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The use of digital badges is transforming how skills and competencies are acknowledged, verified, and recorded. These portable credentials carry a payload of data and evidence about the achievement for which they were earned, making digital badges efficient vehicles for allowing official recognition of competencies to move with individuals as they go from one context to the next. When aligned to an emerging set of technical specifications, digital badges help form a new common currency for skill and career development and workforce advancement.

As higher education evolves to accommodate new forms of learning and new workforce needs, skills are being assessed across an ever-widening range of activities across the learning landscape. Campus-based and online degree programs, professional certificates, competency-based education, open online courses, professional development initiatives, cocurricular and extracurricular activities, and programs in service learning, information literacy, and entrepreneurship are just some of the many settings within higher education where competencies worth recognizing are demonstrated or observed. Digital badges unify the learning that happens in these diverse contexts—often at a relatively granular level—with a common and portable representation of achievement.

The use of badges can also help connect a series or progression of learning experiences, illuminate pathways to learners, and more clearly demonstrate achievements to an external audience. The digital nature of these credentials provides significant affordances and can offer greater ongoing value than more traditional formats for recognizing or recording learning, such as a degree, an academic course-level transcript, or a paper-based certificate of completion. Digital badges:

- include a consistent set of metadata or information about the nature of the assessment, experience, or criteria that led to the skills or competency-based outcomes represented;

- incorporate authentic evidence of the outcome being certified;

- can be shared, displayed, or pulled into different kinds of platforms and environments in both human-readable and machine-readable formats;

- can be distributed in a simple, consistent format, fostering relationship building, marketing, networking, and just-in-time career development opportunities;

- are searchable and discoverable in a range of settings; and

- offer data and insights about how and where they are used, valued, and consumed.

A diverse and rapidly growing set of examples in higher education illustrate the marriage between the unique benefits of digital badges and learning programs that emphasize discrete competencies, skill mastery, or credentials as certified outcomes. Examining existing initiatives is one of the best ways to appreciate the potential for digital open badges and to inform and inspire the development of new programs. The following use cases highlight the use of digital badges in supporting faculty development, cross-disciplinary literacies, extracurricular learning, and competency mastery within degree programs:

- Texas Wesleyan University's Center for Excellence in Teaching and Learning awards badges for participation in faculty development programs to recognize soft and technical skill development (see Badges 2.0).

- The University of Central Florida's Information Literacy Program awards digital badges for successful completion of each of UCF's Information Literacy Modules, which are grouped into three functional categories: gather, evaluate, and use (see Badges).

- The University of Notre Dame integrates digital badges into e-portfolios to recognize the authentic evidence and important skills demonstrated by students through extracurricular and cocurricular activities (see E2B2 Badge Directory).

- Brandman University offers badges to enable learners to attain, manage, and share portable digital credentials earned through their online competency-based degree programs (see Competency-Based Education).

- UC Davis's Agricultural Sustainability Institute has a badge system that functions as a competency-based (rather than credit-hour based) model of learning. The program has developed a set of competencies for the major—systems thinking, experimentation and inquiry, strategic management, civic engagement, personal development—and each competency correlates to a badge that students work toward by collecting experiences (see Digital Badges at the Agricultural Sustainability Institute).

More than anything else, 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. This brief provides a roadmap, guidelines, and examples of how to get started and take steps to incorporate digital badges into your programs. The first section addresses the dynamics of digital badges and badge systems. The second section details how to cultivate a complete badge ecosystem. The final section considers technology, implementation, and graphic and design components.

The Dynamics of Digital Badges

As a marker of an achievement, a digital badge looks both backward and forward at the same time: *backward* to the experience or assessment that was completed to qualify for it, and *forward* to the benefits, rewards, or new opportunities available to those who have earned it. As nothing more than a vessel for communicating and transporting information about an achievement, digital badges can serve very different functions and convey different kinds of value, depending on how and where they are employed.

