Digital Badging for Information Literacy Instruction: Diffusion of Innovations Analysis and Case Study

Lauren M. Young

abstract: Digital badging has seen widespread adoption within the US higher education sector with continued growth predicted. Might digital badging present an underrealized opportunity for libraries seeking new vehicles through which to deliver information literacy instructional content? This paper offers an analysis of badging in higher education and considers the strengths and weaknesses of digital badging for asynchronous information literacy instruction by employing Dr. Everett Rogers' Diffusion of Innovations theoretical lens. Current evidence is presented and a case study is provided, detailing Samford University Library's development of an information literacy digital badging pathway incorporating the ACRL Framework and the institution's Christian mission.

Introduction

"Digital badges are validated indicators of skills or competencies, often representing the completion of a microcredential."[1]

Digital badging is a slice of the digital credentialing trend that has enjoyed significant adoption across sectors in the US over the last 10 years. Industry leaders recognize digital badges as a vehicle for professional development and upskilling for their employees. With the average US company investing between 48 and 59 training hours per employee in 2023, depending on company size, a streamlined training process that takes advantage of existing digital networks and infrastructure proves attractive.[2] In the current hiring climate—in which 29 percent of employees representing four generational segments list learning and development as the most important job consideration—companies can benefit from visible, marketable training programs such as microcredentialing and badging pathways.[3]

The higher education sector has been integrating digital badging since 2011 to enhance discipline-related outcomes as well as the soft skills that students will carry forward into their careers, a trend that has primed many employee proponents of digital training and development.[4] By no means a new modality, there remain institutions that have not yet employed badging, or which have not fully realized the potential of badging utilization. A 2016 UPCEA (The Online and Professional Education Association) survey report revealed one in five higher education institutions offering digital badging.[5] By Fall 2023, 80 percent of UPCEA institutional survey respondents (n=92) offered credit-bearing or non-credit bearing badges.[6] [Author note: UPCEA specializes in digital education initiatives, which renders this data only part of the story. Comprehensive higher education badging statistics prove difficult to isolate from larger microcredentialing numbers which include alternative credentials including non-credit and professional certificates, online courses such as MOOCs, badges, MicroMasters, and NanoDegrees.[7]]

Dr. Everett Rogers' Diffusion of Innovations theory, first published in 1962, offers a lens through which to analyze the spread of innovations—technological and otherwise. Rogers grew up the son of an Iowa corn farmer. When the US Department of Agriculture created and offered a new hybridized, drought-resistant corn variety to farmers in the 1930s, Rogers' father chose to continue using his tried-and-true, unmodified seeds. The area experienced a severe drought in 1936 and the hybridized cornfields neighboring the Rogers' farm grew green while the Rogers' crops succumbed. This left a strong impression on young "Ev," aged five years at the time, and he devoted his life's work to studying the factors that lead to varied rates of innovation adoption within social systems.[8]

Rogers' work is noteworthy due to its wide applicability. Initially designed to analyze technological adoption, scholars representing diverse disciplines have applied the Diffusion of Innovations theory and found it to hold true. His model of adoption categories can be visualized as an S-curve; there are five categories which might sound familiar even to those not aware of Rogers' himself (see Figure 1). Within a given social system—which for these purposes is considered any distinct group of individuals presented with a given innovation for potential adoption—the innovators lead the pack, and once the curve reaches a 2.5 percent social system adoption rate, the category shifts to the early adopters, which also represents a slim percentage (12.5 percent). Early majority and late majority adopters comprise the bulk of a defined social system, at 34 percent each. The final adoption category, laggard, ranges the final 16 percent of the social system (see Figure 2).[9]

