

Promising Practices of Open Credentials: Five Years of Progress

Paper by Sheryl L. Grant

mozilla



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Mozilla has been a pioneer and advocate for the Web and the core principles of the Web-agency, openness, transparency and privacy - for more than a decade. Mozilla creates and promotes open standards that enable innovation, access and opportunity for all. Today, hundreds of millions of people worldwide use Mozilla Firefox to discover, experience and connect to the Web on computers, tablets and mobile devices. Mozilla's Open Badges is a technical standard that makes it possible for learners everywhere to get recognition for lifelong learning through digital badges and to collect and share those badges across the Web for real results, like jobs.

For more information, <https://openbadges.org>

About the Author

Sheryl L. Grant is the director of alternative credentials and badge research at HASTAC, an international network of educators and digital visionaries committed to the creative development and critical understanding of new technologies in life, learning and society.

In 2011, on behalf of the MacArthur Foundation-sponsored Digital Media and Learning Competition, HASTAC administered the Badges for Lifelong Learning Initiative, which funded research and development of 30 learning-based badge systems.

Sheryl is a strategist, published author, researcher and designer based at Duke University. She is also a Ph.D. candidate at the University of North Carolina at Chapel Hill.



Overview

Five years ago, Mozilla and hundreds of thought leaders designed a basic blueprint for a new kind of digital credential that captures learning and achievement through an online platform. Today, thousands of pioneering organizations have entered this emerging design space, creating open badge programs that span workforce, K-12, higher education and out-of-school learning. Together, these efforts contribute to a rapidly growing body of knowledge, design and implementation. To move the field forward while reflecting on work accomplished, this report provides a synthesis of five years of progress and promising practices to emerge from a sample of these early efforts.

What are Open Badge Credentials?

Open badge credentials represent individuals' skills, interests, and achievements and have emerged as a tool that can convey practical learning not captured by traditional assessments. Using evidence-based digital badges to capture skills and competencies is a chance to change the landscape of making what and how people are learning anytime, anywhere, at any pace count. They represent a more granular picture of skills than a CV or résumé and can be verified by reviewing the evidence one submitted to earn the badge. Open badge credentials are online representations that can be displayed on the web and shared for employment, education or other purposes as interactive image files or "badges" instead of lines of text.

Who Is the Report's Audience?

This report is useful for individuals or organizations interested in implementing or refining open credentialing systems in workforce development, K-12 schools, higher education and out-of-school learning environments.

What Does This Report Include?

This report synthesizes promising practices for each case study and summarizes considerations for badge program designs and research on open credentialing systems to date. It also includes a brief overview of free and open resources available through Mozilla's Web literacy map badging program and Digitalme's contributions on behalf of the Open Badge Network.

What Methods Were Used?

Case studies referenced in this report represent a synthesis of long-form interviews with contributions from Penn Hill Group, Mozilla and other organizations mentioned, many of whom provided feedback based on their experiences designing badge programs for workforce, K-12, higher education and out-of-school learning. Transformative badging systems designed to work with competency-based learning in recognition of 21st century skills are of particular interest.



Introduction

Within 10 years, there will be five billion citizens of the Web. Access to instantaneous and continuous learning opportunities will be unrivaled. Building and sharing knowledge with others, both in and out of school, will be hallmarks of a person's ability to progress and succeed in life. And yet with these opportunities come challenges that are steeped in the Web itself: How, in a sea of information and relative anonymity, can we demonstrate to others what we know and who we are? How can we demonstrate that our learning is credible and that our knowledge, our reputations and even our identities can be trusted? Perhaps most urgently, how can others - including employers and college admissions officers - verify and validate what we know and can do?

Open, networked technologies have dramatically changed our social institutions and norms. We are in a global wave of creativity, collaboration and innovation at a scale never seen before, and what we once simply called "literacy" — the ability to read and write — has expanded to envelop ever more sophisticated 21st century competencies and knowledge. In response, legions of students and lifelong learners are gaining new skills, interests, and competencies to ensure social and economic mobility. Spurred by this new culture of learning, Mozilla and hundreds of thought leaders came together more than five years ago to design a new kind of digital credential system that borrows simple practices from the open web. Using evidence-based digital badges to capture skills and competencies is a chance to change the landscape of making what and how people are learning any time, any place, and any pace count.

Open badge credentials are visual representations of skills and competencies that can be displayed online to demonstrate one's knowledge. Technically, they are packets of information that contain image files and metadata. The metadata behind the image contains concrete data on what the individual earner learned and was able to produce to achieve the badge. Paired with open technical standards, these credentials blend cloud-based technologies with the pervasive sharing habits of social media and the open web so they can be displayed on one's social media accounts or web-based programs of choice. They reflect the highly democratizing open source systems that present us with a transformative new culture of learning and reputation online, influencing not only how we learn, but also how we build identities online that others find credible and meaningful.

