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Badge It! Using Digital Badges to Certify Information Literacy Skills within Disciplinary Curriculum

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Badge it!

A collaborative learning outcomes based approach to integrating information literacy badges within disciplinary curriculum

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Abstract

Purpose – The purpose of this article is to discuss the collaborative learning outcomes-based approach taken by a librarian and disciplinary faculty members to improve information literacy (IL) curriculum within disciplinary courses. To this end, the team aimed to award badges to certify IL skills.

Design/methodology/approach – This article considers relevant literature on competency-based curriculum, technological innovation in higher education, collaboration between library and disciplinary faculty and badges. This literature is used to frame the approach to plan a successful and sustainable project to embed IL in disciplinary curriculum using digital badges. The approach includes mapping learning outcomes and engaging in instructional design tasks – including planning for content delivery and student assessment.

Findings – An approach to technological innovation for instructional projects based on the principles of pedagogical design can result in improvements to IL pedagogy and collaboration between librarians and disciplinary faculty, whether or not a technological implementation is successful.

Practical implications – Librarians and disciplinary faculty can take a pedagogical and learning outcomes-based approach to embedding IL into disciplinary curricula. Further, despite administrative push for technological innovation, projects can succeed when focused on improvements to pedagogy rather than solely on the implementation of new technologies.

Originality/value – Planning for and implementing badges for IL curriculum is in an incipient phase in higher education. This paper uniquely addresses a collaborative approach to be used by librarians to plan and implement embedded library instruction in disciplinary courses, with or without the use of badging technology.

Keywords Academic libraries, Information literacy, Library instruction west,
Competency-based curriculum, Digital badges, Instructional design

Paper type Case study

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Introduction

This article discusses the collaborative learning outcomes-based approach taken by a librarian and disciplinary faculty members to improve information literacy (IL) curriculum within disciplinary courses. To this end, the team aimed to award badges to certify IL skills. Framed by trends in higher education to move toward competency-based curriculum, technological innovation, collaboration and gamification, this article shows that despite these trends, the real success of improving IL curriculum lies with intentional, thoughtful, outcomes-based curriculum design and mapping exercises. The team's approach to planning for badges to certify IL skills views badges as a means to the positive end of improved IL curriculum within disciplinary courses. The team does not see badges as the end goal, but rather as the culminating step of a successful instructional design project. In this way, the team acknowledges the work they accomplished prior to the implementation and testing of badges to certify IL skills.

A shift in higher education

Higher education is at an important crossroads. Student debt is rising and unemployment figures show a difficult path for students finishing college. As a result, students, lawmakers and educators increasingly worry about the "value proposition" of college degrees. Questions such as "For what does a bachelor's degree qualify a student in 2014?" "What specifically did a student learn during her course of study?" frame this conversation. Anymore, a bachelor's degree and good grades may not sufficiently capture what knowledge, skills and abilities students gain from their formal education. Employers seek graduates with definitive skills, and a bachelor's degree cannot sufficiently communicate what skills prospective employees have. As a response to this phenomenon, educators are revamping their instructional approaches to move toward competency-based curricula that outline course objectives in syllabi, and programs lay out sets of competencies students are expected to gain. Educators and students alike see competency-based curricula as one way to address their concerns regarding an education's value proposition. But it is not just educators and students who share these concerns. In recent years, educational-accrediting bodies have modified requirements to request that students meet particular competencies, such as has occurred in both social work (Meyer-Adams *et al.*, 2011) and in the health sciences (Albanese *et al.*, 2010; Jackson *et al.*, 2007). In addition to seeing competency-based curriculum as a means to express an education's value, it has also been lauded as a pedagogical approach that encourages students to be self-reflective in terms of their learning, to conduct more self-assessment and to become life-long learners (Berdrow and Evers, 2011).

As more educators are adopting competency-based approaches, it remains a controversial topic. There are three main criticisms of competency-based education. First, it disempowers students. Second, it is a shift away from education's central ethical and democratic role to prepare students to engage in democratic society. Third, competency-based education represents the neoliberalization of higher education, where knowledge becomes a tangible good; essentially education is commercialized in an open market.

In her Bernsteinian analyses of competency-based training programs in Australia, Wheelahan (2007, 2012) contends that competency-based approaches do not allow students to gain esoteric knowledge or critical theoretical knowledge. Instead of

liberating students to discover the unknowable – which enables students to break the social distribution of power – competency-based approaches lock students into specified outcomes instead of abstract disciplinary themes. In her realist view, education and knowledge are socially mediated; therefore, social power structures are intrinsic to any educational approach. She further argues that competency-based education does not enable students to transcend power and class structures. It disempowers students in that "[…] all the key elements are specified in the competency-outcomes, performance criteria, and assessment guidelines" (p. 129, 2012).

