Digital Badges

Recognizing, Assessing, and Motivating Learners In and Out of School Contexts

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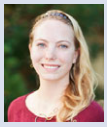
Zainab Oni was a high school student who attended the Hudson High School of Learning Technologies in New York, New York. At 12 years old, she had moved from Nigeria to New York City in a transition that was challenging for her. While at Hudson High, Zainab connected with MOUSE Squad, a youth development program designed to train students in economically challenged communities to be the technology and web literacy experts for their schools. Zainab also joined MOUSE Corps, an advanced program that focuses on design, technology, and applies student interests to create new technologies and solutions for social good.

In these two MOUSE programs, Zainab was able to connect with other like-minded students and take on leadership positions both in school and out of school. Importantly, she was able to learn to lead in the spaces in-between. Zainab worked with peers to create adaptive technology prototypes for individuals with disabilities using human-centered design concepts. One of these inventions included a watch-like device that would vibrate when food was placed on the plate of an individual with visual impairment. This work earned Zainab an invitation to the Annual Science Fair held at the White House. For an overview of Zainab's accomplishments, please review the following blog post: http://wiobyrne.com/zainab-oni/.

In the MOUSE programs, "open digital badges" were developed and issued to students in online spaces to document learning and accomplishments. These badges served to indicate Zainab's technical competencies and to document individual and collaborative accomplishments. Most importantly, the badging platform documents the learning occurring through the interactions and connections across the MOUSE program. The learning trajectory that is evidenced by the badges and the personal connections Zainab built up during her time at Hudson High led her to a full scholarship at the University of Virginia where she is now studying engineering. Zainab is an exemplar of a new breed of technologists MOUSE aims to support to help technological solutions come true. While Zainab's efforts and the MOUSE programs are much more than a credential can represent, they do provide a promising new way to help recognize and motivate these important new kinds of learning.

Digital Badges

Digital badges are web-enabled tokens of accomplishment. They can contain specific claims and evidence about learning and are intended to circulate in social

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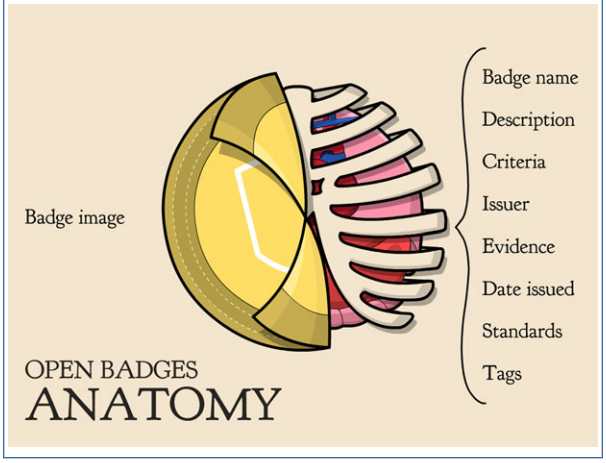
Journal of Adolescent & Adult Literacy 58(6) March 2015 doi:10.1002/jaal.381 (pp. 451–454)

FIGURE 1 Graphical representation of the elements of open badge anatomy. Image used with permission and CC by Kyle Bowen, @kylebowen



networks that badge issuers and earners participate in (Knight & Casilli, 2012). Much like traditional scout badges, the badges themselves are visual representations of learner accomplishments. Unlike traditional scout badges or other credentials such as school grades or transcripts, digital badges can contain specific claims regarding what the earner learned or did, and detailed evidence supporting those claims (see Figure 1). Badges usually consist of an image and relevant metadata (e.g., badge name, description, criteria, issuer, evidence, date issued, standards, and tags). This makes it possible for viewers to click on a badge and see the artifacts the learner created to earn a specific badge. Observers and earners are able to map out a learning trajectory to see which badge should be earned next. To learn more about digital badges, please review the following blog post: http://wiobyrne.com/digital-badges-overview/.

This new technology has the potential to break open existing economies for recognizing learning otherwise not found in information gleaned from grades. Digital badges are currently used in a variety of contexts such as teacher education (Metha et al., 2013), online professional networking communities (Love, 2014) and in Massive Open Online Courses (MOOCS; Oliver & Connors, 2013) to represent new ways of recognizing and assessing learning.

Digital Badge Ecosystems

One of the challenges in introducing badges into the mainstream is appreciating that while badges convey information, there are no set standards for the information contained in the metadata for each badge beyond the eight fields shown in Figure 1 (Gibson, Ostashewski, Flintoff, Grant, & Knight, 2013). Additionally, a badge does not guarantee that those outside specific learning communities recognize the achievement or metadata as a credible marker of success. Badges and badge systems are intended to function within larger learning "ecosystems" that includes issuers, earners, educational content, programs, institutions, and so on. The value of a badge and credibility of the particular claims it contains are presumably constructed communally by all of the participants in that ecosystem (Casilli & Hickey, in press).

Within the MOUSE badging ecosystem, credibility is established by translating skills and dispositions into those needed in the workplace and professional settings. The program trains youth to join teams of peer experts who provide technology support during the school day and apply those skills to creative projects in afterschool and elective settings. In contrast to formal certification for the networking support skills that they might earn (e.g., Cisco certification), MOUSE earners have a role in determining what competencies are recognized and how those competencies are assessed. Including the students as well as embedding industry practice in determining learning pathways adds credibility to the credentialing program.

