learning Plan shall describe the scope and rigor of learning opportunities and support services necessary for the student to achieve college and career readiness prior to graduation, and to attain a high school diploma. This plan must be reviewed at least annually. Each school shall provide opportunities for students to obtain academic and experiential learning experiences that reflect their emerging abilities, interests and aspirations, as outlined in the student’s Personal Learning Plan.”

4) Tiered System of Support: “In accordance with 16 V.S.A. § 2902 and State Board Rule 2194, each school shall ensure that a tiered system of supports is in place to assist all students in working toward attainment of the standards. This system shall be aligned with the school’s Personalized Learning Plan structures, and specific student support services shall be specified within a student’s Personalized Learning Plan.”

5) Comprehensive Systems of Assessments: Local Comprehensive Assessment Systems (LCAS) help to ensure equitable learning opportunities for all students and create the potential for every learner to meet high expectations. Performance assessments, an essential component of a high-quality LCAS, engage students in meaningful learning in authentic contexts, require a genuine application of knowledge, and yield a tangible product and/or performance that serves as evidence of learning. Vermont addressed the need for performance assessments by emphasizing the importance of competency-based assessments that are flexible and allow students to gather evidence of proficiency in relation to PBGRs. “Students must be allowed to demonstrate proficiency by presenting multiple types of evidence, including but not limited to, teacher- or student-designed assessments, portfolios, performances, exhibitions and projects.”

Utah: Supporting Personalized, Competency-Based Learning

Other states are taking a different approach. Utah illustrates how states can encourage competency-based education with legislation and guidance and tools from the state board of education, while allowing for local decisions about implementation (Young & Hakkarinen, 2022). The state has created a statewide Personalized Competency-Based Learning (PCBL) pilot program with 30 districts serving nearly half of all public K-12 students involved across the state as of 2023.

Utah has adapted the Aurora Institute’s published 2019 definition of competency-based education (see the [glossary](#)) in legislative code (Utah State Legislature, 2021) and defined a Personalized, Competency-Based Learning (PCBL) framework. The Utah Personalized, Competency-Based Learning framework, last updated in January 2023 (Dickson, 2023), can be seen in Figure 10 and includes five elements:

- Culture of learning
- Learner agency
- Demonstrated competency and assessment
- Customized support
- Social Emotional Learning (SEL)