Similarly, Lozano *et al.* (2012) see competency approaches in higher education as reductive in that these approaches do not hold central the ethical values of preparing students to participate in democratic society. The better approach, they argue, is a capabilities approach (as based in Martha Nussbaum's work), which centers on the expansion of human freedoms. In this view, competency approaches only secondarily lead to a more democratic society, but that goal is not central to the approach itself (p. 138). Competencies focus on the broad outcome of preparing students for a "successful life", whereas capabilities approaches focus on developing intrinsic values, are inherently externally demand focused and do not focus on individual agency. As a result, they concentrate on enabling actions to solve external problems (pp. 139-140). Finally, Lozano argues that the competencies approach addresses societal functioning rather than social transformation.

The larger contextual background for these arguments is framed by what some see as the neoliberalization of higher education. The term "value proposition", in and of itself, has been adapted to higher education from the business and marketing world[1]. Many scholars have cautioned against the trend toward neoliberalism, as it affects teacher education (Sleeter, 2008). Others have provided strategies to counter the marketization and neoliberalization of higher education (Levidow, 2002) by opposing "[…] plans to replace human contact with software products" (p. 12) and developing alternative pedagogical models that "[…] enhance critical citizenship, cultural enrichment and social enjoyment through learning" (p. 13). In short, a neoliberal education is much more focused on education as part of the free market economy, rather than education that is perceived and valued as a public good. When valued as a public good, political and financial capital is spent to support education. Locally, regionally and nationally, we have experienced a large disinvestment in higher education, which has led to neoliberal educational approaches and policies. As such, competency-based approaches give students marketable, tangible skills to be traded and bought.

This paper and its authors make no argument for or against competency-based education, yet we remain aware of the deeply entrenched controversial issues it introduces. Instead, we are concerned with our work as educators in a local environment where students request to know what they are learning and the value of those skills. Moreover, the field of public health has always valued an articulated skills set, so competency-based approaches for this field represent lesser of a radical shift toward neoliberalization than in other disciplines. The national environment in which we exist has introduced accrediting bodies and university systems that require competencies, outcomes and assessments to be a central part of program curricula. Our pedagogical approach recognizes students' needs to learn contextual disciplinary theory that enables them to become critically engaged members of society. At the same time, it

acknowledges the need to better articulate and embed IL skills into disciplinary curriculum.

Digital badges as tool for competency-based curricula

In this educational environment, educators use a variety of approaches to provide students with a theoretical and critical education, as well as outline and assess the competencies students gain in a course. Digital badges – much like the badges children earn in scouting – are one such way that competencies can be expressed and tracked within a course or program curriculum. The digital object of a badge itself does not inherently encapsulate a competency-based curriculum. Rather, a digital badge is merely a visual representation of an earner's achievement, skill or disposition. Badges can show what skills students learn, who is the authority responsible for assessing students' skills, what criteria students must meet to earn a badge and evidence of students' achievements. In short, the power behind a digital badge is a course's curricular structure and effective assessment of student work.

Scholarly research on using badges for competency-based education is incipient and little has been published on the matter. However, some research has explored student motivation using badges, which shows that successful implementations of badges may have to do with how students are individually motivated (Abramovich *et al.*, 2013). Motivation, in this context, is explicitly tied to a concept called "gamification". "Gamification is the process of applying game-thinking and game dynamics, which make a game fun, to the non-game context in order to engage people and solve problems" (Kim, 2013). The idea of gamification originated in the digital media industry, but has also been adopted by practitioners of human computer interaction, user interface design and education (Deterding *et al.*, 2011). In education, gamification is not only a way to make learning fun but also to enhance student motivation to engage in a topic or question. When students can engage in a game, they will be motivated to succeed because the game is fun, challenging and introduces both expected and unexpected reward structures. The New Media Center's 2014 Horizon Report (Johnson *et al.*, 2014) points to badging as one way to approach "learning by playing", a learning practice identified as an innovative pedagogical practice.

