BADGES AT CCCS

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Dawn of Open Badges

Digital badging is a branch of the micro-credentialing movement which aims to help recognize mastery of skills. In 2011, the MacArthur Foundation, HASTAC and Mozilla announced a $2 million Digital Medial and Learning Competition for leading organizations, learning and assessment specialists, designers and technologists to create and test badges and badge systems. The competition explored ways digital badges could be used to help people learn; demonstrate their skills and knowledge; unlock job, educational and civic opportunities; and open new pipelines to talent. In 2013, the Chicago Summer of Learning in which more than 100 youth-serving organizations joined together to make their programs visible. Youth participants earned digital badges that provided permanent recognition of the achievements made by youth through their activities. This was one of the first large scale tests of the open-source digital badge specifications.

The Colorado Community College System (CCCS) developed a number of digital badges in the last year and has plans to continue to develop new badges both within the system and for professional development training provided by CCCS for local area employers. CCCS took a unique approach to developing digital badges. This approach has been recognized for meeting a high standard in both industry and the academic setting of the 13 colleges within the system. The Colorado Community College System (CCCS) deployed an early pilot to recognize 17 different competencies assessed within an applied mathematics course, giving local manufacturers insight into the discrete, workforce-relevant skills of CCCS graduates. The result of this work has led to badge earners who can now show what they can do through a digital badge as well as employers who are now looking for digital badges both in incumbent workers and their internal talent.

Badges as Credentials

Badges represent a number of outcome achievements, from very complex skills to straightforward proficiency. It is not the badge that determines whether a credential has meaning. It is the assessment and experience that went into earning the badge. Badges are qualifying credentials because they indicate specific types of knowledge, assessment and outcomes. Badges have the benefit of:

- **Portability**: Useful credentials of skills and abilities are not locked up in an opaque diploma or transcript, which have limited use and utility; learners can tell a more complete picture of who they are by combining outcomes/credentials from in-school and out-of-school experience.
- **Self-advocacy:** Ability to teach students to better communicate and articulate their skills and abilities to others (such as college admissions, employers or peers).
- **Empowerment**: Helps learners understand in real-time what skills they have and how their skills can stack up to and open up new opportunities.
- **Transparency and granularity**: Badges show much richer and more useful detail than high school transcripts and diplomas.
- **Data and Insights:** Because badges are comprised of data about each achievement and skill, including alignment to standards, learners and institutions alike can better understand the personalized pathways and trends that emerge as students put their skills to work in the world.
- **Evidence**: Authentic work product can be tied to a badge.

- **Machine-readability**: Digital badges and credentials can be consumed by applicant and admissions tracking systems, allowing students greater likelihood of being discovered and because of the discrete competencies they possess, giving more learners a chance at new opportunities.
- **Privacy and Security**: Badges ensure that claims about individuals' skills and competencies are accurate and consistent and put the choice of what to share and with whom in the hands of learners.

The greatest advantage of digital badges in comparison to a traditional transcript or degree is that they are a transparent way for employers to see what a person can do, rather than what they have learned. In order for employers to be able to see that though, badges must first be claimed by badge earners and then displayed in some way. Each badging platform has its own way of claiming and displaying badges, however most allow badge earners to share to social platforms such as LinkedIn, Facebook or Twitter, as well as storing the badges in a digital backpack. Each digital badge has a unique URL which can also be placed on a resume, application or sent through an e-mail.

Badging Possibilities

When Superstorm Sandy struck the eastern seaboard in October 2012, electrical linemen who could repair downed power lines were desperately needed to speed the region's recovery, but painfully short in supply. Across the country in Colorado, the Colorado Community College System (CCCS) graduates certified electrical linemen and electricians through several programs across CCCS. There should be a way to connect workforce needs to available skills. However, in 2012, digital badges were in their infancy.

A case for digital badges presented itself closer to home in 2014, the Colorado governor discussed 15,000 unfilled jobs in advanced manufacturing within the state, which were predicted to grow to 45,000 unfilled jobs by 2016. Why so many unfilled jobs? Employers were struggling to find candidates with the competencies they needed – yet surely there were local community college graduates who could fill many of the open positions. The problem was that employers were searching for applicants with specific competencies and CCCS transcripts only listed course titles and grades. There was no way to match the knowledge, skills and abilities with open positions.