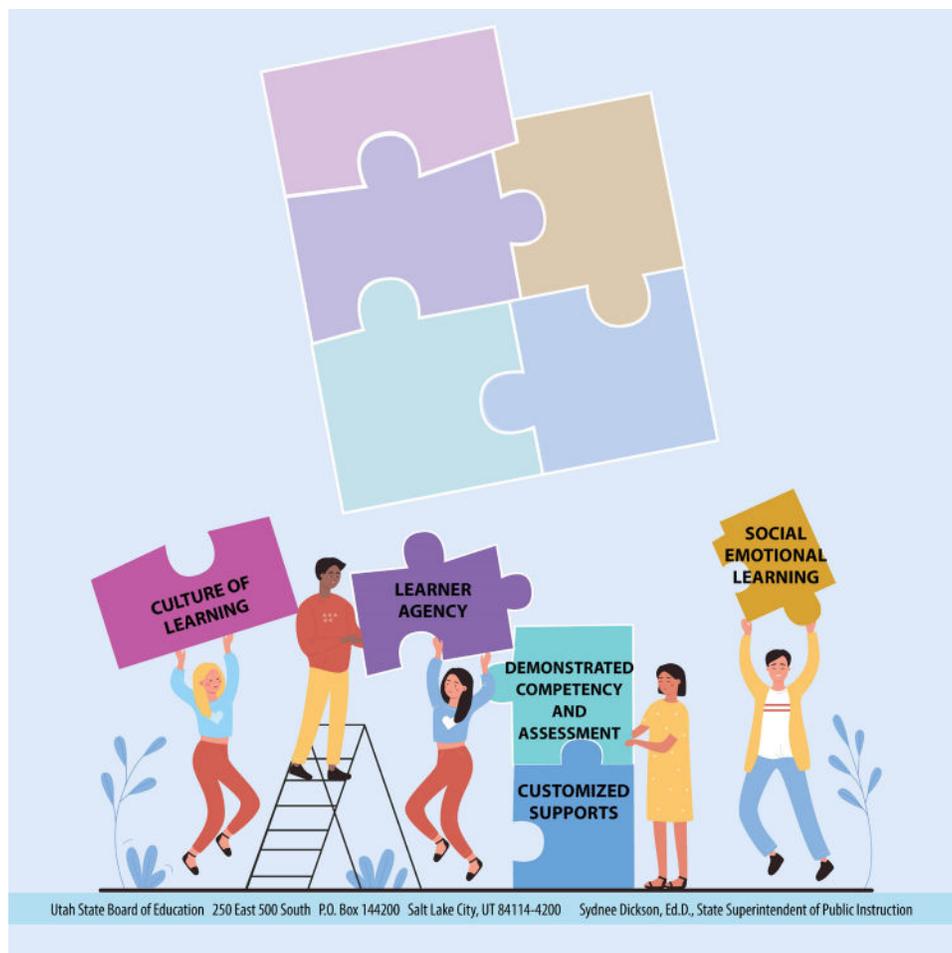


Figure 10. Utah’s Personalized, Competency-Based Learning framework. By Dickson, 2023.

In 2016, Utah's Competency-Based Learning Senate Bill 143 (2016) supported local school boards or charter school governing boards establishing competency-based education programs that would:

- Establish assessments to accurately measure competency;
- Provide the assessments to an enrolled student at no cost to the student;
- Award credit to a student who demonstrates competency and subject mastery;
- Submit the competency-based standards to the State Board of Education for review; and
- Publish the competency-based standards on its website or by other electronic means readily accessible to the public.

For competency-based learning, this legislation also permitted schools to waive or adapt traditional attendance requirements, adjust class sizes to maximize the value of instructors or course mentors, enroll students from any geographic location within the state, and provide proctored online competency-based assessments.

To meet learners' needs, Utah realized it needed to rethink teaching and learning practices to better prepare them to graduate into a rapidly changing future, redefine success, and create a competency framework. To do so, the Utah State Board of Education has engaged stakeholders from across the state to create that framework. The goal of the new Utah Portrait of a Graduate is to identify the ideal characteristics of a Utah graduate after going through the K-12 system. The three keys of Utah's portrait of a graduate, called the Utah Talent MAP (Utah State Board of Education, 2019), are:

- Mastery is the ability to demonstrate depth of knowledge and skill proficiency.
- Autonomy is having the self-confidence and motivation to think and act independently.
- Purpose guides life decisions, influences behavior, shapes goals, offers a sense of direction, and creates meaning.

By personalizing learning and focusing on competency-based pathways, students are able to achieve higher levels of the essential knowledge, skills, and dispositions of Utah's Portrait of a Graduate. The Utah Talent MAP focuses on what a student knows and can do, rather than metrics of compliance, to define student pathways.

To help advance innovations, Utah has partnered with Mastery Transcript Consortium® to provide the learner record and resources to schools and districts making the shift. The [Utah State Board of Education's Personalized, Competency-Based Learning \(PCBL\) planning and implementation grant programs](#) provide the participating schools automatic membership in the MTC network. The grant program, which began in 2019 with 45 schools in six districts, now totals more than 300 schools in five cohorts. During the 2022-23 school year, MTC is working with seven schools to pilot sending the MTC Learning Record or Mastery Transcript® for higher education admissions. Students use the Mastery Transcript® or build an MTC Learning Record to use in their application to supplement their transcript to apply to Utah's higher education institutions. The goals of the pilot (MTC Pilot Meeting, personal communication, January 18, 2023) are to:

1. Provide Utah member schools with an accelerated pathway for learners to construct shareable mastery-based credentials (Mastery Transcript® or MTC Learning Record).
2. Generate large-scale research that mastery of competencies and associated evidence provide a more authentic representation of readiness than traditional transcripts with courses and grades.
3. Interact with, support, and develop best practices for higher education partnerships to highlight Utah's collaborative approach as a model for states to emulate.