Like any credential, a badge is rarely an end in itself. It is a milestone that leads to another leg of a journey or a key to unlock doors to new opportunities. Most people do not engage in learning activities with the goal of earning a badge; worthwhile learning experiences are intrinsically motivating. The badge is a stamp of approval or affirmation of the outcome of those experiences. As such, when developing new recognition and credential systems, the focus should not center squarely on the badge itself but on contemplating what experiences and assessments are worth certifying and on the rewards or benefits those inputs should unlock.

An earned badge communicates a great deal about the earner, the organization that issued it, the relationship between the two, and those that seek, accept, or endorse the badge as a valued credential or certification. A thoughtfully designed badge or system of badges should consider all of these constituents.

As you begin developing a badge initiative that will have maximum meaning, value, and currency, think deliberately about what specific challenge or opportunity your badges are designed to address. Some of the possibilities you might consider include:

- *Serving as an alternate qualification for lifelong learning.* Degrees and licenses certify summative achievements often following formal education programs or courses of study. Do your digital badges provide official certification recognizing learning that is more granular, formative, or incremental?

- *Surfacing, verifying, or sharing evidence of achievement.* How can we surface discrete evidence that certifies a skill or accomplishment, and by doing so arm learners with official recognition they can use toward new opportunities? Does validating and making a specific success or outcome more visible, portable, and sharable help a learner move successfully from one learning experience to the next?

- *Democratizing the process of issuing credit.* How can we empower anyone who can observe or assess meaningful achievements to issue digital recognition of those accomplishments, even if that means that credential issuing becomes less centralized?

- *Exposing pathways and providing scaffolding.* How can we better suggest or illuminate a path forward for learners while also enabling that pathway and progress to be shared with an external audience of peers or potential employers?

- *Supporting ongoing engagement.* How can digital badges support learners incrementally as they progress through a learning experience? Can we enhance motivation before and after the experience?

With a clear understanding of how digital badges align to the needs of the learners you serve and your organization's goals, you're ready to develop a plan for an actual project or initiative. It is useful to continue to return to your objectives as you develop your badge system, checking the components and processes against the stated purpose. Also consider how your organization's core values are demonstrated in your overall system and in each badge.

The process for developing an effective badge system can be broken into several discrete elements to consider:

1. *Create a badge constellation.* A constellation is a master plan or blueprint that shows all of the badges you intend to offer and how they relate to core themes or to each other.

2. *Map meaning to each badge and to the overall badge system.* Ensure that each part of your constellation has a value to the earner, to your organization, and to those who would reward or offer opportunities to bearers of each badge.

3. *Identify or develop an assessment strategy.* How will you know when an earner is ready to receive a badge? Are existing assessments, observation opportunities, or measures already in place, or does your system require new ways to determine when an individual has qualified for a digital badge or credential? What activities or work will be assessed, and what evidence can accompany each issued badge?

4. *Determine relationships within the system and how learners progress*. Is your plan one that shows progress, where components build on one another? How does one badge relate to another or "stack" to support ongoing personal or professional development?

5. *Design benefits, opportunities, and rewards into the system.* Work backwards from the benefits that will be available to those who earn badges in your system. Does each badge serve a greater purpose than itself? What doors does it unlock for earners? How will you communicate and promote the value of your badges to all constituents?

6. *Address technology considerations*. How will you create and issue badges? Where and how will the badges be displayed or consumed by other systems and platforms where they realize their potential value?

7. *Develop an appropriate graphic design*. While the visual design is but one element of a badge rich with data, how an achievement is visually represented communicates a great deal of additional information. Digital badges offer a unique and powerful opportunity to market the skills and capabilities of those who complete your programs, and badges promote your initiatives as well as your organization and what it values.

The above set of considerations can serve as a high-level checklist to ensure your badge system is contemplating all of the most critical components. We will now look at each of these parts of the badge system creation process in more detail.

1. Create a Badge Constellation

A badge constellation is essentially a map of your overall system. Sometimes represented graphically, the constellation shows the overall scope and scale of the skills and achievements your system acknowledges, as well as how the elements relate to one another. It gives learners a holistic visualization to appreciate what progress and incremental milestones might be expected along the way to their ultimate goal, which could be as granular as a single learning objective within a course or as broad as a complete degree program.

