OPEN BADGES FOR EMPLOYEE SKILL TRACKING

Kyle Clements, Sam Jackson, & Richard E. West
Brigham Young University

This case explores the creation of an open badge student-employee training program. Utilizing competency-based learning, we created nearly 40 digital credentials for technical skills related to various software products. We specifically share the decisions we made related to the process of defining competencies, formatting badge criteria, and building a flexible learning system. We also discuss various challenges, including how we motivated employees to participate in the program and unforeseen challenges related to selecting a badge issuing tool.

Kyle Clements is an alumnus of the Instructional Psychology and Technology department at Brigham Young University. His research interests include lifelong learning, digital credentials, and usability.

Sam Jackson is a master's student in the Instructional Psychology and Technology department at Brigham Young University and employed at the Harold B. Lee Library Multimedia Lab. His research interests include educational museum design, open education, and learning theory.

Richard E. West is an associate professor who teaches courses on instructional technology foundations, creativity and innovation theories, and academic writing and evaluation. He researches how to evaluate and design environments for fostering collaborative innovation, as well as the development of online learning communities and open education/credentials.

INTRODUCTION

The Harold B. Lee Library Multimedia Lab at Brigham Young University serves students and employees by offering access to media production equipment, providing technical assistance for software products, and teaching workshops on how to use these products.

The goal of this project was to implement a program that would guide multimedia lab employees in obtaining the skills necessary to fulfill their responsibilities and enable managers to keep track of which employees have specific skill sets.

Kyle sought out and partnered with the multimedia lab to complete this project as part of a graduate requirement. Sam was employed at the multimedia lab and worked in a mentorship role with several employees.

Our solution involved the creation of a competency-based training program in which employees earn digital microcredentials representing their ability to use various tools.

THE DESIGN CONTEXT

The multimedia lab employs 15 to 20 student employees at a time. Those who are hired are typically familiar with at least one or more of the products the multimedia lab helps with. These include software products from Adobe, Microsoft, Google, and other providers. Multimedia lab employees are also responsible for maintaining and checking out multimedia equipment such as cameras, tripods, lighting equipment, and other tools.

Managers do not expect employees to gain advanced knowledge regarding every tool; however, it is anticipated employees will develop the ability to solve common issues a patron may face with the most popular tools.

Prior to this project, employee training on each of these tools was primarily self-directed and inconsistent.
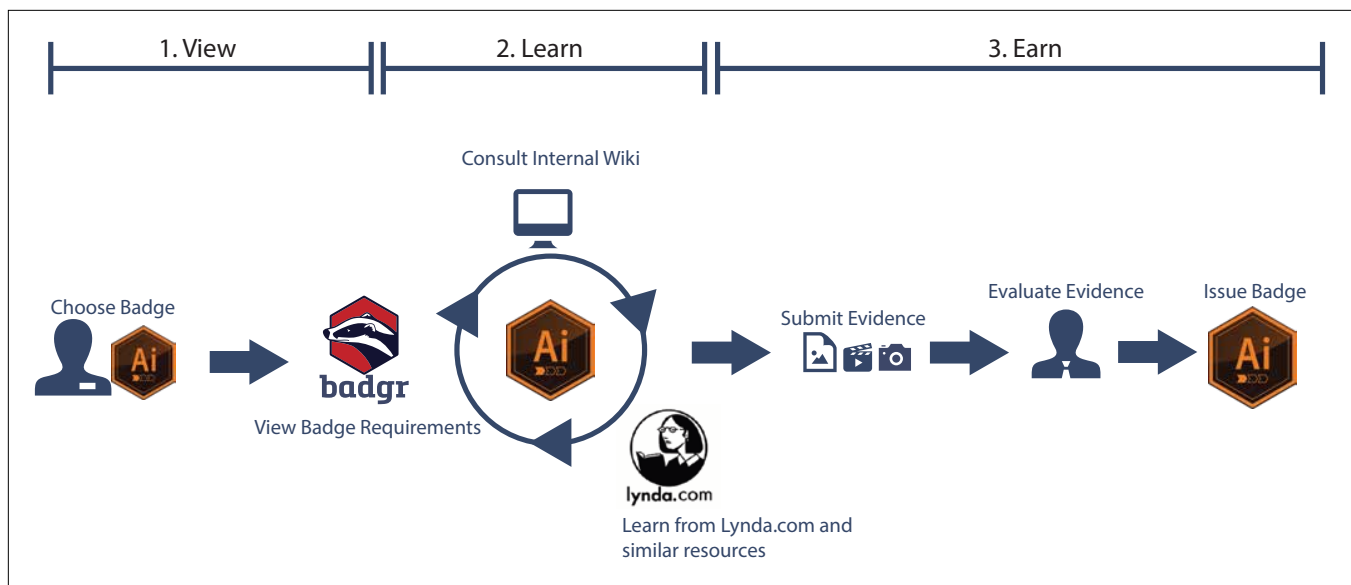
FIGURE 1. Diagram illustrating the process to earn multimedia lab badges.