What are Open Badges?

Open badge credentials are packets of information that contain image files and metadata. Paired with open technical standards, these credentials blend cloud-based technologies with the pervasive sharing habits of social media and the open web. They reflect the highly democratizing open source systems that present us with a transformative new culture of learning and reputation, influencing not only how we learn, but also how we build identities online that others find credible and meaningful.

Momentum and interest in open badges also point to what is missing. Education can be a field in which design work is largely absent. Badging practices push us to ask, What do we want to create here? Open badges have become a form of shorthand to signal strong trends rippling through education and workforce sectors, including 21st century skills and competencies, authentic assessments, networked technologies, learner voice and choice, and data ownership. Often, when organizations turn to badges as a new practice, they invoke complex design work that threads together many strands of these different trends.



What Have We Learned?

Five years have passed since open badge credentials first gained momentum. Where are we now? What have we learned? Although research on open credentials is still in its infancy, we have a handful of highly productive years of badge experimentation behind us to guide future efforts on everything from platform design to implementation, integration with other systems and issues salient to ever-evolving learning environments, including stakeholder buy-in and what to even call these new credentials.

We are learning that badges can be designed in seemingly limitless ways, threaded with technologies that include learning analytics, real-time verification, student information systems, customer management platforms, learning management systems, game mechanics and more. They can be designed to work with different pedagogies, assessment approaches and curricula design, and they can be used for different purposes with different audiences.

We are discovering that the most transformative combinations include assessments that both contribute to learning while measuring it and are embedded in competency, mastery or proficiency-based approaches, representing networked technologies and pathways through 21st century skills that afford some degree of learner (and educator) choice and autonomy. Badges can also connect what would otherwise be siloed learning opportunities and leverage these experiences to form a shared medium of exchange among trusted stakeholders.

This issue brief provides a summary of what we have learned over the past five years about promising practices in the design and implementation of promising badging programs. It includes case studies that focus on out-of-school learning, K-12 schools, higher education and workforce badging initiatives. It also summarizes a set of considerations for badge program designs and describes research on open credentialing systems to date.

Open digital badges matter to students, employers and educators when they:

- Recognize dispositions, roles and incremental skills not traditionally measured, including essential 21st century skills and digital literacies.
- Represent learner autonomy.
- Are co-designed with key stakeholders.
- Explicitly state the expectations about what is required to be successful.
- Provide students with something tangible they can take with them.
- Align with common standards and competencies.
- Are recognized as meaningful and consequential by external partners.
- Provide employers with a quick and visual way to understand the skillset of potential applicants.



What's in a Name?

What we call badges seems to carry significance in different communities. For some, the word “badge” trivializes its value as a credential. Some issuing organizations prefer to refer to badges as “micro-credentials” or “certifications with digital badges.” Organizations should decide in advance what naming convention works best with their stakeholder group to help overcome potential resistance toward adoption.

A badge's name is equally important in terms of what it can do. When choosing a badge-issuing vendor, it is important to evaluate whether the vendor platform issues authentic open badges. Without proper metadata and transfer protocols, digital badges are not widely portable and cannot be easily shared and displayed. Aligning badges with open technical standards through the open badges infrastructure (OBI) is essential to realize the full potential of badges.

For example, nanodegrees are a branded micro-credential issued by Udacity, a for-profit, massively open online course provider that works with corporations like Google and AT&T to train potential job applicants. Although nanodegrees may be micro-credentials, they are not open and cannot be widely shared outside the issuing platform.

Similarly, there are emerging third-party badge-issuing platforms that do not align their badges with OBI's technical standards, and learners are not able to freely export, share or display their credentials outside the issuing platform. Other vendors claim to have OBI-compliant badges, and yet they confine portability of their badges to their platforms. Some enable learners to share via Twitter and LinkedIn; in others, portability is overly cumbersome for the average user. Issuing organizations have found that it is important to pay close attention to the varying definitions of “portability” cropping up in the badging market.



Competency-Based Education and Badges

What is Competency-Based Education?

It is a learning system which often includes the following five principles:

- Students advance upon mastery
- Competencies include explicit, measurable, transferable learning objectives that empower students
- Assessment is meaningful and a positive learning experience for students
- Students receive timely, differentiated support based on their individual learning needs
- Learning outcomes emphasize competencies that include application and creation of knowledge, along with the development of important skills and dispositions

One of the most powerful trends driving the adoption of open badges is competency-based learning.

Competencies tend to represent more concrete skills and more discrete, granular learning outcomes that typically build toward a larger learning goal. Competency-based learning has been described as a learning revolution that upends the traditional paradigm of credit hours and seat-time in favor of the bundling and unbundling of skills, knowledge and abilities, wherever learning may originate.

