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Badging digital pathways of learning

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Educators worldwide are witnessing a change in thinking concerning digital learning, teaching and assessment resources as well as the theories and practices connected to making claims about learning based on digital evidence. These shifts are occurring as three elements have combined to form new digital pathways for learning: 1. Self-organizing online global communities engaged in informal learning activities, 2. A new globally supported mechanism for sharing and managing data, files, images and metadata concerning those activities known as 'open badges', and 3. Rapidly changing conceptions of higher education, continuing education, and the boundaries of informal to formal learning. So in addition to learners being on a personal learning journey to fulfill their aspirations for professional growth, higher education institutions world wide are also on learning journeys to modernize and respond to these changes, which have the potential for disruption and transformation of the university's business model and role in society.

Keywords: Digital badges, learning pathways, credentials, lifelong learning

Introduction

Digital pathways of learning are increasingly available to anyone, anywhere at anytime. Traditional learning pathways are 'approved' connections or 'bridges' that direct learners as they move in and out of courses in the same or different sector. Many learners also develop their own pathways as they traverse formal and informal learning opportunities, courses and programs related to their ideal identity and self, or career paths. These pathways often have some form of signifier of completion and recognition; either a credential, certificate or award plotted along them. A new form of exchange currency embodied in the technology of digital badges can serve as signposts along these pathways indicating points of interest on a learner's journey. These might include new forms of apprenticeship, competency and so forth, providing transparency and access to a range of audiences and stakeholders. This disruptive form of acknowledgment and recognition of skill, experience and knowledge continues to realise its potential in education. Only recently Open edX launched a digital badge credential where "students will be able to earn badges upon completing a course and share these badges on Mozilla Backpack" (Baruah & Otto, 2015, para. 1).

Educators worldwide are witnessing a change in thinking concerning digital learning, teaching and assessment resources as well as the theories and practices connected to making claims about learning based on digital evidence. These shifts are occurring as three elements have combined to form new digital pathways for learning; 1) Self-organising online global communities engaged in informal learning activities, 2) A new globally supported mechanism for sharing and managing data, files, images and metadata concerning those activities known as 'digital badges', 3) Rapidly changing conceptions of higher education, continuing education, and the boundaries of informal and formal learning.

So in addition to learners being on a personal learning journey to fulfill their aspirations for professional growth, higher education institutions world wide are also on learning journeys to modernise and respond to these changes, which have the potential for disruption and transformation of the university's business model and role in society. These numerous and diverse pathways of learning often arise outside of formal education, raising the question of when and in what ways higher education will participate in digital badging to give recognition to learning for a range of lifetime achievements that can sit around, within or on top of current credentials and grades. As Grant suggests, "...badges connect multiple spheres throughout lifelong learning, and make pathways of learning visible to others, opening up new opportunities for more people than the current system"

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(2014, p.19). New business models for recognition of these learning paths for prior learning assessment (PLA) and evidence based learning are on the horizon with new credentialing organisations such as DeakinDigital (http://www.deakindigital.com) and the potential to unbundle and micro-credential targeted skills and capabilities. This paper presents the potential for technology and social forces to disrupt our current system of accreditation, trust and credentials and create new digital badge learning pathways.

What is digital badging?

A digital badge can be described through many lenses: through the technical and structural, multiple criteria and purposes, and the social, political and educational processes for award and issue. Most simply put, a digital badge is a web-based enabled technology that by virtue of its technical affordances (e.g. extensible digital format, accessibility, scalability, interoperability), has given rise to a complex global discussion about educational practices and possibilities that are centred on learning evidence, assessment of learning, and how learning is recognised and validated and by whom. Since assessment is key to the determination of status and value of someone's knowledge, skills and capabilities, and is a key aspect of a formal education, digital badges acquired from anyone, anywhere at anytime represent a dramatic alternative assessment mechanism with powerful disruptive potential for higher education. The question in there lies, who do we trust to warrant evidence, and what evidence is credible? Digital badges are often referred to as a disruptive technology (Carlson & Blumenstyk, 2012). This disruption is twofold, because they can operate outside the conventional award of credentials in higher education and they rival current formal credentials that don't necessarily represent the skills, experiences and knowledge required for employability and identity when bundled.

The cultural practice of creating, awarding and displaying badges has its roots in social media and the open web; the practices "emerged from the intersection of digital games practices, online reputation systems used in commerce (e.g. eBay, Wikipedia and Amazon) and media culture as well as the historical custom of awarding recognition via physical status icons, such as ribbons, medals and trophies" (Gibson, Ostashewski, Flintoff, Grant, & Knight, 2013) with important implications for higher education learning to catch up with social practices on the Internet by becoming more inventive, collaborative, participatory and mobile (Davidson & Goldberg, 2009).

Technically, a digital badge that adheres to the Mozilla Open Badge Infrastructure (OBI) is a '.png' image file with metadata. PNG became an international standard when the World Wide Web Consortium adopted it in 2003 (International Standards Organization, 2004). Launched later by Mozilla in 2011, the OBI utilizes the .png standard to create trust networks among issuers, badge recipients, and other consumers, including organisations that recognise badges as signs of skills and achievement (Surman, 2011). Recently, the OBI has been adopted by a number of international professional learning organisations such as IMS Global Learning Consortium to issue digital credentials for professional learning, Pearson and the American Institute of Certified Public Accountants (AICPA). In education, the *criteria* for awarding a badge (Gibson et al., 2013) generally fall into one of three broad purposes:

- Incentivise learners to engage in positive learning behaviours,
- Identify and recognise progress in learning and content trajectories, and
- Signify, warrant and credential engagement, skills, experiences, knowledge and achievement.