OVERVIEW: THE TRAINING PROGRAM

We designed the training program around the process of qualifying for various digital credentials. The experience of employees, the learners in this program, can be divided into three stages (Figure 1): (1) View, (2) Learn, and (3) Earn.

1. *View*. During this stage, employees select a badge relevant to their learning needs and review the associated require- ments. Employees may choose which badges they will earn; however, a recommended learning pathway is provided to direct students to learn the most commonly used tools first.

2. *Learn*. After reviewing badge requirements, employees may qualify for those requirements using any available resources. An internal wiki provides employees with a list of recommended resources, including relevant Lynda.com courses and other online tutorials.

3. *Earn*. Every badge in our program requires the submission of qualifying evidence to be evaluated by a fellow employee. Evaluators are selected based on their skill level with specific tools. Potential badge earners may submit evidence multiple times and refine their submissions based on the evaluator's feedback.

GUIDING DESIGN PRINCIPLES

Several design principles guided this project. These princi- ples were established based on input from multimedia lab management and the constraints for this project.

Competency-Based Learning

Competency-based learning (CBL) is an instructional strategy that emphasizes learner achievement over time spent learning. Instead of requiring all students to progress at the

same pace, these strategies allow students to progress once specific competencies have been achieved (Donoghue & Chapman, 2013). Other titles for this approach include mastery-based, performance-based, and proficiency-based education (Brodersen et al., 2017).

These strategies enable learners to proceed at their own pace by skipping course content entirely if they can demon- strate mastery of the criteria (Wolfe, 2012). Our decision to use a competency-based approach was based on the following factors.

Skills-Based Criteria

The manager of the multimedia lab was interested in under- standing an employee's skills and not dictating how those skills are obtained. Many employees joining the multimedia lab have experience with one or more of the tools offered. A CBL approach allowed us to integrate employees of varying skill-levels by allowing employees with specific experience to pass beginner-level criteria quickly.

Schedule Flexibility

Employees' availability varies each semester based on their course schedule that semester. This limits the ability to hold regular training meetings where all or most employees can attend.

Cost-Efficiency

Due to the number of tools available for employees to learn, we assumed that establishing and refining competencies would be more sustainable and cost-efficient than maintain- ing tutorials on every topic. We chose to rely on resources such as Lynda.com to provide students the necessary knowledge to use each tool.

Open Badges

In 2012, the Mozilla Foundation released the first public beta of the Open Badge Infrastructure, a verifiable, evidence-based digital credential. Open Badges are image files embedded with metadata providing additional information about the credential. This information includes who issued the credential, what was required to earn it, and the evidence demonstrating that the requirements were met. After an Open Badge has been issued and accepted by the earner, they control how, when, and to whom their credential is displayed. We included Open Badges in our design for several reasons.

Open Badges and CBL

Open Badges have frequently been associated with CBL (Soares, 2012). One reason for this association is the ability to embed evidence within Open Badges that can communicate what the learner accomplished in order to receive the badge. We included Open Badges in this project in part because they provide a useful means to record and display an employee's efforts to learn a specific tool.

Portable

Open badges can be exported and transferred between systems. This enables learners to control how, when, and to whom their credentials are displayed. Potentially, this could allow employees to use these tokens as additional recognition of skills when applying to new jobs and opportunities.