Competency-based learning has been steadily spreading: In recent years, 36 states have revised K-12 policies to allow for competency-based diplomas, waived seat-time requirements to encourage competency-based pathways, created credit flexibility or initiated a redesign of their education system around student learning. Although the spread of competency-based learning is promising, measuring specific competencies remains a challenge. This has renewed conversations about innovative and authentic assessment approaches to enrich the learning experience and ensure rigor. Getting assessments right is one of the key design elements when creating open credentials.

Leveraging Badges in Competency Education

Curricular building blocks that are more fine-grained than the course level offer exciting opportunities for education providers whose programs contribute to competency pathways, whether in or out of school. Competency-based education allows learning institutions to leverage resources both in schools and in the community, to reflect the personal pathway each learner takes toward college and career readiness.

Integrated into competency frameworks, badges mark milestones along learning pathways that can be both structured and flexible, bringing together learning experiences from different contexts, such as out-of-school learning and traditional classroom environments. When mapped to appropriate assessments, standards of quality and common language, badged competencies can scaffold to larger capstone achievements, showing a progression of learning at all stages. They can be latticed into visible and relevant pathways and threaded into a trusted medium of exchange that stakeholders, including college admissions officers and employers, recognize.

States interested in piloting competency-based badging frameworks that serve K-12 students can find opportunities in the recently enacted Every Student Succeeds Act (ESSA), a reauthorization of the 1965 Elementary and Secondary Education Act, which expanded the federal government's role in funding public education. Digital badges work in tandem with ESSA initiatives to advance 21st century skills and dispositions by connecting in- and out-of-school learning across trusted stakeholder and collaborator networks. ESSA offers opportunities to foster wider uptake of competency-based education, while piloting and experimenting with systems that reflect assessments mapped to digital badges.



Afterschool is a Critical Opportunity for Competency-Based Learning

Schools often lack the capacity and time to address the full range of competencies students need to thrive in the 21st century workforce. Partnerships with afterschool programs already play a key role in helping students gain 21st century skills, but they could become even more critical in a competency-based system. Badge can capture evidence that students have mastered specific 21st century skills and demonstrate those skills to different stakeholders, such as the partnering school district, college admissions officers and employers.

Connecting Competencies In and Out of School: Michigan Merit Curriculum

Afterschool and out-of-school providers across Michigan, in partnership with the state's Department of Education, are participating in badging initiative for students to demonstrate competency of college- and career-readiness standards. Michigan's high school students, as part of the Michigan Merit Curriculum program, must demonstrate competency in the state's college- and career-readiness standards. Afterschool providers recognized the potential for badges to connect and leverage their programs in service of these competency goals.

To get started, the Michigan After-School Partnership began experimenting with badging pilots in collaboration with community partners that offer high-quality afterschool enrichment opportunities focusing on science, technology, engineering and math (STEM), including Michigan State University's 4-H Extension Program and Eastern Michigan University's Bright Futures 21st Century Community Learning Center program. These initial STEM badging pilots focused mainly on competencies for high school students presented in a renewable energy summer camp, a resiliency skill "GRIT" project in a middle school as well as a STEM endorsement of the Michigan School-Age Youth Development credential for youth worker professional development.

Building on its success with out-of-school badging pilots and educator professional development, Michigan is working with other stakeholders to implement a STEM in After-school Competency-Based Learning Value Chain Demonstration Pilot that will help guide the state's badging framework going forward. The pilot will feature, among other things, a growing network of high-quality out-of-school STEM providers, local school districts, employers, college access networks and institutions of higher education. Part of this framework will include educator training materials on how to design badges and build appropriate assessments for student learning, an EduPaths educator training portal and a rubric featuring the Mozilla Foundation's 21st century essential skills, developed in collaboration with researchers, educators, practitioners and industry experts.

Other states are watching as Michigan designs one of the first statewide systems in which students can accumulate digital badges and credits required for high school graduation and early college success, through not only traditional classrooms but also out-of-school providers participating in a co-designed, flexible and trusted badging framework.



As one of more than 30 states to legislate policies in support of competency-based pathways, Michigan is investigating the feasibility of scaling effective models to transition away from traditional transcript models while drawing on both in-school and out-of-school providers as sources of rigorous and relevant content. The state's emerging badging program is an effort to reach this goal.

Next steps involve gathering and analyzing data to inform badging policies that refine credibility principles through the state's badge-rating rubric. This will help ensure legitimacy and establish a badging framework and accredited marketplace consisting of existing out-of-school STEM providers and local school districts.

Similar opportunities and challenges are taking place in higher education. To create the conditions needed to prepare students for 21st century college and career readiness, postsecondary institutions have implemented a number of experimental competency-based programs that allow them to take advantage of resources in schools and in the community.