Paths into learning

A 'learning journey' perspective is helpful for thinking about the entry points, waypoints and possible futures for the processes and tools of digital badging in higher education in the form of micro-credentials and credentials. This perspective, views relationships with learners along three phases of their journey:
1. Before they are formally enrolled as higher education students,
2. While they are pursuing formal studies, and;
3. As they move on to other pursuits as lifelong learners in informal and formal learning spaces.

We'll refer to these as 'paths into' (Table 1) 'paths during' (Table 2) and the 'lifelong pathway' (Table 3) of formal learning in higher education.

Table 1. Badges on the path to formal learning

Journey Waypoints	Badging Examples
Access to higher education	Learner brings a collection of badges to the review process, which meets admissions criteria. Those badges will have been earned cost-free or at low cost from trusted issuers. Higher education admissions processes accept badges from trusted issuers, creating an alternative currency for pre-university and university-ready learning experiences.
Recognition of prior learning	Badges become a part of PLA review processes. Trusted issuers ease the burden of the review process. Badges can be stacked in a variety of ways to meet pre-requisites for courses and units.
MOOC-like learning experiences	Free and low cost access to knowledge becomes ubiquitous; some experiences include trusted badges that signify achievement and are accepted as prerequisites for courses and units.

Paths during learning

A second set of waypoints on the learning journey in higher education offers badges that might be earned during the time of formal engagement as an engaged or enrolled student. Engaged learners are those who are taking advantage of higher education offerings without a formal enrolment agreement or degree program plan, and enrolled learners are those who are registered to complete a planned degree or credential program.

Table 2. Badges on the paths traversed during formal learning

Journey Waypoints	Badging Examples
Personalising at scale – learner control, choice and adaptations	Badges become part of a continuum of personalization strategies by offering alternative self-directed activities. 'Badges as bridges' facilitate new cross-disciplinary and trans-disciplinary approaches.
Unbundling and rebundling (Bull, 2014)	Course and unit content is unbundled and badged in new configurations, promoting openness and reuse of teaching and assessment materials.
Assessment as networked credibility and expert authority	Badges are awarded by flexible knowledge communities (e.g. peer groups, expert groups, global groups) within, across and extended from the university. Digital badges carry the university's reputation in micro credentialing, while internal badging, points, and awards expand the creative use of motivational rewards and game-based learning in the learner's digital experience.
Scale and automation – integrating into the grades and exams system	In MOOC-like offerings, badging processes enable global scale and a degree of automation while promoting quality learning experiences.
Evidence-based & competency-focused assessment	The tools and processes of badging (e.g. transparency and transportability of outcomes) meld with portfolio assessment processes, promoting the evolution of evidence-based competency-focused assessment in higher education.

Lifelong pathways of learning

The idea of a badge as a signpost of engagement, learning and achievement continues as the learner's journey moves past formal education and into lifelong learning. The learner might return for additional advanced study in the future, or might begin to add credentials and experiences to their degree in order to professionally advance and develop their identities, either in the field, online or both. Some of the options during this phase of the relationship of the learner to the university or institute of higher education include, *facilitating professional networking*, acquiring certifications and *credentials that are co-designed and co-developed or recognised by professional communities and associations*, and engaging, learning and achieving new heights of knowledge and action across disciplines (Table 3).

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Table 3. Badges on lifelong learning paths

Journey Waypoints	Badging Examples
Alumni networks	Badges from one's degree-granting institution help alumni networks to form and adhere around common strengths, interests and aspirations.
Professional certifications	New certificate programs arise with flexible badge configurations that personalize the learning journey.
Co-credentialing and Community Association	Badges awarded from the institution are co-designed and endorsed by national and international associations to generate professional community recognition and new forms of leadership.
Multi-disciplinary & Inter-disciplinary recognition	Badges issued upon application of evidence to a disciplinary community you do not formally learn in, developing new opportunities for learning ecologies and pathways.

Paths from informal to formal learning

Given the relevance of graduate employability, outcomes based learning and competency based education in the changing space of higher education in Australia, one of the most exciting opportunities for digital badges are in the validation and warranting of those skills and capabilities that lay on the outskirts of the learning journey. The skills acquired in formal learning, bundled and hidden by grades that do not reflect their experiences and knowledge within, work based and work integrated leaning opportunities, internships and experiential learning. Digital badges have the potential to highlight the paths that lay between the 'certification' of informal learning, bridged with the many possible uses within a formal educational environment (Glover & Latif, 2013, NPN).

The value of digital badges within these contextual situations highlights the issue of credibility and validity. "In order to compete with traditional credentials like degrees that boast centuries of credibility, organisations first need to create systems of badges that structure their educational offerings, serve audience needs, motivate learners to participate, and provide appropriate evidence to back up their claims" (Hickey et al, 2014, exec summary, para.1). Designing evidence-based badges can go one step toward creating an ecosystem that is trusted, valued and credible by involving key stakeholders in the co-design and co-endorsement of the badge. "Integrating experts in the badging process boosts the credibility of the credentials and its value in a knowledge-based economy. This contributes to the validation of the badge and its potential usefulness in professional settings" (Hickey et al, 2014, p.13).

Conclusion

Digital badges represent an opportunity to rigorously re-consider what evidence-based teaching, learning and assessment is, the role of the informal learning in formal learning pathways and the validity and credibility of our current credentials. Digital badges as markers, waypoints and signposts on a digital pathway have the disruptive potential to re-connect formal higher education systems to the wider world of professional, informal and lifelong learning, with a focus on building the individual capabilities of each learner. They offer new ways for the sector to consider what is learning, who are the credible assessors of learning and what learning evidence is. They also offer new opportunities for higher education institutions to modernise and respond to needs of learners, employers and our disciplines, which in turn, have the potential to transform the university's role in society and disrupt the business model.

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