Future Projects

Finally, the multimedia lab plans to utilize Open Badges to recognize the skills of students enrolled in their technology courses. These badges will then represent meaningful achievements to job opportunities located on campus. Providing these credentials to their own employees allows multimedia lab management to experiment with the concept of using badges.

DEFINING COMPETENCIES

A fundamental component of designing the training program was establishing competencies. We decided to utilize the current employees, who teach courses on these competencies, to assist in developing these standards for the specific tools where they were most expert. To support these employees, we created a competency template and example badge for them to refer to.

FIGURE 2. A screenshot of the blank badge creation template. View the template here.

Competency Template

The competency template we created was a google document containing five labeled boxes for subject matter experts to complete (Figure 2). We could have created the badges directly in our chosen issuing tool; however, a google document format facilitated collaboration and feedback as we worked with subject matter experts to refine each competency.

In order to create a more consistent experience throughout the training program, we also chose to provide subject matter experts a completed sample template (Figure 3).

Competency Criteria

The goal of our program was to guide employees in obtaining the technical skills necessary to fulfill their work responsibilities. Because of this, we designed each competency to highlight the most common features employees use within each product while on the job. Most of the badges we created have two basic requirements: (1) a skill demonstration and (2) a creative project. Exceptions to this format included tools with limited creative function (E.g., Microsoft Outlook) or essential non-creative knowledge (E.g., helping students properly format a thesis document).

FIGURE 3. A screenshot of the example badge creation template. View the example template at https://drive.google.com/file/d/1YpA6syNOUoQxkzZ0b0RJ-pY1zlNdHi5f/view?usp=sharing

Skill Demonstration

This requirement involves a badge earner meeting with a badge evaluator (a fellow employee who has demonstrated expert skill with that program and been assigned to oversee it). In the meeting, the earner demonstrates they understand how to use the features listed in the competency. For example, an employee attempting to complete this requirement for the Adobe Photoshop level 1 badge would need to demonstrate an ability to use the tools listed in Figure 4.

Students complete this demonstration in person or by recording a screencast demonstrating the required skills. We chose this arrangement to foster personalized feedback between earners and evaluators.

Creative Project

The project portion of the competency requires employees to create an artifact using some or all of the features listed in the previous requirement. Initially, we required employees to use *all* of the listed features in their projects; however, this requirement led employees to focus primarily on using every feature instead of creating a meaningful project.

We chose to rely on performance assessments such as this to promote meaningful engagement with the tools as opposed to simply memorizing what specific features are available.

Tiered Competencies

Early in the design process, we recognized it was not necessary for every student to learn all of the features for every product. For example, an employee assisting patrons

Demonstrate skill with:

- Image navigation (zoom and pan shortcuts)
- Layer system
    - Duplicating layers
    - Destructive vs. Non-destructive editing
- Crop tool
- Straighten
- Spot Healing Brush
- Clone Stamp tool
- Red Eye tool
- History panel
- Burn/Dodge tools
- Adjustment Layers
    - Brightness/Contrast
    - Hue/Saturation
    - Color Balance
    - Black & White
    - Vibrance
- Masks
- Brush tool

FIGURE 4. A screenshot of the requirements for a Photoshop badge.

FIGURE 5. Three images representing each level of the Photoshop competency.

with Adobe Photoshop at the help desk does not require the same level of knowledge as an employee teaching a photoshop workshop.

In order to facilitate the attainment of various skill levels, we divided the competencies for most tools into three stages (Figure 5): (1) Beginner, (2) Intermediate, and (3) Expert. These levels are further explained later.

1. *Beginner*. Employees who earn badges at this level understand the essential features of a tool and can use it to create simple projects. We chose to design this stage to help indicate which employees have a general understanding of a tool and can assist patrons at the help desk.

FIGURE 6. A screenshot of the beginner-level WordPress badge. The badge image is always displayed next to the title of the badge.