In support of these initiatives and others like them, the [U.S. Department of Education launched the Educational Quality through Innovative Partnerships \(EQUIP\)](#) [2] program in 2016 under the Experimental Sites Initiative, a novel pathway to Title IV student aid for partnerships between colleges and nontraditional providers, including ones that run skills-based boot camps or offer unaccredited online courses. This could open doors for students earning badges or digital certificates from massive open online courses (MOOCs) or coding academies.



Promising Practices: Out of School

Participation in afterschool programs has as much impact on a student's ability to achieve as school-day learning. The hands-on, experiential learning that takes place in high-quality out-of-school programs often focuses on sophisticated 21st century skills and dispositions that are essential to social and economic mobility.

Many out-of-school programs, whether offered through libraries, museums, digital studios, community centers or other afterschool providers, help students develop and demonstrate team-work, critical thinking and problem-solving, among other skills relevant to college and career readiness. Some successful out-of-school badging initiatives include [Smithsonian Quests](#) [3], [Mouse Squad Certifications](#) [4] and [Computer Science Student Network Certifications](#) [5], representing organizations that have designed and redesigned their programs over the past five years.

AFTERSCHOOL BADGING NETWORKS

Afterschool providers that offer learning opportunities to high-risk, low-income communities have an even greater stake in developing successful badging pilots. Students who earn badges from multiple programs can prove they have the skills that employers, schools and community organizations value. At the same time, badging programs make the trusted partnerships between schools and afterschool providers visible, elevating the contributions that these organizations make to learning outcomes in K-12 environments.

Pittsburgh was one of the first to use badges in a [city-wide learning](#) [6] initiative. The city brought together dozens of organizations that served approximately 3,500 young people, providing a model for how other communities could connect learners to high-quality programs. Afterschool networks in Maryland, Michigan, Ohio, Oregon, Rhode Island and other states are [also piloting badging programs](#) [7] that connect out-of-school and classroom learning. One of the promising practices to emerge from these wider-scale badging initiatives is the identification of an anchor organization that coordinates efforts.

Maryland Out of School Time Network

[Maryland Out of School Time Network](#) [8] worked with Wide Angle Youth Media (WAYM) to develop digital badges that recognize both technical and workforce skills in Baltimore. An advisory committee included representatives from the Baltimore City Public Schools, the University of Maryland, the Maryland State Department of Education and education technology companies familiar with badging and student information systems. Working with Baltimore City Public Schools, WAYM identified three skills badges that reflected workforce-oriented and technical skills that were already being measured through a proven and tested rubric that the organization had previously used. Together, both organizations aligned criteria and evidence in the badges with National Media Arts Standards and Common Core State Standards.

OregonASK

[OregonASK](#) [9], a collaboration of public and private organizations and community members, issued badges to afterschool provider professionals, community college students, high school students and young adults as part of seven pilots. It featured Early College and Career Options High School, Incite Inc.'s Career Achievement Network, Oregon Girls Collaborative Project, Thinkersmith and the Oregon Afterschool Conference. Building on these efforts, OregonASK will be creating digital literacy pathways that connect afterschool and traditional-school opportunities, particularly those that address learning in informal science programs.



South Carolina Afterschool Alliance

New initiatives led by the [South Carolina Afterschool Alliance](#) [10] include the Richland School District's MED Two Program, an afterschool program for high school students interested in health sciences careers. Students from five high schools can earn digital badges and academic credit for attending a series of seminars about what it takes to become health sciences professionals.

What works:

- Communicate the value of badges to key stakeholders throughout the process.
- Gather feedback early and often.
- Involve students at every stage of design. Invite students to meet and share their views with representatives from school systems, community organizations and institutions of higher education.
- Expect technical challenges along the way.
- Start small, but consider learning pathways for other badges that can be designed in future phases.
- Align badges to pre-existing standards to increase legitimacy and credibility.



Promising Practices: K-12 Schools

No learning institutions have had to adapt so often and so quickly to changing conditions and demands as have K-12 schools. With increased expectations and decreasing budgets to fulfill what can often be competing needs, schools are entrusted with the twin goals of preserving norms while introducing novel pedagogies and technologies. To address these goals, schools are experimenting with badges across districts in innovative ways to help elevate social-emotional learning and 21st century competencies. Some are using badges to recognize skills, dispositions and roles within the school environment, while others are using them to connect to community partners like afterschool providers and employers.

Aurora Public Schools, Colorado

Under the leadership of Superintendent Rico Munn, Aurora Public Schools (APS) has become home to one of the most ambitious and innovative K-12 badging programs in the nation. According to Munn, who leads Aurora's large, diverse urban school district, digital badges are "[a tool for social and economic justice](#) [11]" that can provide "a chance to open doors that may not open otherwise." Using human-centered design strategies and limited resources to build their badging program, a team of teachers and education technology staff within the APS system started small. The group launched the program with few expectations in 2014, but by the 2015-2016 school year, more than 20 APS schools had issued nearly 8,500 badges to more than 6,000 students.