With funding from the [Colorado Helps Advanced Manufacturing Programs (CHAMP) U.S. Department of Labor's Employment and Training Administration grant](#), CCCS had the opportunity to bring digital badging into the community college system in a meaningful way, recognizing that the Manufacturing Industry needed to know explicit competencies and skills job candidates could bring to their industry. Digital badges have the potential to show employers what students can do, unlike a course or degree title which certifies a student has completed the coursework. The fit for digital badges in the manufacturing sector was natural and had the potential to be really meaningful.

Brenda Perea and her team of instructional designers, Katherine Woodmansee and Jinnie Chieppo developed a digital credential system which made mastery of competencies and skills transparent and easily understood by employers. To accomplish the transparency of competencies and skills, CCCS

convened industry representatives who helped identify specific competencies required for success in advanced manufacturing. The team then located which courses in the CCCS program curriculum addressed those competencies and how these key outcomes could be most effectively communicated to local employers. Digital badges fit well within the Advanced Manufacturing curriculum due to the fact that much of the work is based on competencies. Colorado Community College System has taken the view that digital badges need to be built around mastering a competency and applicable for all thirteen colleges to provide consistency through common competencies for all colleges.

Working with Stakeholders

Once badges were decided upon as a way to give students a micro-credential, the next step was to speak with the stakeholders to decide what they needed from incumbent or upskilling workers. Discussions included business partners, faculty, and subject matter experts along with instructional designers in order to bring all the ideas together. Digital badges cannot function in the vacuum of higher education; they require not only input, but also buy-in by employers to be successful. In order to get that buy-in, CCCS believed it was crucial to create a credential that employers would seek out. This was the start of building a viable digital badge ecosystem of badge earners, badge issuers and badge consumers.

To engage business partners, sector summits were held to find the most areas with the most significant hiring difficulties for employers throughout the state of Colorado. Common themes emerged from these summits and a picture of what kind of competencies employers were looking for emerged. From there, business leaders and instructional designers determined if and where in the current programs students mastered the competencies needed for the job. The ultimate goal was to develop meaningful micro-credentials with detailed meta-data for both students and employers to facilitate the education to employment connection.

Backwards Design

A taskforce was convened to create a "digital white paper." The whitepaper was sent out to the CCCS Presidents and Vice Presidents. After the institutions agreed to the information contained in the whitepaper, the taskforce developed the badge hierarchy, or badge classes. CCCS decided on a hierarchy of four badge classes, Excellence, Mastery, Expert and Proficient with a decreasing skill level. When the hierarchy was presented to industry experts, the "Proficient" badge class was dropped to reinforce that badge earners were either expert or masters of specific skillsets. Employers dismissed proficient badges as equivalent to a "C" grade.

After discovering which competencies were highly valued in the advanced manufacturing industry, the next step was to create a working group of subject matter experts and instructional designers to connect competencies to a common understanding of mastery using authentic assessment as the evidence of that mastery. The subject matter experts included faculty, department heads, instructors and individuals from the CHAMP business advisory groups. Working within committees for each of the special areas: Machining, Engineering Graphics and Technical Math, the working groups organized the identified skills into groups of competencies and then determined what was considered mastery level

skills. It was important to the group to differentiate between proficiency and mastery. The employers understood proficiency, but wanted to hire applicants with mastery level skills.

Once groups of competencies were determined, the next step was to determine where the badged competencies would fit into a program or course. Locating the course or courses where the competencies of the badge could be mastered allowed the group to move forward with identifying how competency mastery would be assessed to ensure the evaluation methods are the same across all participating colleges. Other decisions were made on badge constraints, such as whether badged skills need to be periodically refreshed, which implies an expiration date for the badges and if so what is the viable time frame for master skill level to be accurate after the issuance of a badge. The final decision was on the badge's graphical elements enabling employers, learners and others to quickly associate the badge's image with the underlying metadata or competencies.