But badges can accomplish more than simply motivating students to learn. The digital objects are easily shared via social media, on ePortfolios and on online curricula vitae. Badges can communicate more clearly to students the skills they gain and their other achievements. Moreover, badges can communicate to the world at large what a badge earner knows and what an earner has achieved on a much more granular level than grades or diplomas (Raths, 2013; Cary, 2012; Tally, 2012). "Badges can provide a way to translate all types of learning into a powerful tool for getting jobs, finding communities of practice, demonstrating skills, and seeking out further learning" (Knight and Casilli, 2012, p. 280). While these claims have yet to be scientifically proven, educators are experimenting with badges in the hopes that they will help propel students and graduates to long-term career and life success. What's more, badges are a way for students to recognize and acknowledge their co-curricular skills, those skills not tied to any one discipline and developed throughout a course of study, such as writing, communication, working in groups and IL.

According to Schneckenberg *et al.* (2011, p. 754), online learning environments can support competence development when they take advantage of a technology's Web 2.0

capabilities. Badges can operate in this same manner. By structuring IL competencies with badges, we are changing our approach to IL instruction. We agree with Schneckenberg *et al.* (2011, pp. 747-748), who have asserted that:

[…] the change of technological possibilities is less important than its potential to help creating new educational approaches, which result in a better fit of graduate profiles to market needs.

Technological innovation in higher education

With the advent of learning management systems and the growing number of distance learning programs throughout higher education, there exists a body of literature on technological innovation. It generally points to leadership qualities and structures necessary for technological innovation to succeed. In her literature review, Smith (2012, p. 176) notes that successful innovations are those that are focused on "context specific problems", have institutional support in terms of time allocated for projects and have provided infrastructure to support innovation. Moreover, good management and leadership are necessary for innovations to be broadly adopted and deemed successful. In her case study of educational technology integration at research universities, Moser (2007, p. 148) argues that "Faculty members are key to a successful integration of educational technology in the teaching and learning process". Of course this is easier said than done, as faculty resistance to change and innovation is common (Garrison and Vaughan, 2013; Moser, 2007). Faculty concerns are usually rooted in the need for developmental support to engage in innovation, as well as an expressed need for incentives and recognition of the work (Garrison and Vaughan, 2013, p. 25). However, successful leadership and management of technological innovation at institutions will "[…] provide meaning and overcome barriers among the various subcultures involved with educational technology" (Moser, 2007, p. 150).

We contend that too often innovation is championed for innovation's sake rather than to improve pedagogical aims. Administrators frequently approach innovation as a response to external political forces, resulting in high failure rates (Grotevant cited by Moser, p. 143). We assert that for technological innovations to succeed, they should be grounded in educational values and approaches that will improve teaching pedagogy and, as a result, student success. When approached thoughtfully and intentionally, technological innovation and change incorporating competency-based curricula can complement instruction that also provides students with theoretical disciplinary knowledge.

Collaboration and embedded librarianship

There is no paucity of literature discussing library and disciplinary faculty collaboration for IL. Brasley (2008) outlines nine models for this kind of collaboration (Brasley citing Cruzon, 2004, p. 80). Among these nine models, the learning outcomes model, in which "[…] faculty and librarians working together create departmental disciplinary IL learning outcomes" (Brasley citing Curzon, 2004), is the model most applicable to the Portland State University (PSU) badges project described in the latter half of this article.

More recently, the term "embedded librarianship" has emerged as a way to discuss collaborations within teaching, learning and research environments. Although embedded librarianship is differently defined, approached and implemented by all libraries and librarians, it generally refers to librarians working closely as part of a team

or community member with their patrons (Schulte, 2012). Common activities include embedding library instruction, resources and subject guides into course management systems, collaborating on course and assignment design, co-teaching courses, providing research support and more (pp. 126-127).

As libraries have evolved, so has library instruction. No longer should library instruction be viewed as a library service, argue Meulemans and Carr (2013), but rather librarians should bring forth their own expertise to instruction, demonstrating initiative and agency in conversations about IL. "Effective instruction requires the professor and librarian to work together as partners to achieve a common goal" (p. 82). Further, they argue that librarians should be engaged in creating a value system that mirrors teaching faculty in the disciplines. Librarians can develop teaching philosophies, personal instruction policies and be prepared to carefully and thoughtfully approach conversations and attitudes that frame library instruction as service rather than collaborative work (pp. 87-88).

PSU digital badges for creativity and critical thinking project
PSU's provost challenge
In fall 2012, Sona Andrews, Provost for Academic Affairs at PSU, announced a challenge to the faculty to "rethink" PSU. This challenge aimed to distribute USD3 million to support faculty and staff-led initiatives that would respond to challenges currently facing higher education:

> […] changing models of educational delivery, declining state funding, alternative credentialing, demographic shifts in student populations, questions concerning the relevancy of the curriculum, increased cost, and increasing external scrutiny (Portland State University, 2014a, p. 1).