APS badges are separated by grades P-2, 3-5, 6-8 and 9-12. Students must earn a series of four to five "journey" badges to earn one "summit" badge; each badge represents one of the 21st century skills in Colorado's State Standards. When awarding badges, teachers recognize competencies such as collaboration, critical thinking, information literacy, invention or self-direction for work students are already doing in class. Evidence is attached to each badge for others to validate whether the learner has met the learning criteria. As a testament to the subject matter expertise of APS teachers, the system eschews rubrics in favor of the teachers' ability to recognize standards manifested in student work.

Community partners have externally validated and endorsed more than 20 APS badges. These endorsed badges open doors to opportunities in the community that may include job shadows, guaranteed job interviews or internships for students who earn the badges.

What works:

- Start small and don't have a mandate. Let teachers opt in.
- Get feedback early and often from teachers willing to volunteer and experiment.
- Focus on 21st century skills and align them with standards that index the skills for which employers are looking.
- Have a districtwide badging ambassador (ideally a teacher) whose sole job is to work with teachers who want to opt in to the badging program.
- Hire a badge ambassador to build relationships with community partners and create endorsements that students value.
- Do not bend instruction toward the badges. Bend the badges toward recognition of work that is already happening in the classroom.
- Do not overly rely on rubrics for assessment. Let teachers be local subject area experts who can evaluate students when they see them doing work that is worthy of a badge.



Corona-Norco Unified School District, California

The Corona-Norco Unified School District in California was one of the first school systems to implement a [district-wide K-12 badging program](#) [12]. Located 45 miles southeast of Los Angeles, Corona-Norco is California's 10th largest school district, serving a total of 49 schools and 53,000 students across the communities of Corona, Norco and Eastvale. It includes 31 elementary schools, eight middle schools, five high schools, a middle college high school and three alternative schools. What began in 2011 as a paper-based college- and career-readiness initiative known as Passport to Success is, five years later, an emerging community-wide ecosystem that includes 12 districtwide badges, 200 school-based badges, 26 active badge pathways and 162 active badges. By 2016, students had earned more than 748,000 badges, and a promising new community-based badging system was in its early stages.

To ensure success, Corona-Norco instituted digital badge ambassador roles at each of the schools. Ambassadors include principals, vice principals, student advisors, teachers and school secretaries; they all take ownership of the badge program and are involved in implementation and facilitation, including the staffing of administrative duties and leadership roles. Like many micro-credentialing programs, Corona-Norco uses badges to recognize smaller and more frequent increments of student learning. Tying game mechanics like redeemable points to badges, the Corona-Norco badging system also features tangible rewards that are specific to each school.

What works:

- Appoint a badge ambassador at each school so there is someone to take ownership of the badging program.
- Design the system to grow and use feedback to modify and add new badges.
- Make room for community partners to issue badges through the platform.
- Use game mechanics to appeal to students and let each school determine what their students value.
- Expect unexpected lessons when working with legacy technology platforms, including student information systems.
- Involve engineers in discussions about how the badge system needs to function both locally and districtwide.



Promising Practices: Higher Education ..

Higher education is anything but monolithic, and the digital badge initiatives piloted across postsecondary institutions reflect the diverse learning that takes place on campuses, both online and offline. Community colleges, continuing education and extension programs, faculty and staff professional development programs, MOOCs, academic library information literacy initiatives, open online courses, co-curricular and non-curricular learning, and local experimentation at the classroom level all represent digital badge programs designed within the higher education environment.

For an innovation barely five years old, open digital badges have been saddled with steep expectations, particularly for institutions of higher education. Postsecondary education is in a period of dramatic change, and institutions of higher learning are doubling down on efforts to be relevant in the near term without losing sight of longer-term missions and goals. With experts forecasting a shift from degree-based hiring to competency-based hiring, institutions of higher education are experimenting with different models of teaching and learning so that they are better positioned for such a change.

Developing a plan to thoughtfully integrate digital badges into higher education initiatives involves an investment of time by multiple stakeholders to ensure a meaningful mapping of outcomes and credentials. Although the larger potential of badges has yet to be implemented at scale in many institutions of higher education, there are promising starts and skunk works projects worth noting, including those listed below.

Portland State University issues badges in [creativity and collaboration](#) [13], as well as for mastery in French language learning. At Illinois State University, digital badges are integrated with a co-curricular transcript for programs such as the [honors program](#) [14], which is a study abroad and service-learning program. Once a student earns digital credentials, he or [she can embed them in an online portfolio](#) [15]. The University of Central Florida provides digital badge [credentials for information-literacy skills](#) [16], and [Penn State offers several badging initiatives](#) [17], including course badges in the College of Education's Learning, Design and Technology Design Studio and contemporary skills for business professionals.