2. *Intermediate or Teaching*. Employees who earn badges at this level can use all the features taught about a specific tool in multimedia lab workshops. We chose to create this stage to assist management in identifying employees with the knowledge necessary to provide workshops. It also identifies employees who have gone beyond the basics to learn many of a tool's commonly-used features.

3. *Expert*. This final stage indicates the employee has completed several projects using the specific tool and has an advanced understanding of its features. One reason we chose to include a third level badge for most products was to help management recognize which employees may be capable of serving as evaluators for each tool.

Software Specific Competencies

We designed our competencies around specific tools (e.g., Wordpress) instead of broader skills (e.g., Web Design). We chose this format because the responsibilities of multimedia lab employees are typically tool-specific. The drawback of this decision is that individual tools are often updated, and essential features may change over time. These changes could require more frequent updating of competency criteria than if our competencies focused on broader skill-sets. Badge evaluators are responsible for updating competencies to represent a tool's current features. These evaluators assured us that someone regularly using these tools can typically keep up with the pace of any updates.
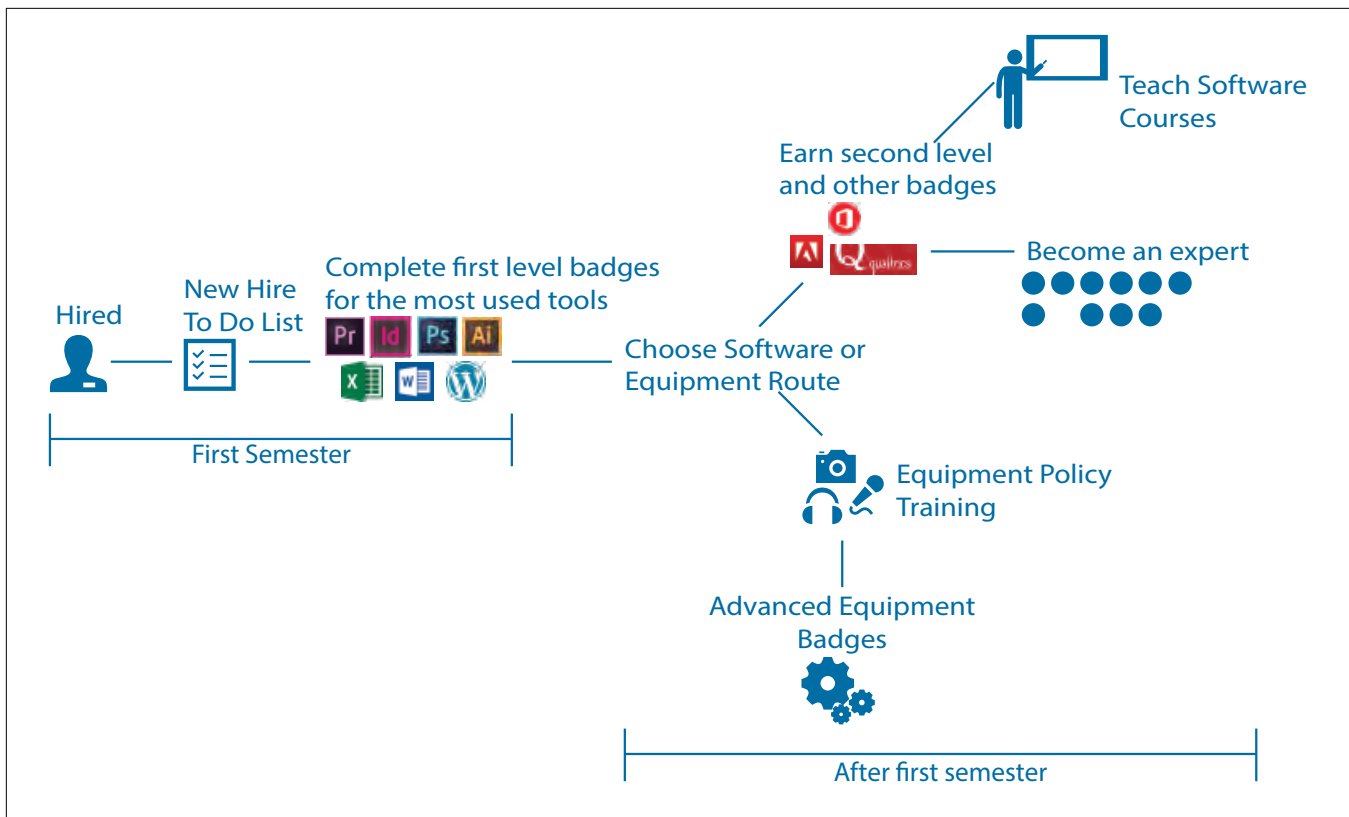
FIGURE 7. A diagram outlining the initial design for skill pathways throughout the badging program.