The request for proposals (RFP) included three concentrated areas. Acceleration Challenge awards funded 4 projects that aimed to complete and launch "high-impact" online courses and degree programs; the Reframing Challenge funded 6 projects proposing innovative use of technology to make "major changes in the delivery of high-quality, affordable education" (Portland State University, 2014b, p. 3) and the Inspiration Challenge sought to award up to USD20,000 per project, and funded 14 projects that would provide "[…] technology-based solutions that lead to student success and graduation" (Portland State University, 2014b, p. 4).

This RFP came out at a time when the Urban & Public Affairs Librarian (and first author) had been struggling to identify a way to better integrate IL instruction into undergraduate community health classes. She saw a need for future health educators to have a solid IL foundation, communication and critical thinking skills to be better prepared for their future work with the public. Moreover, she had been thinking about how to make learning more meaningful to students. After presenting her idea for a badges project to the Director and faculty members in the School of Community Health, she was encouraged to apply for the Inspiration Challenge. Thus began the project Digital Badges for Creativity and Critical Thinking. The aims of the project were to undertake a curriculum-mapping exercise with the undergraduate community health curriculum, better align IL with undergraduate courses and to certify IL skills gained in those courses using digital badges. The project proposal, supported by colleagues in the School of Community Health and in the University Library, was successful and fully funded.

The approach to badges
Our team approached the badges project as one that, at its core, would have long-term effects and improvements in the teaching and integration of IL skills in community health curriculum. Rather than focusing our efforts on the technology, we focused on improving pedagogical foundations that would result in long-term teaching and learning successes by faculty and students, respectively. By thoughtfully outlining learning outcomes, a curriculum, designing assignments, assessments and syllabi, we wanted to ensure our work would have positive impact on student learning whether or not badge technology proved useful and sustainable.

The rest of this article discusses the steps taken by the badges project team with our collaborative, learning outcomes-based approach in mind. Badges, for us, were a hook that enabled us to receive the financial support to embark on the project. At its core, the project focused on learning outcomes and improving the way IL was embedded within disciplinary assignments. While this was our main goal, implementing badges will expand our success. When implemented in fall 2014, badges will clearly communicate to students what skills they learn throughout a course and have earned the badges as evidence of these skills. In turn, students can showcase their badges as evidence on ePortfolios, and be equipped with language to discuss their skills.

Learning outcomes and outcomes mapping
Complementing disciplinary outcomes with library outcomes better contextualizes and prepares students with IL skills they will use in a profession (Gordon and Bartoli, 2012, pp. 25-26) and can also better elucidate for disciplinary faculty members how to contextualize IL skills within their courses and assignments (p. 29) that prepare students for skills they will use in a profession. In this way, outcomes mapping is a useful exercise to ensure that outcomes meet general IL standards, and to contextualize them within a discipline. As such, it was important that the badges project began with a learning outcomes mapping exercise, which attempted to reconcile the many disparate expressed outcomes from the University, the University Library and discipline-specific accrediting and credentialing bodies.

Part of this outcomes mapping work began prior to proposal funding. The project's title, Digital Badges for Creativity and Critical Thinking, recalls one of PSU's undergraduate campus-wide learning outcomes: creativity and critical thinking. The outcome, which reads: "Students will develop the disposition and skills to strategize, gather, organize, create, refine, analyze, and evaluate the credibility of relevant information and ideas" (Portland State University Institutional Assessment Council n.d.), expressly discusses what librarians commonly refer to as IL. Although using creativity and critical thinking as a broad outcome for IL creates problems in assessing and evaluating achievements on a campus-wide level, using this language to frame the project's goals clearly communicated to the University community what larger learning outcome the project would address. By doing so, the project was in a better position to be funded, and situated itself as an example of how to tackle this particular outcome in an undergraduate curriculum.