North Dakota: Next Generation Digital Credentials

North Dakota became the first U.S. state to announce it would launch a next gen digital credential using a digital wallet for learners in 2022. Digital credentials are similar to a paper degree, certificate, or diploma, except they offer an electronic way for people to verify and signal their education. Digital credentials can include traditional academic degrees, shorter-term credentials, and competency-based learning outcomes. Entities that produce digital credentials (“issuers”) include education providers, employers, training providers, universities, and licensing bodies.

Leading the program are North Dakota Chief Information Officer Shawn Riley, Chief Data Officer Ravi Krishnan, and SLDS Program Manager and Architect Tracy Korsmo, who said they are creating the first state-developed digital credential publishing application (State of North Dakota, 2022). According to the State of North Dakota (2022), the online tool will provide digital high school transcripts as verifiable credentials with the following benefits:

- Any high school graduate can present their transcript to an educational institution or employer digitally.
- Users of the technology can have all their degrees, certifications, badges, and skills located in one accessible and secure location on their personal devices.
- It allows individuals agency of their learner-employment-experience, to gain access to employment opportunities. It is a benefit to students and lifelong learners of all ages and stages of their careers.
- It provides a real high school transcript application that will serve the citizen as we shift to a skills-based economy.

The Learn & Work Ecosystem Library (2023) further describes the initiative:

The technology spearheads other forms of credentials (educational, certifications such as a certified nursing assistant (CNA), work experience, training and life experiences) as a form of recognized skills that a citizen holds, has private control of, and can easily share their skills with potential employers in an anonymous, equitable and inclusive manner to gain access to future employment and for employers to seek talent regionally.

This digital credential application will help high school students seamlessly transition to colleges and universities, allow adult learners to create skills and education portfolios and help those who want to transition or advance in the workforce by allowing them to map out necessary education and share it quickly, easily and securely with employers.

The project has expanded to include industry-recognized credentials through Open Badges representing credentials ranging from welding to cybersecurity and pathways from high school to community college certificates or bachelor’s degrees through a master’s degree at the University of North Dakota.



The North Dakota next gen credential and digital wallet will contain evidence and elements to build credentials—certifications, diplomas, badges, skills, and micro-credentials—that users can build to show to any university, employer, or other entity on demand. They are supporting the idea of giving students ownership. The state believes this is a step toward guaranteeing that learners have individual control of their own education.

State Policy Recommendations

To ensure the proliferation of next gen credentials and learner records, the Aurora Institute recommends advancing state policies to enable change and remove barriers to rethinking the high school diploma. (State examples are listed after each recommendation.)

Develop Next Gen Credentials

- Create pilots to plan and implement next gen credentials and competency-based transcripts to ensure all youth can use their skills, education, and interests for a thriving future. (ND, UT, VT)

Create Competency Frameworks and Competency-Based Education Systems

- Establish a new Portrait of a Graduate to redefine K-12 graduation requirements into knowledge, skills, and competencies. The new graduate profile should be created with input from diverse stakeholders, including students, parents, educators, communities, employers, and industry representatives. (20+ states)
- Offer multiple pathways to graduation to align with a holistic graduate profile (or Portrait of a Graduate), and establish competency-based frameworks to guide curriculum, instruction, and assessment. (ND, NM, SC, UT, VA, VT, WA)
- Move from seat-time to competency-based credits; redefine the Carnegie unit from seat-time to competency-based credits to support anytime, anywhere learning. (NH, OR)
- Support state policy changes to advance personalized, competency-based pathways by hosting a task force to create recommendations, using pilots to begin planning and implementing competency-based pathways. (AR, IA, UT)
- Create a statewide vision for a lifelong, continuous system of learning. (AL)
- Create opportunities for improving and aligning K-12, higher education, career and technical education, and employment training into competency-based systems to connect and stack credentialing. (AL, RI, WA)