Badge Images

Badge images were designed to reflect the software product or skill they represented. We chose not to include the title of the badge on the image for two reasons. (1) Our naming conventions for each competency level changed throughout the project, and (2) the issuing tools we reviewed nearly always display the name of the badge alongside the image (Figure 6).

Recommended Earning Pathways

One of the main goals of the badge program was flexibility. We initially made no recommendations for the order in which employees should earn badges. However, after several new employees mentioned feeling confused and unguided, we chose to prepare a list prioritizing the essential badges. Employees' quarterly raises were dependent on their progress along this path. Each semester, each employee was required to earn at least three badges: two of these essential badges (especially Adobe Photoshop, Microsoft Word, and Adobe Premiere), and one of their choice.

In the early phases of the design, we intended to develop separate learning paths (Figure 7) and have employees specialize in either workshop training or equipment checkouts after their first semester. This plan was abandoned after a summer of particularly high employee turnover made it

impossible to staff the range of positions with only experienced employees. Instead, all employees were trained to manage the equipment soon after being hired and to teach workshops beginning in their second semester.

DESIGNING BADGES

Representing competencies as digital credentials brought a variety of unanticipated challenges related to selecting a badge issuing tool, formatting badge content, and designing badge images.

SELECTING AN OPEN BADGE ISSUING TOOL

Several tools exist for issuing Open Badges. These tools can facilitate the review and issuing processes, ensure badge portability, and provide data related to an organization's issued badges.

We did not anticipate the extent to which our design would be influenced by our chosen issuing tool, but the tool's affordances ended up driving other design decisions. Many platforms are available for issuing Open Badges. We reviewed several issuing tools based on their ability to support our intended badge reviewing process, cost for implementation, and usability.

- **Acclaim:** https://www.youracclaim.com/
- **Accredible:** https://www.accredible.com/
- **Badge List:** https://www.badgelist.com/
- **Badge School:** http://badgeschool.org/
- **Badgr:** https://badgr.io/recipient/badges
- **Credly:** https://credly.com/
- **Open Badge Factory:** https://openbadgefactory.com/
- **OpenBadges.Me:** https://www.openbadges.me/

None of the tools we reviewed fully satisfied each of these criteria. Unexpectedly, we found that none of the existing tools offered permissions to allow an employee to be a reviewer for specific badges and not others. This was problematic as our badge evaluators would also be badge earners. We eventually limited our decision to a few badge issuing tools that one or more of the designers had prior experience with.

We initially selected Badgr, an issuing platform created by Concentric Sky. The greatest drawback of this decision was Badgr's issuer-focused interface. Badgr accounts can issue badges but do not allow badge earners to apply for badges within the interface. We attempted to circumvent this issue by using google forms for the submission process; however, this setup confused employees and complicated the badge earning process.

For this reason, we recreated our badges with BadgeList. com. The functionality of this website aligned better with our intended process.
All employees could now use a single website to apply for badges, view earned badges, and evaluate other employees' submissions.

Getting Started Badge

Another challenge we faced conforming to our program design with our selected badge issuing tool was usability. User-testing with multiple employees revealed that attempts to apply for and earn specific badges were prone to error. To address this issue, we created the Getting Started badge (Figure 8), which introduced employees to the training program and guided them through the badge application process.

Decorative Themes and Professionalism

The manager of the multimedia lab requested a gamified theme be included in the program. As a team, multimedia lab employees had voted to include decorative elements inspired by Nintendo's *The Legend of Zelda*.