Upon funding, our first step was to continue this dialogue about learning outcomes. In collaboration with the Chair of the Community Health Undergraduate Curriculum Committee and the Director of the School of Community Health, the Urban & Public Affairs Librarian identified and mapped disciplinary and library-specific learning

outcomes. Doing this work in the field of public health proved easy. In its "Recommended Critical Component Elements of an Undergraduate Major in Public Health", the Associated Schools and Programs of Public Health (ASPPH) has identified IL as one of the two background domain skill areas necessary for an undergraduate major in public health. "Students should be able to locate, use, evaluate, and synthesize information" (Wykoff *et al.*, 2013). This document also outlines nine public health domains, which should be reflected in the undergraduate curriculum. By taking these nine public health domains and mapping them to the School of Community Health's undergraduate courses, we were able to identify the courses in which these domains were taught. Next, we mapped course objectives from course syllabi to the four broad PSU Library Learning Outcomes: Strategize, Gather and Organize, Analyze and Evaluate and Behave Ethically. These mapping exercises enabled us to identify which outcomes are taught in which courses, and to identify courses best suited to the badges project.

Although it would have been ideal to select project courses based on the outcomes mapping exercise findings, financial and socio-political challenges required the librarian to rely on disciplinary faculty volunteers to join the team. Luckily, three motivated and passionate Community Health faculty members volunteered. With volunteers on board, we had three courses that would integrate badging:

(1) Our Community Our Health, the introductory course to public health.

(2) Community Nutrition, an information- and research-heavy course taken mostly by Health Studies majors concentrating in nutrition.

(3) Social Gerontology, a survey course focusing on gerontological issues.

Curriculum planning and assessment
The project team, consisting of the Urban & Public Affairs Librarian, three faculty members from the School of Community Health and an Instructional Designer from the Office of Academic Innovation, started by reviewing the learning outcomes mapping. From there, we had to decide which skills were "core" (those that would be central to the project in each class) and which skills were not. In the end, the core badge curriculum reflected what we deemed most important for community health students to learn. It comprised of six badges: Web Ninja (for Web site evaluation skills), Source Sleuth (for understanding information formats and audiences), Silver Pen (for contributing to the information landscape and providing peer commentary), Keyword Hacker (for learning search techniques) and Recorder (for citation and source documentation). Finally, the sixth badge of the core curriculum certifies the culmination of students' work throughout the course: Master Information Analyzer.

After identifying the core curriculum, we set out to develop course assignments and outline the assessments and criteria students must meet to earn each badge. Working in team meetings, during a retreat and in one-on-one meetings, we outlined the parameters of course assignments for each badge. Although the badges focused on the same learning outcomes for each class, most class assignments and requirements remained unique. In this way, the core curriculum was not a "canned" curriculum, but rather a curriculum focused specifically on course and disciplinary contexts. For example, the Silver Pen badge shows a good example of how each course will meet the same outcomes

but via different means. See Table I for an outline of this badge and its associated assignments and criteria.

Identifying and creating appropriate assessments for each badge was a large portion of the instructional design work. We struggled to figure out how to assess each competency. While we hoped to assess each competency in the context of larger projects, we decided to sometimes use smaller assessment tools. Mapping portions of a larger project back to a particular skill seemed too onerous a task for this trial run with badges.

An example of this is the Community Nutrition course's term project, which spans the entire 10-week term. It seeks to investigate the community nutrition landscape in Oregon's counties. Students must research existing services as well as make meaningful connections between evidence in the literature, demographic and other data, and the information they uncover about local communities. Instead of assessing student comprehension of information audiences and formats as expressed in their final annotated bibliographies, we will certify this skill with a stand-alone assignment and assessment. Students will find one professional article, one popular article and one in-between article. We will then ask them to complete a worksheet that identifies characteristics of each article type. Not only does this approach begin to scaffold skills students need for their annotated bibliographies but it also sets the stage for students to think about information formats, perspectives and audiences. Similarly, the Source Documentation badge will not be assessed using annotated bibliographies. Instead, students will engage with instructional content and take a quiz. Although these skills will be certified before the annotated bibliographies are due, the grading of the annotated bibliographies requires students to exhibit these skills.

After the project planning phase was completed, the remainder of the work to prepare for badges consisted of identifying and outlining course assignments, instructional content, assessments and rubrics to be used for badges. We began compiling and

Course	Assignment	Criteria
Our community, our health	Students are required to write a blog post on the class blog. They will then provide peer evaluation of one another's blog posts	Students complete the blog post and peer evaluation exercise
Community nutrition	Students will critically evaluate a newspaper article on a community nutrition topic. They will then write and submit a commentary about that newspaper article to *The Oregonian* and *The New York Times*. Students will also provide peer review feedback on commentary drafts prior to their submission	Students will print/submit the e-mail showing they have sent a commentary to the newspapers; students participate as a peer reviewer
Social gerontology	Students will write critical responses to an assigned article. Students will then provide peer review of one another's responses	Students successfully complete the critical response and the peer review process

Table I.
Silver Pen badge assignments and criteria

creating handouts, worksheets, quizzes and other needed instructional tools. Moreover, the digital badges themselves needed to be created. The project will launch in fall 2014.