Factors Influencing the Adoption of Innovations

Rogers not only studied characteristics of social system members, but also the attributes of a given innovation. While the S-curve consistently forms along the adoption percentages, the innovation adoption rate (timespan over which the S-curve unfolds, as plotted on the x axis) varies greatly and is dependent on numerous factors, to include a set of variables that reflect five perceived innovation attributes: relative advantage, compatibility, complexity, trialability, and observability.[10] For the purposes of this analysis, the innovation will be information literacy (IL) instruction digital badging and the social system will be higher education, with evidence selected from both domestic and global contexts.
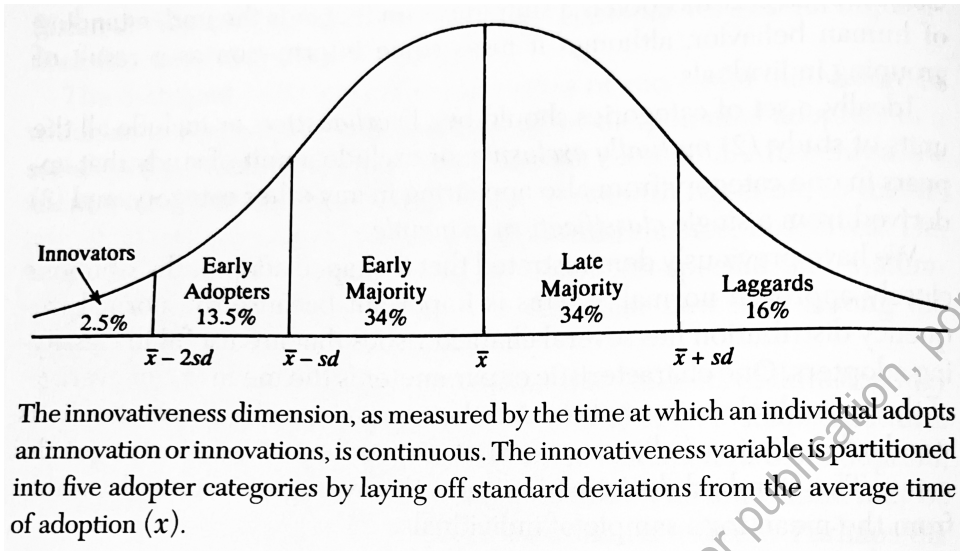
The innovativeness dimension, as measured by the time at which an individual adopts an innovation or innovations, is continuous. The innovativeness variable is partitioned into five adopter categories by laying off standard deviations from the average time of adoption (x).

Figure 1. Diffusion of innovation adopter categories (Rogers 1995, 262).
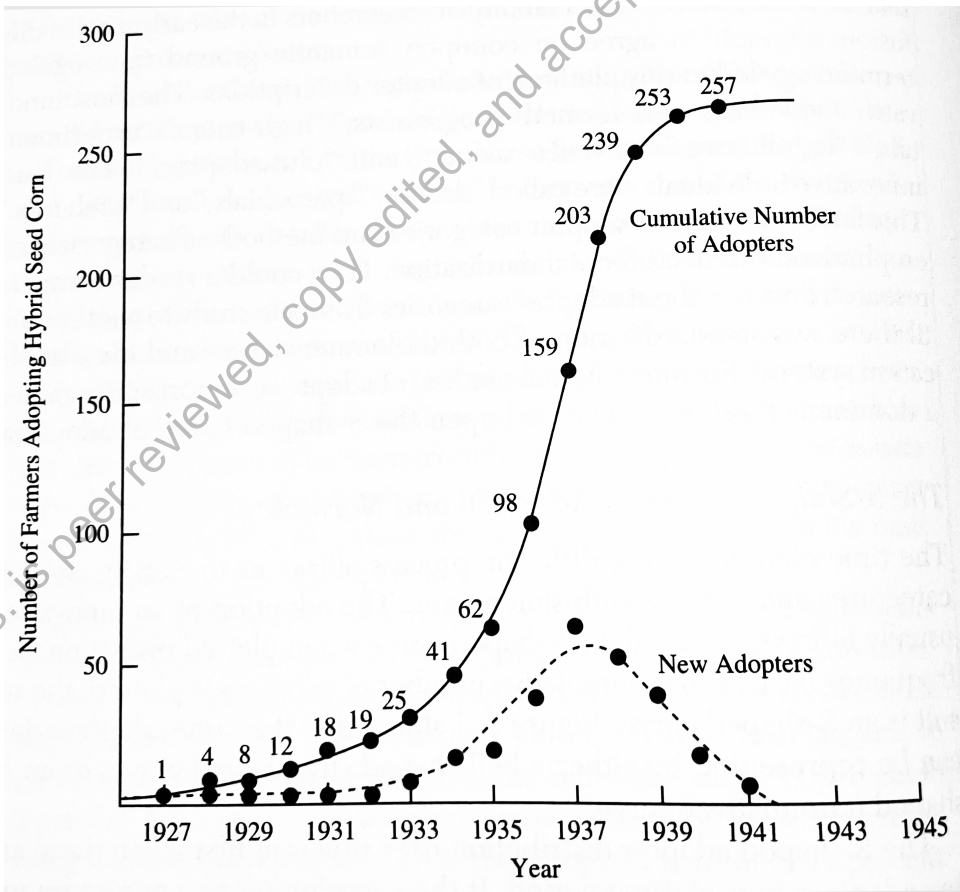