The constellation is the vehicle to express all parts of a badge system, and it should highlight what the recipient and issuer value as outcomes. Additionally, the constellation should help learners and other interested parties navigate the experiences unified by the badge system. For example, it should help illustrate relationships across activities, assessments, assignments, and prerequisite steps.

The first step in constellation design is to consider what kind of achievements a badge might represent. These classifications can help to further organize your constellation:

- Individual skill or knowledge development
- Summative achievement
- Progressive or milestone accomplishments
- Membership or involvement in a community or activity

These are not mutually exclusive. For instance, one badge might recognize the completion of an individual unit of learning (such as an individual skill or knowledge development), while another may recognize completion of all the badges (a summative achievement) in the learning experience.

2. Map Meaning to Each Badge and to the Overall Badge System

While a constellation will show the overall system, it is important to articulate what each component represents. A component is a part of that larger system and could be a badge or an activity that leads to a badge. You'll find some of the badge development steps are very similar to instructional design steps. In a classic instructional design model, once the audience is identified and analyzed, the overarching learning outcomes are broken down into smaller learning objectives. In his blog post, [Digital Badges as Curricular Building Blocks](#), Bernard Bull encourages us to think of discrete competencies as the building blocks of curriculum design. In this model, the smallest building block is not a course but a competency, and each is attached to a learning experience recognized by a digital badge. That competency is equivalent to an instructional objective. Employing this approach would lead to a competency-based badge design and could be easily applied to a short learning experience, such as UCF's [Information Literacy Initiative](#), or a full degree program, such as Concordia University Wisconsin's [online master's degree in educational technology](#).

During this part of the process, it is instructive to begin filling in the standardized set of metadata that defines all open badges, such as title, description, criteria, expiration (if applicable), and evidence that

will be included when the badge issued. You might also consider who will be the issuer of record for each badge because that impacts its credibility, value, and meaning. Taking the time to work on the specific data for each badge at this stage acts as a sanity check that the badges you are creating meet your program objectives.

3. Develop an Assessment Strategy

Next consider how you might design an effective assessment strategy for each badge; this is one of the most significant steps of badge development. The assessment will determine when a competency or learning objective has been met and when to issue a badge. Existing measurement processes or instruments may already be in place, or new assessments may be needed, depending on the badges being developed.

It is important to note that badges in and of themselves are not assessments; they are what is issued to acknowledge that an assessment has been successfully completed. That said, due to their unique nature and use across a broad spectrum of contexts, digital badges lend themselves to being associated with many forms of authentic and embedded assessments. Some to consider include:

- Review of a submission of evidence or an authentic artifact, such as a reflection piece, video, or other media created during a learning experience or activity
- Test, quiz, or other formal assessment
- Peer review of work
- Verified participation at an event or in a learning program
- Membership in good standing in an association or interest group
- Earned role within a community, such as a presenter, facilitator, or leader

Although badges can be organized in many ways and can recognize many levels of accomplishment, it can be useful to differentiate between badges that represent "gold star" types of achievements versus those that might rise to the level of a "gold seal." By *gold star*, we mean badges that are generally used to help visualize progress or motivate an individual to move along a path toward something more substantial and significant. *Gold seal* badges recognize more significant learning or an accumulation of work, such as completing an overall certification, degree, or other credential. Sometimes multiple lower-level gold star badges can accrue or lead to a more highly regarded gold seal badge, and other times they might constitute a completely separate currency—it all depends on the constellation design.

4. Determine Relationships within and Progression through the Badge System

As badge earners move through your system, the constellation should guide them and show the path, whether it be linear or otherwise. Here is also where you determine how one component of your system relates to another. It may be that several smaller achievements are necessary before a more meaningful badge is awarded or that an earner can receive many of the same achievements based on a chronological factor (e.g., Faculty Fellow for 2015, Faculty Fellow for 2016; the badges may look the same but represent different years). If a badge signifies completion of a milestone (that might have involved lots of other steps), you might think of this as representative of a summative assessment. If a badge represents a step toward the completion and is smaller in "scale," it may be formative. Regardless, the relationships between the various parts of your badge system should be conveyed clearly to earners and the community at large.