Lessons learned

Initially, we hoped to complete the project planning and instructional design in one term and implement badges. We quickly discovered, however, that the work to map outcomes, create a curriculum, redesign course assignments and student assessments, in addition to developing needed course content and badging, would take much longer. All in all, the project planning phase spanned over one year.

Despite the pressure to innovate and address external pressures straining higher education today, we feel it is possible to maintain educational underpinnings throughout implementations of technological innovation and change. In the PSU Digital Badges for Creativity and Critical Thinking project, centering our work on learning outcomes and course objectives, has enabled us to identify our shared values and desired project outcomes. While the outcomes mapping portion of the work helped to frame the project, we did find that the alignment of the PSU Library Learning Outcomes to the National Commission for Health Education Credentialing's competencies, the University's learning outcomes, the School of Community Health outcomes and expressed learning outcomes for each course was not only onerous but also perhaps overkill. The problem lies in the fact that so many organizations have differently expressed learning outcomes, making it difficult to know which credentialing body and which outcomes will best serve students. For instance, the PSU Creativity and Critical Thinking outcomes are so broad and encompassing that there is no effective way to capture and assess the breadth of student work in this category. Similarly, ASPPH does not address IL as an outcome, but as a knowledge domain. These differing takes on outcomes and competencies can needlessly complicate a systematic approach to identify which outcomes are most important for teaching and learning. As such, it made sense that we mapped outcomes to only the Library's broad outcome categories. Reflecting back on the mapping, we could have more successfully chosen fewer organization's outcomes and credentials to include in the outcome mapping exercise.

The badges project at PSU is viewed by administrators as a "proof of concept" project that will inform the institution regarding the viability of digital badges. As such, we are concerned that any evaluation of the project will simply take into account the success of badging technology and its adoption by students, rather than the core of the work, which aims to improve pedagogical practices and collaboration in providing disciplinary specific IL instruction to undergraduate students of Community Health. This danger in how the University evaluates the project puts the project's potential at risk. Without the badges or other innovative technologies as a "hook", the institution may not incentivize labor-intensive instructional design projects that expand outcomes-mapping and the integration of IL content into course assignments and student assessment. For this project to expand and for similar projects to succeed, administrators will need to prioritize the time-intensive nature of curricular redesign projects in a challenging environment fraught with decreasing budgets, shrinking human resource capacities and institutional performance-based budget models that, arguably, prioritize income generation over improvement of pedagogical practices.

Notwithstanding these challenges, we feel that our work has been exceedingly valuable and successful. We engaged with ideas about what skills students need, and

together discovered how to scaffold assignments and assess student work. At the same time, we hope to deliver an improved learning experience for students and professors. Collaboratively discovering how to approach instructional design was valuable; it is a skill and experience that we will all as individuals carry forward throughout the rest of our careers in higher education.

Implications for library practice
These lessons learned have broader implications for libraries considering badges as a way to certify IL skills. Generally, our findings show that a collaborative and learning outcomes-based approach can effectively guide instructional design, which takes true collaboration, time and planning. There are multiple steps to learning outcomes-based instructional design projects. First, a collaborative team of librarians and disciplinary faculty should begin by mapping outcomes, competencies and other articulated skills from stakeholders such as the Library, University and accrediting bodies. This allows the team to consider which learning outcomes to use and which courses to target for integrating IL skills and badges. With articulated outcomes to target, team members can begin the instructional design of assignments and assessments to meet both disciplinary curricular needs and IL learning outcomes.

Technological innovation has an exciting place in higher education. As technology is appealing, it can be intoxicating and cause projects to be ineffective or to fail. Badging is no exception. Libraries should approach badges as a tool that aids educators in improving pedagogical practices rather than approaching them as the end goal itself. As such, it is hard to garner support for badging projects that will not result in awarding badges to students. A good compromise is to communicate with project stakeholders that the goal of implementing badging technology is a secondary to the larger and more important of goal of improving IL skills integration into disciplinary courses. Without strong instructional design, badges cannot successfully communicate to students what they learn, nor will students show as much engagement with badges. Meaningless badges may be fun and novel, but for students faced with insurmountable debt and the drive to showcase their successes, they will hold little value. Technology can be a tool that makes clearer to both students and instructional faculty what skills students learn in which assignments, and can provide more concrete evidence of these co-curricular achievements.