Figure 2. Example diffusion of innovation S-curve (Rogers 1995, 258).

Relative Advantage

"Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes. The degree of relative advantage is often expressed as economic profitability, as conveying social prestige, or other ways."[11]

Relative advantage, per Rogers, is how members of a social system perceive the innovation being introduced in comparison to the existing alternative. A greater relative advantage can suggest a faster adoption timeline. Three capabilities of digital badging that are arguably advantageous to alternative IL instruction modes include mid-stream student reach, a transfer-receptive culture, and chunked information that aligns with modern students' attention spans.

Mid-stream Student Reach

Library instruction is often integrated into bookended courses (think first year writing courses and final year capstones) which can limit librarian access to mid-stream students with (1) refreshers on skills learned in their first year and (2) increasingly sophisticated, discipline-specific information-seeking strategies.

Efforts to scaffold IL concepts throughout students' academic tenure have been cited liberally in the literature over the last half-decade.[12] Scaffolding situated within teaching faculty-library faculty collaborations is often seen as a vehicle to equip students with skills that align with their increasingly complex, discipline-centric information needs. This scaffolded, collaborative approach stands in contrast to the oft-discussed "one-shot" library instruction in which librarians endeavor to fit an entire course's worth of skills into a single instruction session with a class. In contrast, Urszula Lechtenberg and Carrie Donovan write that one benefit of scaffolded library instruction is the ability of librarians to "work toward curriculum-integrated programs in which we are positioned as facilitators rather than the keepers of information literacy."[13] In addition to curricular benefits, seeing librarians work in concert with teaching faculty members signals to students the value of the library and librarians.

Barriers that prevent this scaffolded, collaborative approach include institutional cultures in which departments are siloed and do not naturally interact; cultures in which librarians do not have a seat at curriculum planning tables; and insufficient bandwidth in both librarian and teaching faculty schedules to revise course flow and assessments.

When collaborations are not feasible, badging stands to offer an asynchronous IL instruction component in mid-stream courses. Mark Robison, Nancy Fawley, and Ann Marshall found that junior and senior students reported IL instruction being presented in classes by teaching faculty without librarian involvement.[14] While still pro-library, this approach limits the opportunity for librarians to highlight new

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resources and services teaching faculty might not be aware of. Integrating IL badges can satisfy the end goals of both librarians and teaching faculty and reinforce general skills students will need to succeed, such as citation styles and how to request items through interlibrary loan. Likewise, IL badges can be created at the course level to represent discipline-specific information needs and strategies, such as locating industry data for a business course or identifying article evidence levels in the health sciences. The flipped nature of badges, which asks students to complete the work outside of class, ensures content delivery without sacrificing classroom time in crowded curricula.