5. Design Benefits, Opportunities, and Rewards into the System

As the designer of a badge system, you must consider and help develop the value of each badge you create. What will your badges do for the recipient? What rewards or opportunities available to those who earn a badge will help motivate learners to complete the badge criteria or assessment process? Will they be qualified for a new position? An internship? Will it lead to new learning opportunities or unlock a new step along a professional learning pathway?

The value of a badge can be local to your organization or it can extend beyond to the broader community or ecosystem at large. Either way, that value should be communicated in the badge metadata.

6. Address Technology Considerations

With your badges defined and your constellation coming together, you will want to consider how you will create, distribute, and keep track of issued badges, as well as how your earners will securely receive, manage, and share badges and put them to use. A digital credential or open badge management platform helps manage all aspects of the life cycle of a digital badge.

A badge that aligns with the emerging "open badge" specification includes a set of standardized metadata packaged with an associated image and is linked to what's called an "assertion." An assertion, which is hosted in perpetuity by the issuer or a trusted third party, can be thought of as a carbon copy or receipt that affirms the authenticity of the issued badge. An open badge platform such as Credly takes care of all of these requirements.

Badge-issuing platforms can also include tools for individuals to manage their earned credentials and choose how and where they'd like to use or display them. A user's profile or "backpack" can store badges earned from different contexts and issuers. Badges earned through a variety of sources can be curated to tell a story about each individual's learning path and achievements.

The essential functions of a badge management platform include the ability to:

- Define a badge, including its associated metadata, such as title, description, expiration, and evidence requirements

- Manage the organizations or individuals who may issue the badge

- Set badge-earning criteria or rules for who may earn the badge

- Securely issue the badge to one or more people

- Host the assertion and any evidence associated with the badge indefinitely

- Track and analyze badge-earning and -sharing data

- Confirm the identity of those using the platform

- Enable earners to securely receive a badge and direct how and where it is visible

- Set options for how and where badges are pushed or pulled into other connected systems, such as professional and social networks, intranets, online communities, and talent management or e-portfolio systems

A range of discrete tools can also manage specific aspects of the badge life cycle. For example, BadgeOS allows organizations to set up badge constellations and set rules for automatically issuing badges as individuals meet requirements, and apps for platforms like Eventbrite or Moodle allow badges to be issued based on event participation and learning outcomes, respectively.

Figure 1 shows an example of the metadata associated with a badge. The metadata includes the title, description, criteria, issue date, expiration, evidence, and issuer details.
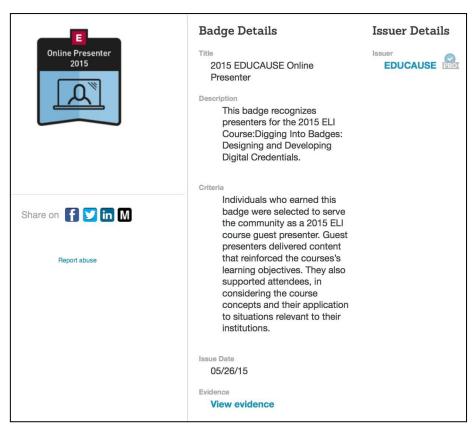

Figure 1. Badge metadata

7. Develop the Graphic Design of the Badges

Developing a graphic design for your digital badges can be an enlightening experience. The exercise often brings together a range of stakeholders, from instructional technologists to marketing departments, and it requires thoughtful consideration about the potential growth of your system so that the graphics can expand as your constellation grows. As you work through the design process, here are some things to contemplate:

- How should one balance the skills or competency represented by the badge with the granting institution's brand? Badges can help extend the institutional brand, but a badge system can also have its own unique identity and purpose.

- If your badge system has multiple tracks or categories, how should those taxonomies be reflected in the design? The badge system shown in figure 2, which is from the University of Central Florida, offers an example of how relationships and hierarchy can be conveyed through shape, size, and color.

