

# Digital Badges for Recognizing, Assessing, Motivating, and Evaluating Learning in Games and Beyond

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**Abstract:** Digital badges are web-based tokens of accomplishment and learning. Thanks the 2012 MacArthur/Gates *Badges for Lifelong Learning* initiative, hundreds of formal and informal programs are now incorporating digital badges. The *Design Principles Documentation Project* is capturing the knowledge being generated by thirty diverse programs that were directly funded by the initiative to develop digital badges. This poster will present the design principles for using digital badges for recognizing, assessing, motivating, and evaluating learning. Visitors will get a seek-peek at the now-private project database that is organized around the 5-7 general principles that have emerged in each of the four areas. Each principle is accompanied by a burgeoning database of the relevant research literature and illustrations of how that principle has been enacted in specific projects.

Digital badges are web-based tokens of accomplishment and learning that promise a new and transformative way of recognizing and credentialing learning and accomplishment. The MacArthur/Gates Badges for Lifelong Learning initiative attracted over 300 proposals in the 2012 competition. Thirty awardees for developing badges and content were paired with several awardees for developing platforms and issuing badges. This laid the groundwork for a new ecosystem for recognizing learning as partners work together within Mozilla's Open Badge Infrastructure (OBI) to implement their plans. The awardees represent a diverse range of programs, from very traditional (Girl Scouts and 4H) to cutting edge (*BuzzMath* videogames and *MOUSE Wins!* for national youth technology leadership). But the competition and the unfolding initiative allowed the technology, standards, and participants that define this new ecosystem to emerge in just a few months. The existing accreditation system of grades, degrees, and transcripts took roughly a century to develop. We are witnessing the deliberate and rapid creation of something that might transform a significant piece of the educational landscape.

## The Design Principles Documentation Project

The DML Design Principles Database project aims to capture the most useful knowledge being generated in this initiative. As awardees attempt to enact the plans outlined in their proposals, they are discovering both challenges and opportunities. Mozilla's Carla Casilli explained this process in a 2012 blog post:

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Regardless of where you start, it's more than likely you'll end up somewhere other than your intended destination. That's okay. Systems are living things, and your badge system needs to be flexible. You must embrace a bit of chaos in its design.

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As shown in more systematic studies of software architecture design rationale (e.g., Krutchen, 2004), most of the knowledge generated when designing complex systems simply "evaporates" as features evolve and teams dissolve. Our project aims to capture this knowledge as it is being generated, sift it for the most generally useful ideas, link those ideas to the contextual factors that framed their appropriateness, share this knowledge widely, and lay the groundwork for continued refinement.

Like digital badges, this is uncharted territory. The closest example is the Design Principles Database project (Kali, 2006). That project also captured design knowledge across multiple projects and helped share that knowledge. To do so, they distinguished between (1) specific *practices* within projects, (2) specific project *features* used to enact those practices, and (3) more general design *principles* that captured those practices and features across projects. The Design Principles Documentation project is organized around these distinctions as well. Specifically, the project is identifying the more general design principles that emerge across the various projects. The design principles are then illustrated with practices and features from specific projects, and elaborated with a database of the relevant research literature. Thus, rather than searching for mythical "best practices" the project is identifying "appropriate practices along with the contextual factors that others need to help use and refine those practices in their own contexts. Drawing from studies of media "spreadability" (Jenkins, Ford, & Green, 2012) we are supporting spread and continued transformation of knowledge. We are doing so by deliberately fostering networked communities of practice (Wenger, McDermott, & Snyder, 2007) around this knowledge.

In order to foster coherence, community, and spreadability, this project is organized around badge *functions*. Focusing on actual functions (rather than intended *purposes*) highlights the way that educational practice often function in unintended ways, and that functions interact with each other in complex ways. After some consideration, the project was organized around the following four functions: *Recognition* is the most obvious and arguably the primary function of badges. At their core, all badges are used to recognize some learning or accomplishment. *Assessment* is almost always called for when learning gets recognized. Most assessments serve both summative and formative functions. In some cases these are simply an assessment of whether somebody clicked on a few things or made a few comments. In other cases there might be a project or essay that was reviewed and scored, or a test that was graded. *Motivation* is the most controversial function. Much of the debate over badges concerns the well-documented negative consequences of extrinsic incentive on intrinsic motivation and free choice engagement. This is why some argue that we should not use badges to motivate learning. However, if we use badges to recognize and assess learning, they are likely to impact motivation. Because many uses of badges offer new power and privilege, they seem less likely to disempower learners. Regardless, this needs to be examined systematically. *Evaluation* is the least explored function of badges. Digital badges have tremendous potential for helping teachers, schools, and programs evaluate and study learning. At the minimum, just having a system for tracking all of the information included in all of the badges that a program awards might be very valuable. Each badge has eight bits of information (“metadata”) which will be recorded and easily accessible as a database. And much of that information will be hyperlinked to even more information that will be accessible with just a little more effort.

## Methods

Starting in 2012, the project first created a database that summarized the intended practices for using digital badges. Interviews with representatives of the various projects were conducted in late 2012 and early 2013. These interviews focused on the ways that the intended practices were being enacted in the various project contexts. Particular attention was directed at how the various project contexts shape their enacted practices. In Spring 2013, projects are reviewing and validating the characterization of their intended and enacted practices, while the project is beginning to identify 5-7 design principles in each category, along with the research literature that is most relevant to each. The conference poster will present the design principles and the relevant research and example practices and features for each. Visitors will be allowed to access the project database and examine the design principles, relevant literature, and examine practices and features of projects that have approved their project representations for viewing by the public.

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## References

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