Anticipate Transfer Students' Information Needs

The traditional, 18-year-old college applicant pool is declining in the United States for reasons including reduced birth rates and increasing doubt of the value and benefit of higher education.[15] The effects are predicted to be differentiated regionally, with areas like the West Coast seeing an increase in enrollment, but the Midwest and East Coast seeing declines up to and beyond the 15 percent mark.[16] College admissions officers are thus tapping into underrealized populations for potential students, chiefly a) working adults with some college credits but no degree, and b) more traditional transfer students who are currently enrolled in 2- or 4-year institutions and are planning to transfer to a four-year institution to complete a bachelor's degree.

Students whose institutions close their doors, leaving them without either a degree or an academic home, are also on this list. Consider these statistics collated July 1, 2024: 120 public and private nonprofit American universities have closed, merged, or announced closure since 2016.[17] Evan Castillo and Lyss Welding found that as a result of 56 public and nonprofit institutions closing since 2020, 42,000 students were affected and 52.9 percent of these students did not re-enroll at another institution.[18] This suggests an estimated 20,000 plus students universities could recruit to join their campuses.

If universities are successful in recruiting students from these populations, libraries would be well-served to increase or to develop programming and services tailored to their needs. In 2011, Dimpal Jain et al. introduced the concept of "transfer receptive culture" in higher education, which stood in contrast at the time to an assumption that successful transfer depended upon the transfer-sending institutions, namely two-year community colleges.[19] In 2013, Alfred Herrera and Jain identified hallmarks of institutions which have successfully fostered transfer-receptive cultures. The authors encourage transfer-sending institutions to prioritize transferability of students and target transfer-specific student needs. Transfer-receiving institutions can engage in post-transfer efforts including providing targeted financial and academic programming for transfers, recognizing non-traditional transfer students and the experience and perspectives they add to the campus fabric, and assessing transfer culture and efforts with an end goal of advancing the scholarly discussion.[20]

Research undertaken by librarians at Metropolitan State University of Denver campus found through surveying transfer students at their institution that firstly, it is not feasible or practical to describe a "typical" transfer scenario since the experience differs so greatly among students; and that 77 percent of transferring students who did not receive localized IL instruction cited being somewhat or very comfortable locating a

peer-reviewed article.[21] Furthermore, "[i]nterviews and focus groups with transfer students revealed that they were more likely to seek supplemental instruction in the form of video tutorials rather than approach librarians and campus support staff in-person."[22] Pepperdine transfer students surveyed about library usage indicated that, of relational options, they preferred to pose their questions to their professors first and then their peers, with librarians ranking a distant third.[23]

For institutions that find themselves in transfer student sending mode, receiving mode, or both, digital badging can serve as a tool to prepare students with the transferable IL skills they will need in their classes and careers. Self-paced badging affords flexibility to students entering higher education at a later stage and aligns with identified preferences to secure the information independently.

Alignment with the Gen Z Learner Profile

Higher education analysts tend to make much of generational profiling when designing the classrooms of today and tomorrow. The current named generation of traditional college students (18- to 22-year-olds), Generation Z (Gen Z), comprises individuals born between the late 1990s and the early-2010s and is characterized by its members' experience and comfort level with the internet.[24]

When considering this audience and digital badging, there are pros and cons. In the pro column, Kirsten M. Weber and Halle Keim find that Gen Z students "possess the urge to multitask, shorter attention spans, the drive for instant satisfaction, the desire for collaborative learning, a preference for professor-student interactions based on real relationships, and learning that is practical and relevant to their future careers."[25] If we can agree that any given resource is unlikely to meet all of these listed criteria, and that a resource satisfying some of them deserves consideration, then the IL badging pathway qualifies given its suitability for learners possessing shortened attention spans, drive for instant satisfaction, and a bias toward practical application in their learning.

