Introduction

The importance of life long learning in librarianship becomes more apparent each year as new areas of expertise continue to change the profession. Blakiston, in her article on continual learning and library organizational culture, states, “Job descriptions throughout the library organization will likely look very different in just five years’ time, and the pressure to keep up and stay relevant is greater than ever.” (729) This has proven true. To remain relevant, the profession must adapt quickly and to adapt, learning opportunities in new competencies must be made apparent. However, professional development proves to be complicated in an environment where emerging competencies are hard to articulate, where opportunities are too numerous to strategize a clear course of learning and where learning pathways that illustrate focused professional growth remain unstructured and independent of guidance from the field. This article addresses the many barriers librarianship has with professional development outside of formalized education environments and how approaches to collaborative competency development and emerging educational technologies that offer new credentialing opportunities in the form of open digital badges (ODB) could provide clearly defined approaches to learning new expertise that can be articulated with evidence and endorsed by the profession.

Competencies in Librarianship

A foremost challenge for libraries is maintaining relevancy when the needs of the communities they serve are constantly shifting. These changing needs, while offering new opportunities, also raise challenges for the education and development of library professionals. At a recent American Library Association (ALA) summit on the future of libraries, a major issue identified as a potential barriers for fully realizing the library of the future was “…the education and training of library staff and identification of the skillset that librarians will need in the future” (Bolt, 13). Why would education and identification of competencies for library professionals be identified as a major barrier to the future vision of the library? As identified by the International Federation of Library Associations **(**IFLA) report titled, *Continuing Professional Development: Principles and Best Practices,* the “…constant flux in the needs of societies, changing technologies, and growth in professional knowledge demand that information workers must expand their understanding and update their skills on an ongoing basis.” However, identifying competencies, knowledge and skillsets when the needs of society are a moving target is problematic. Additionally, while the competencies themselves may be hard to identify, the environment in which the knowledge, skills and behaviours are to be demonstrated also impact the type of expertise needed.

Core knowledge and skillsets cannot be independent of the context for which they will be put into practice. Socio-cultural, geographic, economic and technological divides with the communities being served will affect the competencies needed and used. Rheman states, “These factors make it clear that when we are trying to configure competencies in a particular setting, we need to articulate contextual peculiarities (71). Due to this, professional knowledge and skills needs to be developed in collaboration

with institutions and organizations governing librarianship and the larger public that will interact with and guide the future of what the library will become (Khalid, 14).

In addition to community contexts, the employment market has always impacted competency development in library education (Kennan et.al, 187; Macpherson, 12). However, the ability to clearly identify the needs of the market is not an easy task. As Chow et al. states, "… the employment perspective is highly variable and eclectic, leading to a vague set of skill employers seem to value" (4). While core competencies are developed within the profession, the responsiveness of these competencies to market needs is not simple. There are no agreed upon competencies among employers. Additionally, to identify the market needs would require a large scale analysis of employment opportunities, employer expectations and employee needs among other variables (Rheman, 78).

While there may be competencies that can be identified across professional associations, educational institutions, and contextual spaces (e.g. local markets, community needs, etc.) the integration of the identified competencies into a formalized education strategy is complicated by the need for expertise that may not have fully developed within the field. Emerging trends provide opportunity for libraries to evolve and become a central force for change. However, internalizing these trends into official curriculum is difficult as modifying programs to quickly address new competencies is constrained by the process of credit approval in higher education. Additionally, as Rheman states, "…faculty members do not have the competence in all areas in which you wish to develop new curriculum" (78). While the desire exists to integrate new knowledge and skills into the education of emerging professionals the ability to do this may be out of the educators and library communities expertise. If formal education suffers trying to incorporate new trends into curriculum, growing a professional development program that can identify experts to guide skills training will be difficult.