Concordia University Wisconsin offers a [Master of Science in Educational Design Technology](#) [18] program that is based on more than 50 competency-based badges. [Colorado State University's](#) [19] custom-built badging platform leverages big-data analytics and focuses on noncred-it programming in which learners pay only for information they want, including modules on the foundations of 3D printing and a certified gardening program.

[Brandman University](#) [20], a private, non-profit, regionally accredited institution in California that addresses the needs of working adults, launched a series of competency-based degree pro-grams that allow students to earn badges as they progress toward their final degree.

Education Design Lab

[The Education Design Lab](#) [21], a non-profit consulting organization, launched the 21st Century Skills Badging Challenge, a human-centered design approach to badging that addresses the needs of university staff, students and relevant stakeholders. In collaboration with more than a dozen private and public colleges, universities and employers, Education Design Lab focuses on designing a suite of model badges that thoughtfully balance badge development and the intervention strategies necessary for successful adoption.

Education Design Lab encourages individual institutions to adopt badges that reflect specific strengths and goals of their universities. For example, Georgetown University developed a badging process with social change as the driving theme while focusing on workshops with peers, developmental assessments, conversations with mentors and self-reflection. The ultimate goal for all participating institutions is to identify the skills most important to employers and create flexible and customizable competency maps, frameworks, assessments and technology platforms that capture learning beyond the traditional transcript.



What works:

- Bring students into the design process early and often to learn what does and doesn't appeal to them when earning badges.
- Start with fewer badges before scaling them more broadly across the institution. If necessary, make room for skunk works design teams that can innovate in an experimental context.
- Base postsecondary credentials on shared competencies, making them easier for students, employers and educators to understand and use.
- Understand the constellation of 21st century skills that employers care about most.

New World of Work and Foundation for California Community Colleges

Closing the skills gap and preparing students for the workforce are two main goals of the 21st Century Skills Digital Badging project, a new collaboration between [the Foundation for California Community Colleges](#) [22] and [New World of Work](#) [23], with support from the California Community Colleges Chancellor's Office [Doing What Matters Initiative](#) [24]. As part of this collaboration, 13 community colleges throughout California are piloting the project using the Foundation's online platform [LaunchPath](#) [25].

California employers were engaged in the badging pilot from the beginning through design and implementation to signal value and ensure badge content was aligned to the needs of the workforce. As part of the design process, a digital badge advisory group, which included leaders from the California Community Colleges system, the workforce development board, state government and the business community, provided input on badge assessments across three sets of badges: participatory badges for students and instructors; instructor-verified badges for the top ten 21st century skills; and employer-verified badges for the same top ten 21st century skills. Community college educators involved in the pilot can embed the badges in their curricula or create standalone courses that focus on 21st century skills.

What works:

- Establish a list of professional competencies aligned with Mozilla's national comparison of college- and career-readiness competencies.
- Correlate professional competencies into "postsecondary attributes" and "secondary level traits," with each group demonstrating greater skill acquisition as students progress from high school to college to on-the-job training.
- Invite professionals with expertise to design and evaluate the assessments. Working with an assessment consultant and skills rubric is essential. Getting the assessment right is a critical part of badge system design.
- Build in an employer feedback loop to ensure the badges signal value for the business community. For example, employers verify that students have gained competency on the job.
- Ensure flexibility so skills and badges can be embedded in existing curriculum or used as standalone curriculum. Participation is voluntary for colleges, instructors and students



Promising Practices: Workforce

[The U.S. Bureau of Labor reports](#) [26] that working adults can expect to hold more than a dozen jobs by the age of 48 and that the need to upskill and reskill is likely to become an ever-present part of contemporary work life for generations to follow. Meanwhile, employers spend roughly [\\$590 billion annually on training](#) [27], and many are beginning to offer badged training programs that recognize and incentivize formal and informal on-the-job learning. Perhaps pointing to a new trend, some private companies are creating their own education systems, including high-profile organizations like [IBM](#) [28] and Microsoft. [Zappos](#) [29] is using non-portable badges as part of its workforce training and compensation systems, and [Amazon](#) [30] is revamping an internal competency-based education program that is expected to have meaning for employees both within the company and beyond. Although the workforce training sector is embracing badges in growing numbers, this is arguably the least transparent sector, and badges are not widely shared outside the platforms that issue them.

The number of credentials issued by education providers and workforce training has increased [800 percent in the U.S., and there are roughly 4000 personnel-certification bodies issuing credentials to adult learners](#) [31]. Badges and micro-credentials are rapidly adding to those numbers. Although market research is limited, badges reflect a trend toward recognition of incremental learning that can be stacked and latticed to show a more personalized pathway. Open badges are gaining ground with professional associations, especially among teacher professional development. Other sectors are following their lead and beginning to address 21st century skills and competencies both as standalone curricula and embedded in courses.