Future directions
As the badges project at PSU continues, we will explore how to make our successes sustainable. Initially, working to assess this and similar projects will be key in our and the University's understanding of the project's immediate and long-term impacts on student learning and teaching pedagogy. However, to accomplish meaningful assessment, the badges project will need to continue past its current allotted term, and the University has made no commitment to continuing resources to sustain the reTHINK projects. We remain undeterred by this barrier because we know that we have already been successful in our collaboration and integration of IL into three classes. These classes will use redesigned assignments and assessments, regardless of whether badges are awarded to students for successfully achieving these skills. For us, the process of instructional design is an experience that we will share with our colleagues in the School of Community Health, University Library, and generally on the PSU campus.

One such way to measure the project's efficacy would be to use control groups, comparing different sections of the same course – using badging and the redesigned syllabus in one section and the standard "one-shot" library instruction session with the old syllabus in another. Another option would be to engage in a longitudinal study using general IL skills assessment for all undergraduate community health students at PSU, track their courses of study and the IL interventions they receive. After the trial run of badges in fall 2014, the team will assess how to move forward.

Should the University adopt badging as a mechanism to certify co-curricular skills, or if it moves toward a competency-based curriculum model, much work would need to be done to encourage faculty to participate in this innovation. Our continuing assessment of student learning that shows improvement of students' IL skills acquisition and creativity and critical thinking could provide the needed evidence to demonstrate to faculty the value of engaging in innovative projects that blend instructional design with new learning modalities and technologies. This, coupled with student feedback on badges, might be a bridge to continue our University-wide dialogue on competency-based education, instructional design and learning outcomes and innovative educational technologies.

In sum, we have learned from the planning phases of the Digital Badges for Creativity and Critical Thinking project that the approach to innovation is as much or more important than the technology itself. Innovative technology projects can greatly benefit higher education when they incorporate thoughtful planning that first improves pedagogy and instructional design and values instructional design work over the technological implementation.

Note

1. The *Oxford Dictionary of Marketing* defines value proposition as: "The company's core promise of benefits to clients and prospective clients. Often what the organization thinks its value proposition is, and what its customers think its value is, are different, therefore this subject needs to be constantly surveyed" Doyle (2011).

References

Abramovich, S., Schunn, C. and Higashi, R.M. (2013), "Are badges useful in education? It depends upon the type of badge and expertise of learner", *Educational Technology Research and Development*, Vol. 61 No. 2, pp. 217-232.

Albanese, M.A., Mejicano, G., Anderson, W.M. and Gruppen, L. (2010), "Building a competency-based curriculum: the agony and the ecstasy", *Advances in Health Sciences Education: Theory and Practice*, Vol. 15 No. 3, pp. 439-454.

Berdrow, I. and Evers, F.T. (2011), "Bases of competence: a framework for facilitating reflective learner-centered educational environments", *Journal of Management Education*, Vol. 35 No. 3, pp. 406-427.

Brasley, S.S. (2008), "Effective librarian and discipline faculty collaboration models for integrating information literacy into the fabric of an academic institution", *New Directions for Teaching and Learning*, No. 114, pp. 71-88.

Cary, K. (2012), "A future full of badges", *The Chronicle of Higher Education*, available at: http://chronicle.com/article/A-Future-Full-of-Badges/131455/ (accessed 18 June 2013).

Deterding, S., Dixon, D., Khaled, R. and Nacke, L. (2011), "From game design elements to gamefulness: defining gamification", *Proceedings of the 15th International Academic*

MindTrek Conference: Envisioning Future Media Environments, ACM, New York, NY, pp. 9-15.

Doyle, C. (2011), "Value proposition", *A Dictionary of Marketing*, Oxford University Press, Oxford.

Garrison, D.R. and Vaughan, N.D. (2013), "Institutional change and leadership associated with blended learning innovation: two case studies", *The Internet and Higher Education*, Vol. 18, pp. 24-28.

Gordon, L. and Bartoli, E. (2012), "Using discipline-based professional association standards for information literacy integration: a review and case study", *Behavioral & Social Sciences Librarian*, Vol. 21 No. 1, pp. 23-38.

Jackson, M.J., Gallis, H.A., Gilman, S.C., Grossman, M., Holzman, G.B., Marquis, D. and Trusky, S.K. (2007), "The need for specialty curricula based on core competencies: a white paper of the conjoint committee on continuing medical education", *Journal of Continuing Education in the Health Professions*, Vol. 27 No. 2, pp. 124-128.