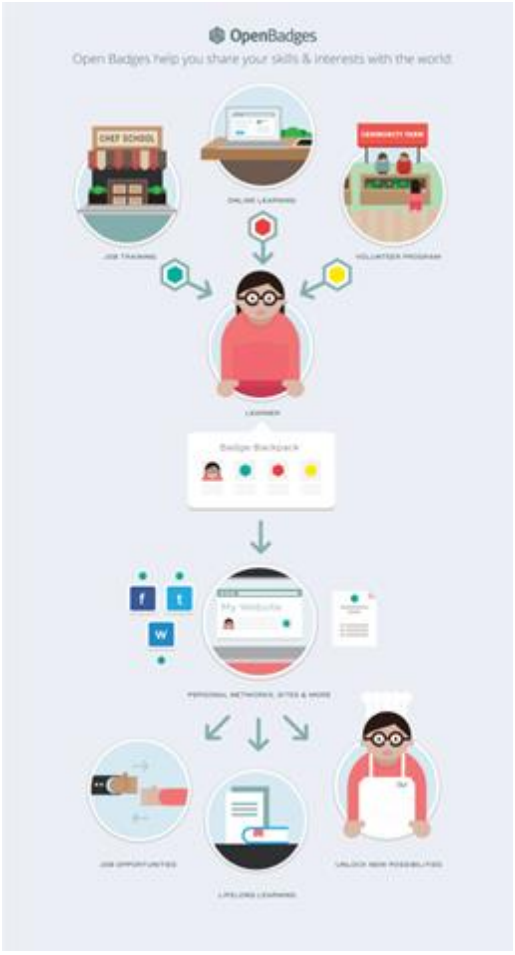
Learning Pathways in Library Professional Development

Learning pathways, defined as the route in which an individual takes to acquire new learning, are based on the choices of the learner. In interviews performed by the Centre for Research in Education, Equity and Work (CREEW) on learning pathways and vocational training, adult learners described their own learning pathways as "…'stepping stones', 'zigzags' and 'crooked paths'" (Harris, Rainey, and Summer, 11). The metaphor of the unstructured nature of their path was in part based on how their learning would veer off in unexpected directions in pursuit of their learning goals. The circuity of their path was in part due to a lack of guidance, lack of appropriate previous knowledge and inexperience in the educational process. Due to this lack of clear direction, "…participants acknowledge mistakes and the inefficiency in their pathways--that there might have been an easier or quicker ways to get to where they were…" (Harris, Rainey, and Summer, 39).

Professional development in librarianship is often dependent on individuals identifying trends and opportunities. For librarianship there is no lack of learning opportunities. From traditional education (e.g. degree programs, additional qualification courses) to professional development within the field (e.g. conferences, professional association events, workshop and lectures) and through the daily activities of working in a complex environment that requires diverse knowledge, abilities and problem solving. While the CREEW report focuses on "facilitated learning pathways" through accredited vocational training and supports, it isn't difficult to identify how online open learning would further complicate the path (Harris, Rainey, and Summer, 9). With the influx of open education resources, there are numerous ways by which information professionals can expand their understanding on a topic without direct contact to the actual learning event itself. Video lectures, podcasts, and interactive websites, are just a few ways by which we can supplement, or in some cases replace, traditional education models. However the diversity of opportunity can easily divert strategies around personal learning. Additionally, in a profession that is constantly shifting, where issues around identifying core roles moving forward is unclear, and where career paths change quickly when these new areas emerge, developing a plan of learning activity is becoming more difficult. Clearly articulating a learning plan in this environment makes discussions on career progress near to impossible.

Open Digital Badges – An Overview of Possibilities

There are many ways to address the issue of library professional development to identify new competency areas and to formalize a visible learning pathway that can be identified and articulated when discussing professional learning goals. With the introduction of open digital badges (ODB) as a form of credentialed learning, the possibility for an organized collaborative approach to professional development may be possible. Developing badges approved and sponsored by our community crossing libraries, library programs and organizations could provide an opportunity to guide our own learning in new emerging areas, to grow our own skills and knowledge directly applicable to local contexts while leveraging abilities exhibited in work, school environments and professional bodies which may otherwise be complex to illustrate.



Open Badges Napkin Sketch. Chris Appleton (Mozilla Foundation) Licensed under a CC Attribution 4.0 International License.

Before discussing the possibilities that ODBs could provide to learning pathways and professional growth in librarianship, we need to answer: 1) What are ODBs; 2) How can ODB paths provide visibility and structure to learning pathways; 3) How can the ODB collaborative model be applied to develop new competencies in librarianship; 4) How can ODBs benefit local contexts and the immediate needs of a changing profession?