Professional Development

[The American Institute of CPAs](#) [32], which serves more than 412,000 accounting professionals in 144 countries, uses badges to certify its members, including the intermediate single audit certificate and advanced single audit certificate. [Educause](#) [33], an association for information technology professionals working in higher education, developed a taxonomy of credentials to recognize a variety of professional development achievements, including leadership, subject matter expertise and community service.

[Digital Promise](#) [34] is building a catalog of teacher professional development micro-credentials for the 21st century skills and competencies they learn throughout their careers. [VIF International Education](#) [35], an early adopter of badges, offers teacher professional development modules that are tailored to grade level and academic specialty and designed to incrementally build global competence in teachers and students. [Who Built America](#) [36], another early badging platform, is an online professional learning program designed to help middle and high school history teachers incorporate disciplinary literacy practices, social history content and literacy supports into their instructional design.

What works:

- Integrate badges into existing communication channels. For example, use customer management platforms to notify principals of teacher accomplishments in professional development.
- Think carefully about how to create a thoughtful, effective (and trustworthy) way for professionals to assess each other's learning artifacts. Peer assessment is a powerful incentive for professionals, especially teachers.
- Build formal recognition of the badges early in the design process. Ideally, bring those stakeholders into the design cycle to incorporate their input where feasible.
- Be prepared to make initial trade-offs when selecting a badge-issuing vendor, or consider building a customized platform if there are resources to support your vision.



Service Year Alliance and The Corps Network

[The Corps Network](#) [37] and the [Service Year Alliance](#) [38] co-developed a unique and flexible badging framework designed to track the competencies in real work settings of emerging adults during their years as service fellows. The Corps Network leads more than 130 programs, including service projects, job training and academic programming. The Service Year Alliance developed an emerging marketplace for organizations providing high-quality experiential service opportunities that tackle important challenges. What makes their joint model unique is that any external service learning organization can use the framework to assess service learning.

Through the badging framework, youth and adults will be able to work toward a service year credential by completing a series of learning objectives designed into the recently launched LRNG.org playlist and digital badging platform. In the process, learners gain a common set of competencies, including professionalism, teamwork, leadership, networking and communication, that are aligned with 21st century career- and college-readiness standards. Site supervisors can assess service learning fellows according to individual, team and community criteria.

What works:

- Identify recognizable skills that occur during service learning, especially those that reflect 21st century skills.
- Create a system in which site supervisors can easily assess learners according to clear guidelines.
- Encourage learners to reflect on their learning experiences.
- Build a flexible framework that makes it possible for service learning providers to participate.
- Find and vet a platform that reflects the organization's mission and goals.



Promising Practices for Implementing a Badging Initiative

Mozilla's mission to promote openness, innovation and opportunity positioned it to spearhead this global digital-credential movement that includes, among other coding initiatives, the foundation of the open badges infrastructure. And yet, from the beginning, the goal has always been to foster a new skills currency. For the past five years, Mozilla has doubled down on efforts to identify core Web literacy skills and badges based on essential Web literacy and 21st century skills aligned with the [Mozilla Web Literacy Map](#) [39] - with the ultimate goal of providing people with open access to the skills and know-how needed to use the Web to improve their lives, careers and communities and to support an open Internet.

Augmenting and adapting Mozilla's open source curricula with training, tools and open credentials has created a new kind of asset or proof of concept for other organizations to download, use and remix. Although there is no one-size-fits-all design kit to guide every badging initiative, Mozilla's 21st century [skills rubric](#) [40], [assessment guidelines](#) [41], [evaluation criteria](#) [42], [web literacy curricula and training](#) [43] and facilitation materials are available for other organizations to leverage and adapt. For example, in collaboration with the [Institute for Museum and Library Sciences \(IMLS\)](#) [44], partnering libraries are piloting Mozilla's materials to advance [web literacy skills among library staff](#) [45]. Other badging initiatives, such as the collaboration between the New World of Work and the Foundation for California Community Colleges, are also adapting these materials as they approach their work.

What works:

- Use experts to align skills to current standards (i.e., Common Core, P21, etc.).
- Create an environment and atmosphere in which organizations and learners can (and want to) opt in to the program.
- Encourage organizations to develop their own platforms so data are under their stewardship.
- Have an implementation strategy that carefully considers the culture of the learners.
- Provide training materials and workshops to guide educator professional development.
- Offer skills rubrics that organizations can download, remix and reuse.
- Have assessment guidelines and evidence criteria that enrich and transform traditional practices

Code contributions to improve the open badge standard have, from the beginning, come from many individuals and organizations, which is customary among open source projects. In 2016, [Digitalme](#) [46], an international non-profit involved in the open badge standard and philosophy from the start, took a more direct leadership role to further refine the open badges technical infrastructure, including the Mozilla Backpack and other parts of the code base. Like Mozilla, Digitalme freely shares resources to help other organizations design badges, including the [Digitalme Badge Design Canvas](#) [47].