Build Capacity and Infrastructure

- Build coalitions within and around education spaces through schools, workforce, community organizations, and government organizations for individualized, competency-based pathways for students. (NM, SC, UT)
- Expand community-driven, regional, and cross-state collaboration and advocacy efforts that advance system alignment and progress. (UT)
- Invest in technology infrastructure for next gen credentials, digital learner records, and digital wallets that learners use for lifelong learning and skill building. (AL, GA, ND)
- Invest in modern statewide infrastructure for K-12, career and technical education, and higher education competency-based transcripts, degrees, professional licensure, and certifications. (ND, UT)
- Build capacity for recognizing and validating learning outside of school. (ME, NH)

State Policy Change to Create Next Gen Credentials

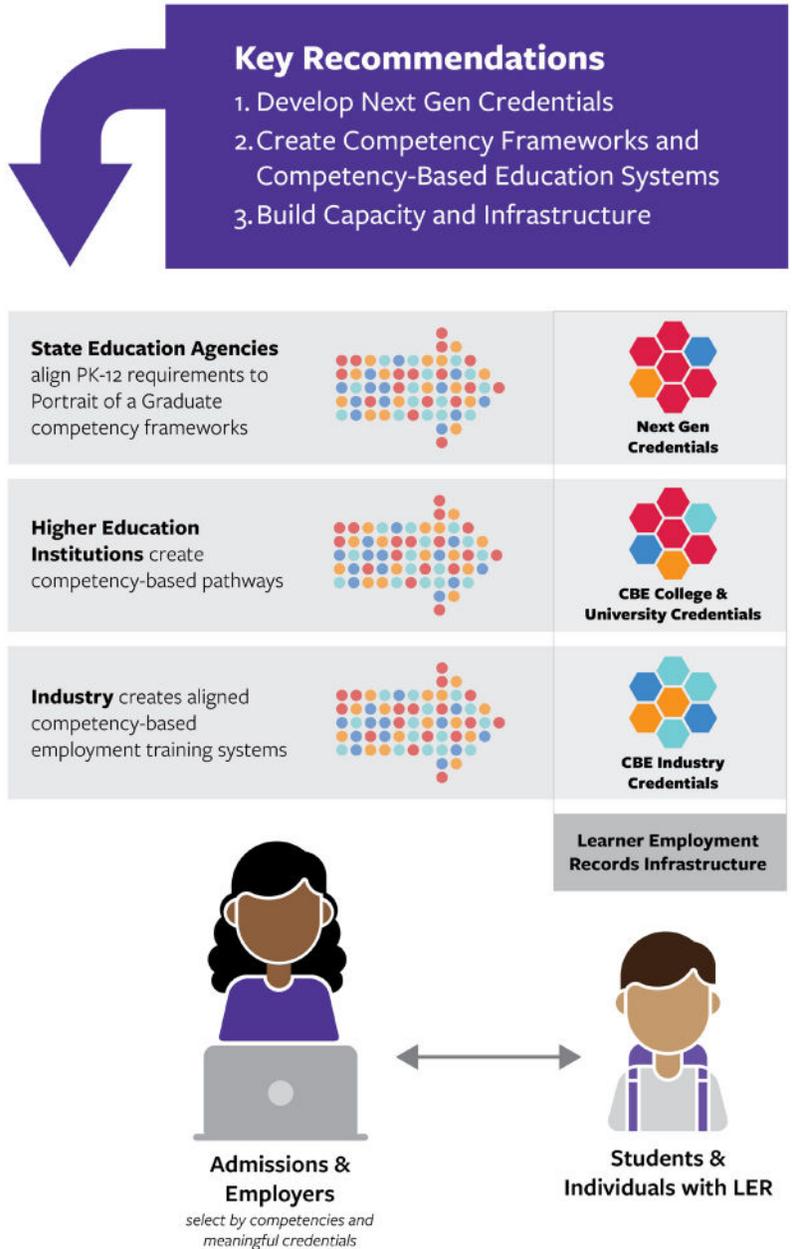


Figure 11. State policy change to create next gen credentials.

