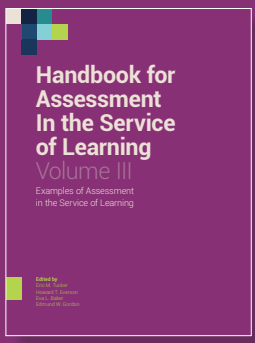
Open Badges as Assessment Innovation: From Digital Media Revolution to AI-Enabled Futures

Constance Yowell and Girlie C. Delacruz

UMassAmherst
University Libraries



Series Editors:
Edmund W. Gordon, Stephen G. Sireci, Eleanor Armour-Thomas, Eva L. Baker, Howard T. Everson, & Eric M. Tucker

ISBN: 978-1-945764-33-2

Suggested Citation:
Yowell, C., & Delacruz, G. C. (2025). Open badges as assessment innovation: From digital media revolution to AI-enabled futures. In E. M. Tucker, E. L. Baker, H. T. Everson, & E. W. Gordon (Eds.), *Handbook for assessment in the service of learning, Volume III: Examples of assessment in the service of learning.* University of Massachusetts Amherst Libraries.

Open Badges as Assessment Innovation: From Digital Media Revolution to AI-Enabled Futures

Constance Yowell and Girlie C. Delacruz

Introduction—Movement Grounded in Experiment

It's 2025. We have been graciously invited to contribute to this extraordinary volume a brief introduction to the topic of Open Badges as educational assessment. To ground this essay, we begin twenty years ago in 2005, in part because, today, as the AI revolution takes off, envelopes us, and demands our attention, we are regularly reminded of the middle and late 00s (or aughts)—another time when a somewhat similar revolution—in digital and social media—took off. Open Badges, and the story of their origin and evolution, may provide a useful window for considering the current opportunities and challenges for assessment innovation.

Traditional forms of assessments rarely capture the richness of real-world competencies and Open Badges were designed to fill that gap. The concept of badges as recognizing discrete, stackable demonstrations of skill is not new. As Baker and Delacruz (2015) note the Boy Scout merit badge system, established in 1911, pioneered breaking down complex achievements into specific, demonstrable skills through authentic tasks. This framework laid the groundwork for today's focus on competency-based learning (Patrick & Sturgis, 2013), where students advance based on demonstrated mastery rather than seat time or test scores. The discrete, stackable nature of merit badges mirrors the structured attainment levels found in qualification frameworks across the United Kingdom, Australia, and New Zealand. A century later, digital badge systems are using technology to recognize real-world skills on a much larger scale.

Like the "Napster moment" when the file-sharing service disrupted the music industry by demonstrating new possibilities without immediately replacing existing systems, Open Badges have pointed toward transformative possibilities while grappling with deeper structural challenges in credentialing and recognition systems. The intentional design of Open Badges with their roots in rigorous educational theory, robust metadata, and a commitment to equity sets the stage for their practical application across diverse educational and workforce contexts.

Connecting Open Badges to Principles of Assessment Innovation

In 2005, the John D. and Catherine T. MacArthur Foundation launched an initiative in *Digital Media and Learning*, eventually investing $250 million over a decade to support research and the design of new approaches to learning. We write as co-architects of the Open Badges project infrastructure—one of us a program officer at the MacArthur Foundation, the other a grantee involved in the implementation effort at the field level. Our goal is not to defend the work, but to reflect on the design intentions and future value of Open Badges. This period revealed to us and others involved the emerging potential of digital media and the Internet to transform learning from its traditional focus on content consumption—what James Gee evocatively refers to as "a fetish on consumption"—to more participatory and production-oriented forms (Gee, 2003). It also became clear that traditional forms of recording and signaling learning—primarily content mastery attested by grades or diplomas—did not capture much of what mattered to learners, nor did they reflect the realities of digital participation.

By 2010, the marriage of deeper learning principles with the technical architectures of the Internet was not just possible, but necessary. In 2011, the Mozilla Foundation, Peer 2 Peer University, and the MacArthur Foundation, released the foundational Open Badges white paper outlining the three core components of a badge infrastructure: the badges, underlying assessment practices, and technological standard and metadata framework that enable cross-contextual use (Mozilla Foundation & Peer 2 Peer University, 2011).