An [Open Badges and Quality Management](#) [48] discussion paper, developed by the [Open Badges Network](#) [49], can be useful for organizations that want to consider quality management of their open badge initiative before design begins. Recommendations for quality considerations at each stage of the open badge initiative include initial design, implementation, delivery and review. The [Guidelines for Open Badges in Territories](#) [50] is useful for multiple stakeholders or networks that seek to develop widescale open badging programs spanning sectors, industries, cities or countries.



Considerations When Implementing a Badging Initiative

Align open credentials with your organization's mission or use them as part of an intentional theory of change that introduces new values and goals. The practice of recognizing learning can be transformative. For open credentials to have an impact, be thoughtful and intentional during the design phase. The following considerations represent many of the promising practices other organizations have discovered in designing their own systems.

Build value with employers and other stakeholders.

Having a plan for what these badges will mean to your learners can help foster widespread adoption. This might mean including employers or other stakeholders in the design process to ensure they value the badges. For example, do the badges represent a progression of learning and degree of competency over time that employers and others find valid and credible? Do they have a preference for what open credentials might be called? Badge earners are more likely to trust a badge if the issuer is a well-established or well-known organization. Those viewing the badge are more likely to trust it if they can gauge the quality-assurance processes involved. [51]

Gather feedback early and often from all stakeholders.

Enlisting learners and educators in the design process improves adoption. Invite feedback from learners, educators, employers and other important stakeholders early and often, and use this input to co-design your system. Find educators and learners who are willing to volunteer and experiment.

Design the system to be as flexible as possible.

Start small and, if feasible, avoid having a mandate. Let educators and learners opt in. Design learning pathways that make room for badges to be included in future phases. This can mean starting with fewer badges that recognize work already being done. It can also mean designing the system to grow, adding new badges later and improving them as the system matures. If there are pathways, make sure learners understand how each badge fits into a larger map of possible achievements.

Recognize 21st century competencies, dispositions and skills

In particular, focus on 21st century skills that index the competencies employers value. Badges should represent learning experiences that are relevant and intrinsically motivating, including those that define 21st century essential skills. Look for established professional competencies like Mozilla's national comparison of 21st century college- and career-readiness competencies. [52]

Align learning with existing standards.

Doing so will increase the legitimacy and credibility of the badges. Look for standards or core competencies that might already exist to make badges easier for students, employers and educators to understand and use. Standards can also help designers lattice and branch learning pathways or trajectories and encourage learners' ongoing engagement and interest in new directions.

Create new positions.

Expect that the adoption phase will create new work, and hire someone to take ownership of the process. These hires may be part of the design team, but their main responsibilities will be to build and maintain relationships with people using the system, troubleshoot issues with the technology, provide professional development and create an evaluation loop to accommodate new feedback.

Think carefully about assessment.

Instead of using more traditional, summative types of assessment, such as multiple-choice scoring, consider using extended performance tasks or other types of authentic assessments. Consider hiring an assessment expert to design or evaluate the assessments, or look for badging assessment guidelines similar to the ones Mozilla makes available.

Expect unexpected lessons and challenges when integrating new technologies.

Involve systems engineers in discussions about how the badge system needs to function. Be prepared to make initial trade-offs when selecting a badge-issuing vendor, or consider building a customized platform if there are resources to support your vision. Evaluate badging platforms carefully to verify that they contain open technical standards and can be exported and widely shared across the open web.



Research and Resources

More than [300 articles](#) [53] have been published on the topic of digital badging since 2011, including two books [54, 55] devoted entirely to the subject and more than 150 papers presented at national and international conferences. Special badging summits have been held across the country, and major education- and workforce-focused conferences now offer dedicated tracks that address the growing field of badges and related research. Journalists have written hundreds of articles for recognized media outlets, and there are international communities of practice who meet regularly to discuss ways in which badges can be harnessed to help redefine educational priorities.

What does all of this momentum represent? Foundation and government agencies continue to fund a variety of initiatives, including research programs dedicated to badging. As badging continues to spread, so, too, does the need for assessment guidelines and skills rubrics, particularly those that address 21st century skills and competencies. Guidelines like those developed by Mozilla to assess 21st century skills badges are becoming more and more necessary. As organizations issue badges for competencies such as problem-solving, collaboration, communication and creativity, we need new ways to assess that measure actual performance, like self-assessment and scenario-based assessments.

We are still in the early days of research and design. Even so, we expect to see even more learners gain greater agency in a flexible yet structured credentialing environment that embraces evidence, credibility and trusted relationships in the service of social and economic mobility.



Endnotes

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