By introducing youth to professional communities of practice, MOUSE enables them to gain exposure and develop their skills in an age-appropriate professional work setting. The program extends students' experience after school by connecting them with a peer community with shared interests. The online credentialing system allows students to identify their achievements and pathways of learning. The badges focus on the skills and accomplishments that do not receive much attention but are critical to the function of school communities and student identities.

Design Principles for Using Digital Badges

In exploring these novel ways of credentialing learners, the Design Principles Documentation (DPD) Project led by Dan Hickey attempted to capture the design principles for open digital badges that emerged across the 30 organizations awarded grants to develop badge content in the 2012 *Badges for Lifelong Learning Initiative* during the past two years. The MOUSE ecosystem profiled in this column was one of the projects involved in the

TABLE 1 Sample of Findings from the Design Principles Documentation (DPD) Project	
Most Successful	**Principle**
Recognition	Using badges to map learning trajectories
Assessment	Promoting "hard" and "soft" skill sets through a combination of collaborative learning and discrete skills
Motivation	Recognizing identities and roles within a system such as "journalist" or "peer mentor"
Most Challenging	**Principle**
Recognition	Seeking external backing or credential that is valued by outside entities
Assessment	Using e-portfolios that foster discussion around artifacts
Motivation	Giving earners incentives as a result of earning a badge

initiative and studied by the DPD project. As shown in Table 1, one outcome of this study is empirical evidence regarding which design principles for using badges these projects found easier or harder to enact. The open project database (http://dpdproject.info/) provides details regarding which badges individual projects attempted and what factors impacted success. By examining the MOUSE program we can examine the three categories of principles identified by the DPD project (e.g., recognition, assessment, and motivation). For more information about the DPD findings, please visit the following website: http://remediatingassessment.blogspot.com/2014/10/open-digital-badges-recognizing.html.

Recognition and badges. Regarding recognition, two of the most challenging design principles were associating badges with existing credentials and determining how learners will interact with badges to unlock their value. Within the MOUSE ecosystem the value is placed on a range of organizational, technological, and interpersonal skills. Community recognition in the MOUSE ecosystem is reflected in the form of peer awarded badges. This rewards students for community involvement and project collaboration.

Assessment and badges. Naturally, most efforts to recognize learning must also involve some form of *assessment*. MOUSE badges embraced the distinction between "hard skills" that lent themselves to more formal assessment and "soft skills" (i.e., contextualized practices) that are not typically recognized in formal education settings. Like many other badge projects, MOUSE also included e-portfolios and used them to support social learning by involving educators and students in the assessment process, as well as peer-issued badges that aimed to move youth toward the center of the assessment process.

Motivation and badges. One of the key assumptions of the DPD project is that any effort to assess and recognize learning will always alter the *motivations* for learning (Schiefele, 1991; Harlen, 2006). These unintended, but inevitable consequences, called *motivational functions* may often differ from the *purposes* for the badges. In contrast to many of the other 2012 *Badges for Lifelong Learning Initiative* projects, MOUSE was quite deliberate about their motivational strategies from the outset. Participants started with the certification curriculum and leveled-up by accumulating micro-achievements that could add to macro-achievements represented by specific badges. Students can identify the achievements they find most important and complete the micro-achievements to complete specific macro-achievements or badges. While such learning "pathways" might seem similar to the traditional "competency-based" approaches, earner participation in badge definitions and peer assessment seems to set this approach apart from these better known practices. For more information about the other *Badges for Lifelong Learning Initiative* projects, please review the following website: http://www.hastac.org/digital-badges#projects.

Conclusion

As students increasingly read, write, and learn in hybrid learning spaces, educators need to recognize

learning pathways across these contexts. Moving across in-school and community contexts through these learning experiences presumably will prepare students for the more fluid and dynamic networked learning contexts of the future. Digital badges promise to help students like Zainab and her peers to actively construct and obtain feedback on learning pathways that they co-construct with other participants in the ecosystem. Significantly for researchers, the micro-achievements and macro-achievements earned along the way promise to provide a compelling record of that pathway. Specifically, Zainab's record of her badges earned includes specific evidence of each of the small accomplishments that together defined an even larger path toward university admission and scholarship.

In a traditional learning context, there are many gaps in the assessment and evaluation system, including an inability to place value on skills generally not recognized in the classroom. Badges shift the focus from achievement measurement through rubrics to personalized achievements that validate learning experiences inside and outside of the classroom environment (McQuigge & Mahar, 2012). When embedded into a curriculum and content rich environment, digital badging ecosystems validate the process of learning and specific skill development that may be missing from traditional learning assessments and evaluations. This is even more essential when integrating the literacies necessary to empower students as readers and writers across learning spaces.

Badging ecosystems like the one designed by MOUSE provide opportunities for learners and mentors to interact in learning spaces that share much with newer networked non-school learning contexts. The open and social element of badging systems, as well as the opportunity to define and follow a personalized learning plan promise to empower students to learn and achieve. But readers are reminded that individual micro-achievements, macro-achievements, and badges by themselves do not create or augment the larger effects of the community. They are merely a vestige, or artifact of learning and interactions that are occurring in the ecosystem. The digital badges, metadata, and associated elements of evidence are invaluable as they provide tangible, digital evidence of this recognition of learning and achievement. It is the responsibility of the developers and members of the ecosystem to identify what representations and recognitions they want exemplified in their badging system. Ultimately it may be these digital badges that are examined and referenced as evidence of learning, and used as a guide for future learners.

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