From the start, Open Badges were intentionally crafted to align with cutting-edge research on pedagogy and assessment. The early design teams collaborated closely with leaders in game-based learning and equity-driven assessment—many of whom have contributed to this Handbook series—to ensure the metadata and badge infrastructure reflected the following overarching goals. Open Badges use an

argument-based approach (Kane, 1992) to establish validity, triangulating evidence and analysis to support validity claims within specific contexts. A badge's credibility depends on the quality and transparency of the evidence behind it. By grounding the design of Open Badges in established frameworks like Evidence-Centered Design (Mislevy, Almond, & Lukas, 2003) and Model-Based Performance Assessment (Baker, 1997), then encoding these principles into machine-readable metadata, Open Badges made technology essential to establishing validity in badge-based assessment.

To that end, the Open Badge Standard was designed to include high quality and transparent evidence of learning and performance. The metadata specification—the "bones" of a badge—was created to include, among other things:

- **Achievement descriptions** that detail what the badge represents, its context and specific achievements;
- **Criteria and requirements** that detail what must be met and completed to earn the badge;
- **Evidence** that provided examples of the work or documentation justifying the award of the badge;
- **Standards Alignment** that included a reference to educational or industry frameworks.

This attention to transparency, transferability, motivation, structure, adaptation, equity, and quality echoes the seven animating principles of this volume:

—***Principle 1***: With an emphasis on transparency, every badge includes clear descriptions, explicit criteria, and links to evidence—making assessments understandable to all stakeholders.

—***Principle 2***: With an emphasis on transfer and explicit focus, badges aimed to document skills and outcomes in ways that could be meaningful across diverse settings.

—***Principle 3***: With an emphasis on motivation and engagement, the flexible design was intended to ensure they were "owned" by the learner and supported reflection through self-curated learning pathways.

—***Principle 4***: With an emphasis on modeling expectations, Open Badges can scaffold and represent structured learning progressions—horizontal or vertical—across time.

—***Principle 5***: With an emphasis on feedback and adaptation, Open Badges could incorporate immediate feedback through iterative tasks and adapt to various forms of learning and assessments.

—***Principle 6***: With a driving emphasis on equity, Open Badges enable credentialing of skills gained in community, informal, or workplace settings—not just traditional academic venues—broadening participation and valuing often marginalized forms of learning.

—***Principle 7***: Emphasizing quality and validity of evidence, each Open Badge embeds access to evidence, issuer reputation, and standard alignment.

With this theoretical and technical foundation in place, we turn now to real-world implementations that test these principles in practice.

Use Cases—Learning from Experience

In today's evolving workforce, valid credentials serve as powerful levers to unlock opportunity. We provide two examples to exemplify this potential: the "This Way Ahead" Gap Inc. workforce preparation program and a badge-to-credit initiative in partnership with Southern New Hampshire University (SNHU).

Each of these examples was a project run by LRNG, a nonprofit, supported by the MacArthur Foundation and established by the authors in 2015 to design and implement "badged" pathways of learning for youth across cities and their communities. The LRNG badge and pathway platform reframed learning as a connected ecosystem, partnering with schools, city agencies, businesses, community organizations, libraries, and museums. Two core elements of the LRNG platform were playlists, which were narrative collections of one or more online or in-person experiences (XPs) stitched together into a compelling media-rich narrative around a common theme. Learners could also earn an LRNG badge to provide verifiable evidence of a substantive learning outcome of an organization's choosing. Badge credibility rested on community norms and shared values. Sometimes badge issuers restrict acceptable evidence types, based on what was appropriate for the learning experience and what counts within

that community. Other times, learners had full discretion over what to submit that counted as evidence. As such, the creation and empirical inspection of the validity argument put primary emphasis on front-end specificity in collaboration with relevant stakeholders including students, employers, and curriculum designers.

LRNG badges also integrated community membership and uptake as part of the validity argument. Badge metadata recorded the issuing organization, making it clear whose norms and values underlie the credential. Ecosystem members could share and re-issue badges, creating networks of endorsement, bolstering their credibility. When multiple organizations recognized and even re-issued the same badge, they collectively affirmed the value of both the credential and its supporting evidence.