Conclusion

The traditional high school diploma and transcript do not fully capture what today’s graduates know and are able to do, let alone reflect the learning that they engage in both outside of school and beyond the K-12 system. The future world of work demands that learners document their developing knowledge and skills, and competency-based pathways—when coupled with next gen credentials and learner records—provide an avenue for doing so. The International Big Picture Learning Credential, the New Zealand Record of Achievement, and the Mastery Transcript Consortium® all provide compelling exemplars for what these meaningful next gen credentials and learner records can look like.

State policy changes can shape and support these new learning ecosystems, credentials, and pathways. “Functioning lifelong learning and skills development ecosystems are needed. All forms of learning and diverse providers will have their role to play, and functioning frameworks and structures for recognition and credentialing are needed. These ecosystems would promote a diversity of learning pathways in education and skills systems. Furthermore, addressing challenges such as updating physical infrastructure and cost-efficiency will necessitate redesigning education efficiently through smart combinations of school-based learning and alternative learning spaces and delivery modes” (Organisation for Economic Co-operation and Development, 2022).

Transforming from a one-size-fits-all education system to learner-centered, competency-based pathways requires new policies and practices to modernize education, and next gen credentials are a key part of that transition. There are clear, actionable steps for state policy leaders to advance this work, and states such as North Dakota, Utah, and Vermont are already paving the way. The time has come for state policy makers to invest in the future by pursuing these policy changes and making student-centered, competency-based next gen credentials and learner records a reality for more learners.



Stanley Morales, Pexels

Glossary of Terms

This glossary defines critical vocabulary to promote shared understanding.

Carnegie Unit

The Carnegie unit is a system developed in 1906 that based the awarding of academic credit on how much time a student studied a subject in direct contact with a classroom teacher. The standard Carnegie unit is defined as 120 hours of contact time with an instructor—i.e., one hour of instruction a day, five days a week, for 24 weeks, or 7,200 minutes of instructional time over the course of an academic year (Great Schools Partnership, 2013; Carnegie Foundation for the Advancement of Teaching, 2023).

Competency-Based Education (CBE)

Competency-based education (CBE), also known as mastery-based, proficiency-based, or performance-based education, is a school- or district-wide structure that replaces the traditional structure to create a system that is designed for students to be successful (rather than to be sorted) and leads to continuous improvement. CBE is not simply a delivery mode. Competency-based learning “ensures that students master prerequisite materials before advancing, which improves learning outcomes and experiences” (Goger & Laniyan, 2022).

Two working definitions from the Aurora Institute often form the basis of state policy to advance CBE. The original working definition of competency-based education was developed in 2011 at the National Summit for K-12 Competency-Based Education (Sturgis et al., 2011). The 2011 definition includes five elements of a CBE system:

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 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.

In 2019, the Aurora Institute worked with over 100 practitioners to update the definition to reflect a deeper understanding of key issues and developments in the field. The 2019 definition includes seven elements of a CBE system (Levine & Patrick, 2019):

1. Students are empowered daily to make important decisions about their learning experiences, how they will create and apply knowledge, and how they will demonstrate their learning.
2. Assessment is a meaningful, positive, and empowering learning experience for students that yields timely, relevant, and actionable evidence.
3. Students receive timely, differentiated support based on their individual learning needs.
4. Students progress based on evidence of mastery, not seat time.
5. Students learn actively using different pathways and varied pacing.
6. Strategies to ensure equity for all students are embedded in the culture, structure, and pedagogy of schools and education systems.
7. Rigorous, common expectations for learning (knowledge, skills, and dispositions) are explicit, transparent, measurable, and transferable.