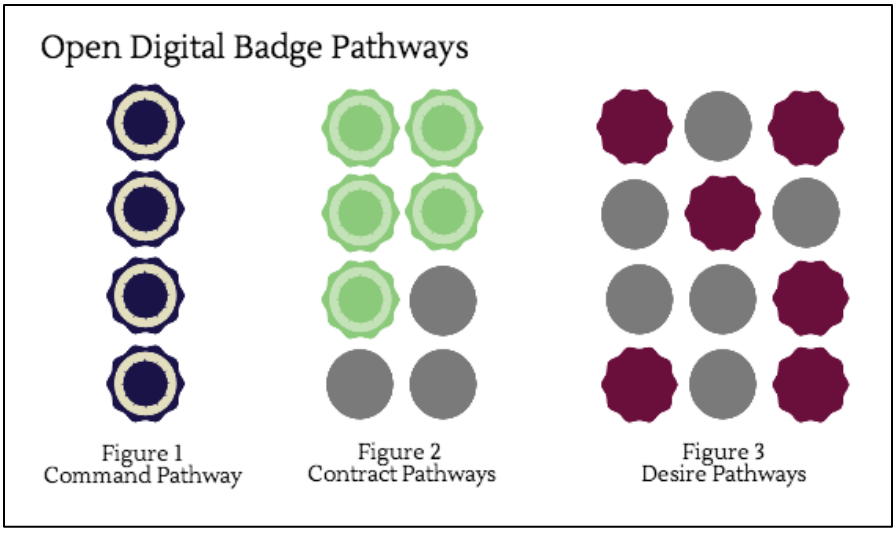
Open Digital Badges Defined

An ODB is a digital signifier of concrete evidence of accomplishments, skills, qualities, or participation in experiences. The signifiers have embedded metadata that includes the issuing organization, criteria for earning the badge, and evidence of the skill or knowledge acquired. The portability of the badges to social media sites like LinkedIn and Facebook, allows badge earners to publically share all learning experiences whether acquired from formal or informal education settings (Open Badges UBC.)

Open Digital Badge Pathways

While developing an ODB provides the ability to credential learning, the opportunity to structure the pathway can provide clarity and visibility to learning activities. Completion of online webinars, MOOCs, engagement in organizations are all examples of learning opportunities in librarianship that may go unnoticed as a part of a professional development track. As there is limited certification of learning acquired from these opportunities and the skills often can be considered difficult to assess (e.g. organization, critical evaluation, interpersonal communication, etc.,) badge paths can highlight activity and engagement from distributed learning opportunities.

ODB paths are fundamental to the development of a badging system. These pathways can be as prescriptive or open as the designer chooses. **Figure 1** illustrates the most prescriptive pathway, the command pathway, where a learner must go through a linear earning process to earn badges. An example of a command pathway is the leveled badge system under development by the Young Adult Library Services Association (YALSA) based on the core competencies outlined in the *Competencies for Serving Youth in Libraries* (YALSA). **Figure 2** illustrates the contract pathway that, while linear in its structure, allows for the autonomy of the



learner to select what pathway they will engage in and how far they will go in the learning process. An example of the contract pathway is the *Edmonton Public Library's Summer Reading Program.* This badge system offers maker badges for use of arduinos, 3D models and digital art creation. While all badges are related to one another thematically, each badge can be earned independently of one another (EPL). Finally, **Figure 3** illustrates the desire pathway where there is no designed pathway and earning badges is based on the learner's interests (Casilli).

The ability to provide structured learning across disparate opportunities through the development of a linear pathway can provide visibility to learning and identification of the thought process of the learner developing competency, and eventually, expertise in an area. Carla Casilli, Mozilla's Director of Badge System Design + Implementation, states,

> All badge earners leave behind a trail. That badge trail may prove to represent merely a series of required steps; that path may illustrate a series of revealing, personally inspired choices, or that path may appear to be erratic and nonsensical, indicating nothing. But rarely is that last example the case.

The badge pathway provides a learner the opportunity to develop a narrative around his or her own learning. As Casilli notes, this builds both personal value for the learner but also external value in understanding the badge earners' learning goals and proficiencies.

Collaborative Model for Badge Development

Badge systems can provide evidence and visibility to both formal and informal learning; however, the development of the learning pathways will need champions focusing on innovative forms of collaboration. The *Constellation Model of Collaborative Social Change* used by the Mozilla Foundation in its development of the Badge Alliance, a group of interested partners working to develop open badges, is the process of "...bringing together groups from multiple sectors to work toward a joint outcome…"(Surman and Surman, 25). For open badges, while the constellation of partners could be anyone interested in badging applications, the idea of co-creation and endorsement of badges provides the opportunity to emphasize competencies in emerging areas yet to be integrated into official curriculum and practice. With the constellation model, not only is there a shared interest in the creation and direction of badge-based programs, but also the badges themselves. Internal and external partners co-creation of badges could provide the needed expertise in new competency areas from a variety of diverse and knowledgeable perspectives (Surman and Surman, 26.)