The LRNG Platform made the learning network visible, surfacing who else had adopted each badge and reinforcing each badge's validity through community demand. This convergence of structured metadata, evidence artifacts, community endorsements, and transparent inspection demonstrated how technology could weave evidence and inference into a single, interoperable credential.

Each of these examples illustrates how the foundational principles and architecture of Open Badges have been translated into practice, and how badges, grounded in rigorous assessment design can reliably signal learner competencies and open pathways to employment and higher education.

"This Way Ahead" Digital Pilot

The This Way Ahead Digital Pilot (TWADP) brought together Gap Inc., community-based partners, and LRNG to create a suite of Open Badges that qualified young people to interview at Gap retail stores. Drawing on Gap Inc.'s *This Way Ahead* curriculum and insights from interviews with human resource specialists, store managers, and regional managers, LRNG focused on teaching and assessing three core competencies for entry-level sales associates: Teamwork, Conflict Resolution, and Punctuality.

We linked each badge to behavioral objectives, tasks, evidence, and rubrics in a model-based framework. For each of these learning outcomes, we specified the tasks learners would complete, the evidence they needed to submit, and the rubric criteria for scoring. Gap Inc. staff reviewed the framework to confirm that it accurately reflected the targeted competencies and that the artifacts learners submitted constituted valid, appropriate evidence of mastery for each of the learning outcomes.

One illustrative activity asked learners to recount a personal example of teamwork or conflict resolution. Gap Inc. staff reported that strong candidates could effectively articulate how they have used these skills in their lives. We asked learners to draft a concise 2–3 sentence written response and then record a short video practicing their delivery. This two-step task guided learners to draw on examples of using these skills in diverse contexts such as at school, with friends or family, on sports teams, or in clubs. It then had them practice voicing their responses aloud, mirroring how they would share those examples in a real interview. Learners reported feeling more confident in interview settings, and many badge-earners subsequently received job offers from Gap Inc.

This pilot demonstrated how the LRNG platform's Open Badges integration codified the assessment argument directly into each badge. Written reflections, video recordings of learners practicing their responses, and answers to scenario-based quizzes were logged. This data formed the raw material for each badge's evidence field, ensuring that every submission was timestamped, verifiable, and tied directly to the competency being assessed. Once the learner's scores and human ratings met the badge-award thresholds, a rule engine triggered the badge assertion and a badge was awarded which contained the scored artifacts, as well as the seal of authority which denoted Gap Inc. as the issuer, making the entire evidentiary chain visible in the LRNG dashboard. Learners and badge consumers (e.g., future hiring managers, nonprofit partners) could inspect how each claim was supported, making the LRNG badge a self-contained, interoperable argument of competency.

Badges-to-Credit Initiative

LRNG, One Summer Chicago (City of Chicago's summer youth employment program), and Southern New Hampshire University (SNHU) collaborated to demonstrate how informal learning can be translated into formal college credits. Together, they identified a set of playlists and badges that could be awarded credit equivalency through the process of prior learning assessment. Prior learning assessment comprises the processes and practices of determining if knowledge, skills, and abilities gained in a variety of settings may warrant consideration of college credit. For this work, SNHU used the Global Learning Qualifications Framework (SUNY Empire State College, 2014) to determine course equivalency, evaluating playlists developed by the youth serving organization, scoring rubrics, and samples of student submissions. As a result, 36 playlists and badges were

identified to count toward 19 course credit equivalencies. This canonical set comprises career readiness, design, and coding playlists and badges. For each of the identified SNHU Competencies or Courses that map onto a set of LRNG badges, we created an SNHU meta-badge on the LRNG Platform, to be automatically issued when an LRNG learner earns all the associated LRNG badges.

Because the LRNG Badges were developed using a model-based framework each badge embedded an explicit chain of reasoning among the learning outcomes, required evidence, and scoring criteria direction into its metadata. This self-contained assessment argument enabled the SNHU team to transparently inspect every badge's linked artifact, rubric scores, and badge issuer to ensure they could verify competency before awarding course credit.