Johnson, L., Adams Becker, S., Estrada, V. and Freeman, A. (2014), *NMC Horizon Report: 2014 Higher Education Edition*, Austin, TX.

Kim, B. (2013), *Keeping Up With […] Gamification*, Association of College and Research Libraries, available at: www.ala.org/acrl/publications/keeping_up_with/gamification (accessed 18 July 2014).

Knight, E. and Casilli, C. (2012), "Mozilla open badges", in Oblinger, DG. (Ed.), *Game Changers: Education and Information Technology*, Educause, available at: http://net.educause.edu/ir/library/pdf/pub7203.pdf

Levidow, L. (2002), "Marketizing higher education: neoliberal strategies and counter strategies", in Robins, K. and Webster, F. (Eds), *The Virtual University? Knowledge, Markets and Management*, Oxford University Press, Oxford, pp. 227-248.

Lozano, J.F., Boni, A., Peris, J. and Hueso, A. (2012), "Competencies in higher education: a critical analysis from the capabilities approach", *Journal of Philosophy of Education*, Vol. 46 No. 1, pp. 132-147.

Meulemans, Y.N. and Carr, A. (2013), "Not at your service: building genuine faculty-librarian partnerships", *Reference Services Review*, Vol. 41 No. 1, pp. 80-90.

Meyer-Adams, N., Potts, M.K., Koob, J.J., Dorsey, C.J. and Rosales, A.M. (2011), "How to tackle the shift of educational assessment from learning outcomes to competencies: one program's transition", *Journal of Social Work Education*, Vol. 47 No. 3, pp. 489-507.

Moser, F.Z. (2007), "Strategic management of educational technology – the importance of leadership and management", *Tertiary Education and Management*, Vol. 13 No. 2, pp. 141-152.

Portland State University (2014a), "Portland state office of academic innovation | about provost's challenge", available at: www.pdx.edu/oai/provosts-challenge-about (accessed 7 June 2014).

Portland State University (2014b), "Portland state office of academic innovation | provost's challenge", available at: www.pdx.edu/oai/provosts-challenge (accessed 7 June 2014).

Portland State University Institutional Assessment Council (n.d.), "Undergraduate campus-wide learning outcomes with rationales", available at: www.pdx.edu/institutional-assessment-council/undergraduate-cwlos-with-rationales (accessed 8 July 2014).

Raths, D. (2013), How Badges Really Work in Higher Education. *Campus Technology News*, available at: http://campustechnology.com/articles/2013/06/20/how-badges-really-work-in-higher-education.aspx?=CTITTNL (accessed 20 June 2013).

Schneckenberg, D., Ehlers, U. and Adelsberger, H. (2011), "Web 2.0 and competence-oriented design of learning – potentials and implications for higher education", *British Journal of Educational Technology*, Vol. 42 No. 5, pp. 747-762.

Schulte, S.J. (2012), "Embedded academic librarianship: a review of the literature", *Evidence Based Library & Information Practice*, Vol. 7 No. 4, pp. 122-138.

Sleeter, C. (2008), "Equity, democracy, and neoliberal assaults on teacher education", *Teaching and Teacher Education*, Vol. 24 No. 8, pp. 1947-1957.

Smith, K. (2012), "Lessons learnt from literature on the diffusion of innovative learning and teaching practices in higher education", *Innovations in Education and Teaching International*, Vol. 49 No. 2, pp. 173-182.

Tally, S. (2012), "Digital badges show students' skills along with degree", *Purdue News*, available at: www.purdue.edu/newsroom/releases/2012/Q3/digital-badges-show-students-skills-along-with-degree.html (accessed 18 June 2013).

Wheelahan, L. (2007), "How competency-based training locks the working class out of powerful knowledge: a modified Bernsteinian analysis", *British Journal of Sociology of Education*, Vol. 28 No. 5, pp. 637-651.

Wheelahan, L. (2012), "The appropriation of constructivism by instrumentalism: the case of competency-based training", *Why Knowledge Matters in Curriculum: A Social Realist Argument. New Studies in Critical Realism and Education*, Routledge, Taylor & Francis Group, New York, NY, pp. 126-144.

Wykoff, R., Petersen, D. and Weist, E. (2013), "The recommended critical component elements of an undergraduate major in public health", *Public Health Reports*, Vol. 128, available at: http://europepmc.org/abstract/MED/23997294 (accessed 8 July 2014).

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