Open Digital Badges and Local Needs

The American Institute for Research (AIR) report titled, *The Potential and Value of Using Digital Badges for Adult Learners*, outlines how badges can benefit more than the

earner. The importance and value of badges for issuers is the ability to provide credentialing without accreditation through a formal education system (Finkelstein, Knight and Manning, page number). As noted earlier, curriculum modifications for librarianship cannot occur quickly enough to address emerging needs within the profession and at times the initial expertise for these areas lay outside of the field. As ODBs remain open and outside of the bureaucracy of formal education, the ability to develop an authoritative credential based on the immediate needs of the profession and workplace is possible. Finkelstein, et al. writes,

> ... granting credit through badges can level the playing field and thus make it easier for local community groups, learning program providers, and training programs to offer opportunities to earn badges that meet national or association-based standards (12).

While masters degrees and library technician programs have the ability to accredit the library and information science degree or diploma, the ability to connect that learning to the specific core learning objectives and goals of the profession (e.g. ACRL Guidelines and Standards, YALSA Competencies, etc.) and emerging employment needs requiring leadership (e.g. data management, open education, etc.) could be delivered through a badging program. This would extend the professional development within specific contexts, encouraging lifelong learning, and provide associations and employers a larger role in the continuing education of the profession.

Sample Open Digital Badge Collaboration for Librarianship

To better exemplify the potential of ODBs in librarianship as proof of learning and skill development, making visible learning and collaborative articulation of competencies, **Table 1** provides a possible ODB collaboration focusing on computer programming skills and emerging needs in libraries.

Table 1	**Sample Open Digital Badge Collaboration Emerging Technologies in Libraries**
Partners	Library Degree Program Canadian Association of Research Libraries (CARL) Codeacademy
Competencies	As identified by the Core competencies for 21st Century CARL Librarians (2013) document and the core information technology course in the Library Degree Program, the core competency is the understanding of principles of web page design, maintenance and development.
Learning Pathway	Successful completion of the HTML & CSS tutorials from Codeacademy. Successful completion of Library Degree Program course work and assignment on web design principles.

Badge Accredited 	**Description** - This badge is issued as proof of understanding of basic HTML & CSS and web design principles in a library context.
	Criteria - Completion of the HTML & CSS tutorials from Codeacademy; Successful completion of Library Degree Program course work and assignment on web design principles.
	Issuer – CARL, Library Degree Program, Codeacademy
	Evidence - http:XXXX (A website coded in HTLM & CSS, incorporating web design principles)

In this example the partners, competencies, learning pathway and accredited badge, including the badge metadata, are outlined. As stated earlier when discussing the *Constellation Model of Social Change*, potential partners are drawn from both the internal library community and external partners but all are focused on a common goal, for this example, skill development in web design and coding. The partners include CARL, a library degree program, and Codeacademy, a free interactive platform that focuses on the development of programming skills including "...core programming concepts and syntax for the world's most popular languages…" such as HTML, CSS, Python, PHP, JavaScript and Ruby.

To connect learning goals to the needs of research libraries, both immediately and in the future, all partners must have a shared responsibility in outlining the competencies. In this example the CARL document, *Core Competencies for the 21st Century CARL Librarians,* and the library degree program core information technology course goals are identified as a common area of competency need (CARL, 9). A core goal of Codeacademy is to partner with schools and organizations to help develop programming skills needed for the future workforce.

The learning pathways outlined in this example are simplified but could also include webinars and conference (e.g. Emerging Technology User Group Unconference, BCCampus) from both local and international contexts. For this pathway the badge earner will be expected to complete the HTML & CSS tutorials from Codeacademy and assignments designed for the library degree program course on web design principles. Once these are completed successfully and the final evidence of the learning is produced, for this example a website built with HTML & CSS using appropriate web design principles, the badge earner will be awarded the fully articulated badge that has been endorsed by all partners. The assessment to ensure the criteria were met was not discussed here but is an important element in ensuring that learning has occurred and provides authority to the badge.

Conclusion

ODBs are a relatively new form of educational technology. What they will become is difficult to say; however, the growth of badges as a form of credential will need the dedication and commitment of various partners. If partnerships between library programs, associations, library systems and external interested partners were developed, ODB systems could begin to articulate the future roles of librarians by identifying areas of learning and endorsing those badge sets to shape the library staff of the future and further support the professional development needs of both established librarians and new graduates. By developing structured badge paths, a number of learning opportunities could formulate into a cohesive narrative of learning that provides clarity currently lacking in current professional development. By partnering with library programs, ODBs could make skill acquisition more visible by providing concrete samples of accomplishment through the metadata attached to the badges. Finally, through collaborative endorsement by external and internal organization and library systems, the badge accomplishment could be given further recognition in the hiring and promotion process by focusing competencies on local needs and contexts.

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