Competency Framework

A set of competencies that set rigorous, common expectations for learning (knowledge, skills, and dispositions) for a span of education (e.g., K-12) that are explicit, transparent, measurable, and transferable. Competency frameworks can be organized as a continuum or progression that describe a developmental trajectory in which each new learning opportunity builds on and is informed by the one before it, in both depth and complexity. In some cases, a competency framework may substitute for standards.

Competency-Based Assessments

Competency-based assessment is the process of collecting authentic, valid, and reliable evidence demonstrating mastery against clear competencies and criteria at the appropriate level of rigor and application. This evidence of student work is often from performance assessments and can include projects, reports, presentations, and competency-aligned tests.

Competency-Based Pathways

Competency-based pathways support learners anywhere, anytime by offering multiple combinations and sequences of learning experiences to get to graduation, civic engagement, and readiness for post-secondary careers and education. Pathways allow students to learn and apply their knowledge and skills in areas of interest, including community projects and work-based learning, with educational opportunities occurring both inside and outside of school.

Competency-Based Transcript (also Mastery Transcript, Proficiency-Based Transcript)

A competency-based transcript provides comprehensive information on a student's knowledge, skills, and performance upon graduation. Rather than only listing courses and grades like a traditional transcript, a competency-based transcript is based on actual evidence of mastery and offers a comprehensive record of achievement. Competency-based transcripts often include a detailed student profile and a portfolio of work.

Comprehensive Learner Record (or Learner Record)

A comprehensive learner record shows a complete picture of lifelong learning, from the earliest stages of learning to advanced education to career achievements (1EdTech, 2023).

Credit

Credits are one of the primary methods school systems use to determine and document that students have met academic requirements, most commonly at the high school level. Systems award credits once a student has completed and passed a course or required school program. In the United States, credits are often based on the Carnegie unit (Great Schools Partnership, 2013). In next gen credentials, credits are typically competency-based.

Credential

The Cambridge Dictionary (n.d.) defines a credential as “proof of someone’s abilities and experience” or a “right to credit.” The Lumina Foundation definition is “a documented award by a responsible and authorized body that has determined that an individual has achieved specific learning outcomes relative to a given standard. Credential in this context is an umbrella term that includes degrees, diplomas, licenses, certificates, badges, and professional/industry certifications” (Lumina Foundation, 2015, p.11). The most common higher education academic credentials are associate, bachelor’s, and graduate degrees. But U.S. post-secondary credentials include thousands of different certificates, certifications, licenses, and increasingly also badges (New England Board of Higher Education, 2023).

Digital Badges (also Badges)

Badges are a type of digital credential. As the learner successfully completes learning activities or exams, they earn a badge that offers a shareable visualization that they have achieved a certain learning outcome, license, course, or certification that can signal their qualifications to an employer. Typically, digital badges are offered through online learning platforms, such as LinkedIn, Mozilla, Instructure Badging, and Credly, although they may also be offered in traditional academic institutions to signal career-specific skills.

Digital Credentials

Similar to how a paper degree, certificate, or diploma signals someone's education, digital credentials offer an electronic way for individuals to verify and signal their education. Digital credentials can include traditional academic degrees, shorter-term credentials, and competency-based learning outcomes. Entities that produce digital credentials ("issuers") can include employers, training providers, universities, and licensing bodies.

Digital Wallet (also Digital Learner Wallet)

A digital wallet is an online or smartphone application that individuals use to control and manage their learning and employment data. This could be particularly useful for individuals who elect to market themselves or generate a job application package or portfolio for potential employers or education programs. Digital wallets allow users to accept, store, display, and exchange digital credentials (JFFLabs, 2022).

Extended Transcript

An extended transcript supplements the traditional transcript's list of course credits and grades with additional information, which could range from a short list of badges and certifications earned and scholarships awarded to a learner record with work samples.