Graphic Design

With all of the metadata of the badges determined, the graphical representation of the badge was the last step in creating a micro-credential that was easily understood. Many of the badging platforms include badge designing components, however CCCS decided to create a unique badge design that would convey a system identity and would enable modification for each college or non-credit training. The work group which developed the Technical Math for Industry badges decided on a basic round coin shape with a ribbon to allow a badge name to be prominent. Additionally, "Colorado Community College System" is branded around the outer rim of each badge produced by CCCS for use system wide, which is the design used for the Engineering Graphics Badges and the Machining badges. The design allows for an additional inner circle to develop a college specific badge for a particular site specific or business specific workforce training.

Central graphics are an important part of any badge, because while each badge is composed of metadata, it is the visual impact which coveys the meaning of the badge. First impressions are always formed from the image. Once again, the team worked closely with the committees to find images that would be simple and still conveyed the meaning of the badge. The final touch was a band added in the middle circle of the badge to indicate where the badge fits into the badge hierarchy.

Badging Deployment

The initial badge pilot occurred within a Technical Math for Industry MOOC (A Massive Open Online Course) where the determination of concept mastery was passing an assessment at 80% or higher on a randomized math assessment. Students were allowed only one attempt to complete the assessment and no badges were issued for scores lower than 80%. As each succeeding session deployed, it was noted that learners were more likely to complete all learner activities within a topic in order to learn the math concepts in anticipation of passing the assessments at 80% or higher to earn a digital badge. It was also noted that while the majority of the participants were not Colorado community college students, the technical math badges have been the greatest area of success in digital badging at CCCS. Employers in the advanced manufacturing industry sought out participants who had specific technical math digital

badges in addition to advanced manufacturing skills and even sent some of their own employees to earn a specific digital badge to improve their own skills. The badge ecosystem became viable as soon as CCCS issued digital badges to participants, the participants earned and claimed the badges, and employers sought out badged skills. Additionally, each badge earner claimed their digital badge and in many cases shared it to LinkedIn or Facebook.

Additional badges were created for Machining Level I based on the NIMS (National Institute for Metalworking Skills) requirements, Engineering Graphics (additive and subtractive manufacturing including 3D printing, scanning, composite repair and the associated software), and faculty development for blended and online teaching. These badges have had various adoption success by the individual colleges, badge earners and employers.

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Digital Badges nationwide and in Colorado are continuing to gain recognition as a way to find and train employees based on their mastery of competencies. As things stand with digital badges at CCCS, over the next 18 months there will be some very exciting new opportunities. Area employers such as Bal Seal and Cemex have recognized the usefulness of CCCS's digital badges and have decided to work with the Systems' training directors in business development to co-develop training and workforce centered digital badges. CCCS will be working towards developing more badges for industry partners who want a transparent way to see which skills a potential employee has mastered. Students will also have the advantage of being able to see a clear pathway of progression which will help them gain employment and then upskill as they have the ability to work and move up within their chosen pathway.

Transparent credentials of granular skills are the way forward for many jobs in the future. Competency based education is gaining recognition as a great way to train students for jobs while they get their education. Digital badges fit well with a competency based system because they are proof of granular competencies. CCCS has taken an approach to align digital badges to workforce demanded skills and competencies, which in turn were tied to either national or local standards. By taking this approach, the system provides an advantage for all three major stakeholders: students, industry partners, and CCCS schools. Asa students gain skills, companies have a place to send employees for training and colleges have the ability cultivate deep and lasting relationships with students.

Moving Forward

CCCS is taking the long view of digital badges and believes that while badges will not replace transcripts or degrees, they enhance and augment current training, courses, certificate and degrees. Badges will become increasingly useful for hiring, training and managing talent pools. Companies will start utilizing digital badges as ways to upskill and reskill their personnel similar to how IBM, Fossil, Home Depot, Walmart, Hunter Douglas and Bank of America are managing their talent pools with digital badges. Digital badges are an excellent way for both big and small companies to keep track of the skills each of their employees possess. This will allow them to place the right employee with the right project as new needs arise. Digital badges allow employers to be more efficient by making wise staffing decisions on a

project by project basis, rather than keeping talent in one place and training new employees as new projects arise.

Colorado Community College System is uniquely poised to grow the Colorado digital badge ecosystem by giving companies the ability to track talent using the innovative and efficient digital badges.