Early on, however, we recognized this theme could potentially detract from the professional value of the microcredentials employees earned. For this reason, the thematic
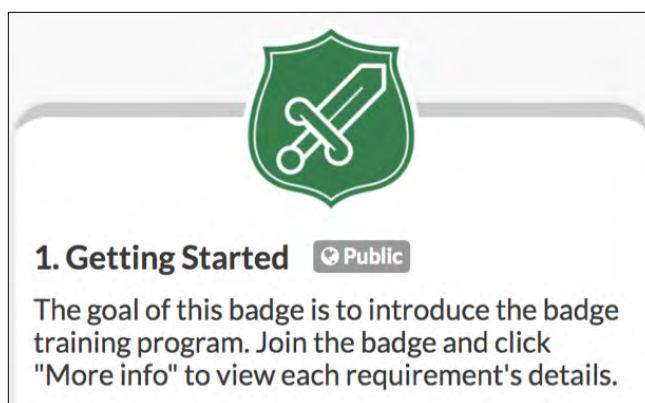

FIGURE 8. A screenshot of the Getting Started badge description.

elements we designed for the training program were limited to internal-facing aspects of the training program only.

For example, although employees who review submitted

FIGURE 9. A picture of a gamified employee progress chart and lanyard.

evidence are referred to as *sages* internally, all references to this role within public-facing badge requirements refer to them as evaluators. The badges themselves similarly have two names, sometimes being referred to as *medallions* internally.

Additional Incentives

Our initial iterations revealed the training program was particularly engaging for employees with a year or less experience. Employees with more experience, however, tended to be less motivated to apply for and earn badges for the skills they had already obtained.

In order to motivate employees such as this to participate in the badging program, we connected the achievement of badge-related goals to quarterly raises in employees' pay. This change successfully motivated all employees planning to work the following semester to participate in the program.

Physical Representation

To help employees celebrate their badge-earning successes, we created physical representations of their digital progress in the form of *Legend of Zelda* inventory sheets and lanyard pins (Figure 9). These physical credentials are distributed and celebrated at weekly team meetings.

The inventory sheets were created to display each employee's badges in the office in a form that more fully embraced the *Legend of Zelda* theme. They were designed to look like the equipment screen from the pause menu in *The Legend of Zelda: Ocarina of Time*. These sheets also became useful places to mark any employee progress, which wasn't represented digitally, such as their new hire training or certification to teach workshops.

Pins on employees' name tag lanyards further display their progress and make it easier for library patrons to tell which programs a particular employee has skill with. Originally, we created these pins by borrowing a button maker from another office on campus but found that the large size of the buttons (almost a 2" diameter) looked strange and weighted nametags oddly, so employees were reluctant to put their earned pins on their lanyards. After discovering that another office in the library had a much smaller button maker, we recreated the pins (now 0.75" in diameter), and they have been much more widely adopted.

Following the implementation of the physical badges, the Multimedia lab manager began formally recognizing those who had earned badges in a monthly team meeting. This procedure includes playing dramatic music as each employee's name is announced. This manager commented, "The [badging program] helps me give recognition to my employees, which is something I am not good at doing naturally as a manager."

Overall, the implementation of the badging program has been a success. Plans for expanding the program are already in progress, and regular employee feedback will continue to guide future iterations.

CONCLUSION

Our goal was to create a competency-based employee training program that was skills-based, cost-efficient, and flexible to a myriad of employee schedules.

We faced a variety of challenges related to defining competencies and representing them as Open Badges. In order to cover a breadth of tools, we relied on employee expertise to define our competencies. We assumed designing the badge earning process independent from a specific badge issuing tool would allow us to design a more optimal experience. However, we found the rigidity of existing issuing tools forced us to alter our initial design.

We attempted to design our badges to be interpretable by a variety of potential audiences. The portability of open badges limits the ability to design the user experience for this process; however, we wrote badge descriptions and content with such audiences in mind.

We found our design was engaging for newer employees, but more experienced employees required additional incentives to participate in the program. We are encouraged by the initial results of the training program, and the supervisor of the software training department is now looking into expanding the badge program beyond employees to any student on campus attending the software training workshops.

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