Learning and Employment Record (LER)

An LER is a comprehensive digital record of interconnected (linked) data, such as employment, skills, and credentials. LERs bring data from multiple sources together, and various products and services can be built from them to enable users such as employers, learners, and training providers to document, verify, and transmit qualifications (Goger et al., 2022). LERs can include data from formal, informal, and non-formal learning, such as skills acquired through self-instruction, military service, volunteer experiences, hands-on training, and work-based learning.

Micro-Credential

Micro-credentials recognize completion of a shorter-term learning program (compared to a two-year or four-year post-secondary degree) to signal an individual's level of qualification in the labor market. They offer learners the flexibility of learning at their own pace, so they could get through months of academic coursework in a few weeks or gradually progress in learning level over a period of years (Organisation for Economic Co-operation and Development, 2021).

In May 2022, the Council of the European Union issued a recommendation on a European approach to micro-credentials for lifelong learning and employability. It included a definition, standard elements, and principles for designing and issuing micro-credentials. It defined micro-credentials as "the record of the learning outcomes that a learner has acquired following a small volume of learning. These learning outcomes have been assessed against transparent and clearly defined standards" (European Union, 2021).

Next Generation (Next Gen) Credentials

A next gen credential is a modern, new type of credential that more accurately and transparently reports the knowledge, skills, and competencies an individual has attained. Often digital, next gen credentials communicate what individuals know and what skills they have attained over time in a lifelong learning and employment record (LER).

Personalized Learning Plan (also Individualized Learning Plan)

A Personalized Learning Plan (PLP) is a plan created by a student, with the support of parents/guardians, teachers/mentors, and peers, that defines the scope and rigor of academic and experiential opportunities that will lead to secondary school completion, post-secondary readiness, and civic engagement. Creating Personalized Learning Plans provides students the opportunity to reflect on their learning and shape their future, and it enables the adults in their lives to better understand each student as a unique individual. The planning and refining process should be ongoing and iterative, with formal updates to the PLP occurring at least annually, to ensure the student's emerging abilities, aspirations, dispositions, and interests inform the student's path toward proficiency (Vermont Agency of Education, 2021).

Portfolio

A portfolio is a learner's compilation of academic work and other forms of educational evidence assembled for the purpose of evaluating coursework quality, learning progress, and academic achievement; determining whether the learner has met standards; helping the learner reflect on their academic goals; and creating an archive of academic work (Vermont Agency of Education, 2021).

Profile of a Graduate (also Portrait of a Graduate, Learner Profile, Graduate Profile)

A profile of a graduate describes a broader definition of success that articulates the knowledge, skills, and dispositions students should have upon graduating from K-12 education, to be prepared for college, careers, and civic life. Profiles are a modernized vision for student learning and achievement that reflect communities' aspirations for their students, to drive coherence in policies and to improve learning outcomes.

Proficiency-Based Graduation Requirements

Proficiency-Based Graduation Requirements (PBGRs) are the locally delineated set of content knowledge and transferable skills connected to state standards that, when supplemented with any additional locally developed requirements, have been determined to qualify a student for earning a high school diploma (Vermont Agency of Education, 2021).

Qualifications Framework – New Zealand

Qualifications frameworks are policy tools used to organize and classify skills, knowledge, and competencies. They show learners, workers, and employers the meaning behind credentials and how they relate to one another, and they clarify learning progressions from basic to advanced levels. Qualifications frameworks can be designed in different ways to meet specific goals, such as easing progression through learning levels or the changing of learning paths; aligning education paths and labor market needs; improving recognition of informal and non-formal learning; and regulating quality standards of qualifications (Goger & Laniyan 2022).

Record of Achievement (ROA) – New Zealand

An official transcript of standards and qualifications achieved. The ROA grows as students gain new standards and qualifications through tertiary study and industry training (New Zealand Qualifications Authority, 2017).

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