The value of this work is that it fundamentally breaks the singular control of schools in defining learning that counts. Young people were able to participate in robust experiences in summer youth employment, after-school programs, entrepreneurship experiences and more that occur anywhere, anytime while simultaneously building their work and college portfolios.

Badges provide pathways to opportunity that can bypass the lengthy timelines required for degrees or certifications, allowing learners to demonstrate competency and gain recognition as soon as skills are mastered. Such flexibility can enable us the opportunity to redesign and reimagine pathways to social mobility that are grounded in the needs and interests of each young person. It also brings the possibility of college and a meaningful career closer to our young people, enabling them to see that their learning experiences build a clear and immediate path toward higher education.

What We've Learned, What Remains Unfinished

Fifteen years since their launch, with inspiring examples such as those shared here and many others, it is possible to feel extremely hopeful and optimistic about the potential for Open Badges to enable the equitable scale of high-quality learning and innovative assessments. It is also possible to experience ambivalence, and wonder if rather than enabling transformation at scale, their influence has more closely resembled that "Napster moment" as a disruptive innovation that unsettled established norms, provoked new conversations, and pointed toward what might be possible, without resolving deeper structural challenges.

The Open Badge standard (IMS Global Learning Consortium, 2015) and its associated infrastructure clearly create the necessary digital foundations for innovative and equitable assessment, as articulated by Gordon and Rajagopalan (2016) and the volume's authors. In contrast with grades, transcripts, and resumes, which reinforce traditional conceptions of achievement, badges offer the architecture for recognizing diverse and meaningful learning. Over recent years, Open Badges have undergone significant technical upgrades with version 3.0's enhanced security features that make each badge cryptographically verifiable creating tamper-proof digital credentials. At the same time, the Comprehensive Learner Record standard evolved to version 2.0 that can collect and organize multiple credentials into a single, authenticated record that learners own and control. Together, these developments align with the establishment of a global standard for Learning and Employment Records, which integrate verifiable micro-credentials into interoperable learner-controlled portfolios, advancing both portability and trust across educational and workforce ecosystems (1EdTech Consortium, 2024; 1EdTech Consortium, 2025; Institute of Electrical and Electronics Engineers, 2024).

Yet, the infrastructure alone has been insufficient to drive systemic change: while Open Badges can encapsulate granular evidence of learning, their widespread use is marked by fragmentation and inconsistency. Features like robust metadata, the organization of badges into coherent, stackable pathways, and systematic unlocks of new opportunity for learners remain only partially realized. They haven't become the engine for assessment innovation we once hoped for—at least, not yet.

There has, nonetheless, been significant cultural impact. Startups centered on digital credentials, portfolios, and learner wallets underscore a shift in narrative about the future of learning pathways. Millions of badges have been issued worldwide (1EdTech Consortium & Credential Engine, 2023). Universities regularly produce micro-credentials as part of their curriculum, and the language of modular, "stackable" credentials is commonplace in higher education circles (Coursera, 2024). For example, Western Governors University uses a unified credential framework and extensive rich skills descriptor library to integrate digital badges with degree pathways, allowing students to demonstrate competencies incrementally rather than waiting for program completion (Western Governors University, n.d.-a; Western Governors University, n.d.-b). This capacity for badges to demonstrate competency and gain recognition as soon as skills are mastered aligns with the rise of a skills-based economy. Recent research indicates that 81%

of employers believe skills should be prioritized over degrees, and 95% of university leaders expect micro-credentials to become a standard feature within most degree programs (HolonIQ, 2023).

These developments speak to a growing awareness of—and demand for—alternative recognitions of learning, even if they have not (yet) led to truly systemic assessment innovation aligned with the seven animating principles.

The (Still) Missing Links—and Why AI Might Matter

If Open Badges are ever going to matter for assessment, they'll have to serve as bridges. The infrastructure was intended to connect learning experience, skill, evidence, innovative assessment, and, finally, opportunity. In theory, all of that can be rendered explicit in the badge metadata, aligned to the seven design principles described earlier.