- Will you display a logo on the badges? Does the logo need to integrate with the institutional, unit, or departmental brand?

- Will the badge graphic include a year?

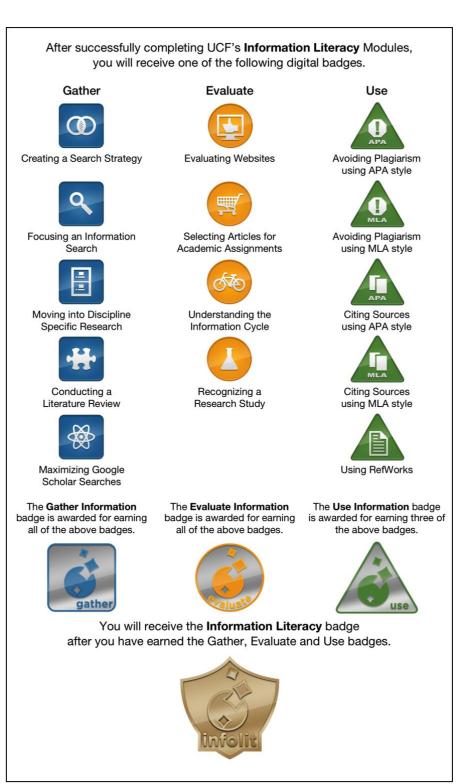- Will the badge color or art change from year to year?

Figure 2. University of Central Florida Information Literacy Modules badges

Additional Considerations

Developing a badge system is in many ways like designing a complete currency. There are many aspects, constituencies, and use cases to consider. Here are some additional, overarching items to keep in mind.

Scale. Will you begin your badge initiative as a pilot or a full implementation? Will your badge program be for a specific program or department, or will it be institution-wide? A larger, broader deployment may take more time and coordination and will involve more stakeholders as the system is developed.

Value. Who will value your badges, and how will you communicate this so the badge program maximizes its relevance? Will there need to be external and internal communication or marketing to build awareness of the badges' value and utility? Will their value be determined by the exclusivity or degree of difficulty to obtain them? What role will the evidence required to obtain the badges have in determining their value? Who will assess or ultimately determine the value of the evidence?

Marketing. Closely related to the value of a badge is how the entire program is marketed. Internally, will there be any common institutional standards or policies needed, or can those come later? Will badges be sharable and consumed outside the institution? If so, how will they need to be contextualized? Should there be an outward-facing description of credentials and badges that helps the uninitiated appreciate the value of your badges?

Administration. Depending on the scale of your badge program, you will need to consider how many people need to be involved in administering and issuing badges. If a badge system is implemented at an institutional level, there may be a few special considerations regarding the administration of badges:

- Who has the ability to create new badges?

- Who can issue a badge?

- Who verifies achievement if evidence is required?

- Will all badges be public and "sharable," or will some badges stay within an institutionally controlled system, either open or closed?

Learning Management System (LMS) Considerations. A few LMSs allow for the issuance of badges. An important consideration is whether those badges are intended to "gamify" the course experience, signal progress within a course, represent competency acquisition, or signify completion of the full course. Likewise, not all LMS badges are externally sharable; some can only be shared in the LMS itself.

Conclusion

Many organizations are looking to provide a means to recognize learning and achievement in a way that moves beyond the traditional transcript or resume and captures a more granular set of accomplishments and skills demonstrated in a broader collection of settings and programs. A digital badge system can help unify how we represent successful outcomes in the many learning opportunities in higher education, from formal activities and assessments to more informal and cocurricular activities. A deliberate, thoughtful system can introduce learners at all levels to new pathways and can act as a catalyst to explore additional experiences. It also can foster academic growth, professional development, and workforce advancement by turning verified skills and achievements into official credentials and opportunities.

Digital Badging Resources and Examples

The resources and examples below are organized into categories that illustrate how badges are being used to respond to an opportunity or a goal within each organization.

Student Skills, Competencies, and Cocurricular Achievement

- University of Alaska Anchorage (UAA): The Exploration of Digital Credentials for Professional Learning at UA. UAA Academic Innovations & eLearning offers professional development

opportunities in the form of workshops, group training, consultations, course review, and community connections.

- Concordia University Wisconsin's Office of Continuing and Distance Education: Learning Beyond Letter Grades. In this MOOC, students work through the self-paced course and pursue the badges that correspond to the modules they're interested in.

- University of Central Florida: Information Literacy Initiative. Digital badges are awarded to students for completion of any of UCF's Information Literacy Modules. In this program, which supports both student and faculty, learners progress through literacy modules and earn badges for completion.

- OpenSUNY Learning Project: Metaliteracy. The Metaliteracy badging project is designed with a focus on flexible, individualized learning, where participants go through self-paced interactive quests and challenges, through which they learn to produce, evaluate, select, and share information. The quests allow participants to choose paths relevant to them as they navigate the constellation of available badges.

- University of Notre Dame: ePortfolios and Digital Badges. Students receive digital badges that recognize accomplishments in their e-portfolios.

- Elmhurst College: Skills for the Digital Earth: The Use of Location Technologies for All. In this MOOC, students receive digital badges for skills they've mastered after each completed module.

- Harvey Mudd College: Computing and Information Services. The Educational Technology Services Group has awarded digital badges to students who attended Scientific Computing and High-Performance Computing workshops. In addition to participating in the workshop, students completed tasks such as completing a quiz and then writing a program outside the workshop to qualify for a badge.

- University of Wisconsin–Stout: Professional Development Courses. Courses at the School of Education use badges to certify mastery of specific skills within graduate-level courses.

- Coastal Carolina University: Badges. This initiative digitally distributes course content across the first-year composition program to support the development of students' academic reading and writing skills; Coastal Composition Commons, or CCC, is meant to help the English faculty create a systematic way to celebrate and mark students' mastery of critical skills.

- Portland State University: Digital Badges for Creativity and Critical Thinking. The purpose of this project was to create a digital badge curriculum to certify and acknowledge skills attainment for creativity and critical thinking and deploy this curriculum for a subset of undergraduate students in Community Health.

- Deakin University: Deakin University will be offering a master's degree in information technology for earning a series of credentials (through DeakinDigital, a subsidiary of Deakin University) and one unit of study at the university.

Engagement/Scaffolding Experiences

- Pierce County Library System: Scout. The Scout program supports an interactive community to interact with the library virtually where they can explore library services, incentivize customer behavior, and participate in and complete several activities, from small to significant.

- *The Potential and Value of Using Digital Badges for Adult Learners* is a publication that serves as a general resource about digital badges and adult learners and explores the potential and opportunities for developing and implementing a system that supports recognition of an individual's knowledge and skills.

- New Mexico State: New2Online. This professional development program, which uses a faculty audience for badges, helps track where mentees are through PD process and helps know what benchmarks have been hit. Department heads are also stakeholders that support faculty PD. The badge is accompanied by a financial reward for completing the deliverables, which are related to process for redesigning a course.

Faculty and Workforce/Professional Development

- Texas Wesleyan University's Center for Excellence in Teaching and Learning: Badges 2.0. This program awards badges for participation in faculty development programs to recognize soft and technical skill development.

- State University of New York Tools of Engagement Project (TOEP) is an on-demand professional development model among faculty across SUNY campuses.

- The EDUCAUSE Badging Initiative is an example of a professional association issuing digital badges for workforce development, contributions to the field, subject-matter expertise development, and community service.

- New Media Consortium, NMC Academy, is a global network of creative innovators from dozens of universities, colleges, schools, and organizations around the globe with a wide array of minicourses or learning experiences.

- University of Alaska, Digital Credentials for Professional Learning, is a badging program that is aligned with national standards, such as the National ISTE Standards (International Society for Technology in Education) for Teachers and Technology Coaches.

- The Adobe Campus Leaders program issues to educators a range of badges that relate to their skills and abilities in digital media, such as video, animation, and creativity. These badges support a global community of educators who foster creativity with Adobe products and tools.