Open Badges serve a de-coupling function: they enable curriculum to be chunked into smaller, more isolated pieces. It is less common to find Open Badges actively linking coherent, living pathways, as demonstrated in the Badges-to-Credit example, where they linked a learning pathway across institutions (youth development organization to college credit and to job opportunities).

This is where AI enters the story, offering the most credible chance in years to close the gaps. Large Language Model powered systems make performance-based assessment scalable by delivering real-time, personalized feedback, analyzing student work processes, and adapting tasks on the fly, functions that were once costly and labor-intensive to implement at scale. With Open Badge Standard 3.0 (1EdTech Consortium, 2025) able to ingest diverse technology files, these assessments can be formally captured and verified as digital credentials. Automating data capture, matching evidence to criteria, mapping pathways, and even identifying opportunity—all of these become possible with the right human-centered application of AI. Real integration could at last take shape, relieving users of the burden and letting badges begin to function as intended. But it's an open question whether that future will materialize, or if badges will remain a prototype for what comes next.

References

1EdTech Consortium & Credential Engine. (2023). *Open Badge Count 2022: Findings*. 1EdTech Consortium.

1EdTech. (2024). Six steps to a skills-based ecosystem: A playbook for action. https://www.1edtech.org/resource/credentials-case-studies

1EdTech Consortium. (2024). Open Badges 3.0 specification. https://www.imsglobal.org/spec/ob/v3p0/

1EdTech Consortium. (2025). Comprehensive Learner Record standard 2.0. https://www.imsglobal.org/spec/clr/v2p0

Baker, E. L. (1997). Model-based performance assessment. *Theory Into Practice*, *36*(4), 247–254.

Baker, E. L., & Delacruz, G. C. (2015). Badges and skill certification. In J. M. Spector (Ed.), *Encyclopedia of Educational Technology* (pp. 71–74). Sage Publications.

Coursera. (2024). *Micro-Credentials Impact Report 2024*. Coursera.

Gee, J. P. (2003). *What video games have to teach us about learning and literacy.* Palgrave Macmillan.

Gordon, E. W., & Rajagopalan, K. (2016). *The testing and learning revolution: The future of assessment in education*. Palgrave Macmillan.

HolonIQ. (2023, September 28). *The future of post-secondary education in the US*. https://www.holoniq.com/notes/the-future-of-post-secondary-education-in-the-us

IMS Global Learning Consortium. (2015). Open Badges Specification v1.1. https://www.imsglobal.org/sites/default/files/Badges/OBv2p0/history/1.1-specification.html

Kane, M. T. (1992). An argument-based approach to validity. *Psychological Bulletin*, *112*(3), 527–535. https://doi.org/10.1037/0033–2909.112.3.527

Mislevy, R. J., Almond, R. G., & Lukas, J. F. (2003). A brief introduction to evidence-centered design. *ETS Research Report Series*, *2003*(1), i-29.

Mislevy, R. J., Steinberg, L. S., & Almond, R. G. (2003). On the structure of educational assessments. *Measurement: Interdisciplinary Research and Practice, 1*(1), 3–62.

Mozilla Foundation, Peer 2 Peer University, & MacArthur Foundation. (2011). *Open Badges for Lifelong Learning: Exploring an open badge ecosystem to support skill development and lifelong learning for real results such as jobs and advancement* [White paper]. Mozilla Foundation. https://wiki.mozilla.org/images/5/59/OpenBadges-Working-Paper_012312.pdf

Patrick, S., & Sturgis, C. (2013). *Quality and equity: The promise of competency-based education*. International Association for K–12 Online Learning (iNACOL). https://aurora-institute.org/resource/quality-and-equity-the-promise-of-competency-based-education/

SUNY Empire State College. (2014). *Global Learning Qualifications Framework*. https://sunyempire.edu/global-learning-qualifications-framework/

Western Governors University. (n.d.-a). *The WGU Skills Library*. https://www.wgu.edu/lp/general/wgu/skills-library.html

Western Governors University. (n.d.-b). *Unified Credential Framework*. https://www.wgu.edu/content/dam/wgu-65-assets/western-governors/documents/skills/WGU-UCF-OnePager-QR.pdf