Alternatively, in the con column, Weber and Keim also characterize Gen Z students' "preference for professor-student relationships based on real relationships."[26] While the IL badging pathway is often designed to be used in conjunction with face-to-face library instruction during a student's academic journey, uptake of expanded online formats threatens meaningful relationship development between librarians and students.

Compatibility

> *Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters. […] An innovation can be compatible or incompatible (1) with sociocultural values and beliefs, (2) previously introduced ideas, and/or (3) client needs for the innovation."*[27]

Compatibility, per Rogers, is how fitting members of the social system perceive an innovation to be in relation to existing goals and infrastructure. Two unique characteristics of digital badging that can increase its compatibility with existing library instruction programs are its degree-agnostic design and its ability to serve as a mechanism to reinforce defining elements and initiatives that set the institution apart from peer institutions.

Degree-agnostic design

In liberal arts settings hallmarked by their curricular space and freedom for students to develop multiple knowledge domains and interests, the IL badging pathway can

be designed as intentionally extracurricular, in that the primary pathway does not focus on discipline-specific IL considerations. Within institutions already offering badging programs, libraries can harness existing infrastructure and momentum and add information literacy badges to the opportunities offered. Expanding

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badging offerings in this manner not only benefits the library, but also adds breadth to the university's badging roster, demonstrating to key stakeholders (parents, students, accrediting bodies) a commitment to diversified learning opportunities and soft skills development.

To offer somewhat of a devil's advocacy to the prior discussion of the value of collaboration and relationships between a university's disciplines and its library, sometimes it is beneficial to untether and allow students to pursue a pathway of their choosing. The library can directly offer badging pathways to foster transferable skills that transcend domain silos. Effective formats can incorporate institutional assessment goals such as a localized Quality Enhancement Plan, or national initiatives to include the *ACRL Framework for Information Literacy in Higher Education*.[28] Degree-agnostic proficiencies allow students to pursue an additional didactic arc that carries them from their first semester to graduation. Focusing on skills as opposed to majors also allows for transferability of badges, whereby a student can present a badge earned in a 100-level course as proof of completion to professors in future semesters across degree programs.

Additionally, students with high intrinsic motivation, and who are interested in completing the entire badging program, can work on the pathways independently, outside of assigned course badges. They can then display badges on social media sites, resumes, and email signatures to demonstrate the discrete skills they obtained during their academic experience.

Incorporate Thematic Elements

One of the compelling opportunities presented by a badging pathway created within a given institution is the ability to incorporate thematic elements unique to that school. In a landscape that finds higher education looking over several cliffs (enrollment, economic, public perception), a strong identity and purpose can serve to draw students and retain them, resulting in a healthy institution with a healthy alumni base.[29]

Identity and purpose can be innate to an institution, such as a religious or military affiliation, or curated through initiatives emphasized across campus, such as annual themes, common read programs, and special events like institutional anniversaries. Assessments aligned with such themes can be integrated into badging pathways through

content delivery and opportunities for students to reflect on what the identity, theme, or event means to them.

Complexity

"Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use. […] The complexity of an innovation, as perceived by members of a social system, is negatively related to its rate of adoption."[30]

Digital badging is an admittedly complex didactic mode that can require significant teamwork across institutional departments. For this innovation, complexity can be viewed from two perspectives: that of the librarians employing digital badging, and that of the student end-users. Important to consider too are the teaching faculty who potentially serve as gatekeepers to badging for their students.

Librarians building digital badging pathways may need to reach outside of their skillset and enlist help: campus instructional designers for access and permissions to learning management systems; curriculum committees for foundational rubrics and learning outcome approval for badging pathways; and teaching faculty to champion the didactic mode with their students in the form of assignments or extra credit. Teaching faculty considering adoption of IL digital badging in their classrooms must allocate time to work through the badging pathway to determine its fit in their curriculum. Students considering participation in a badging pathway must consider incentive weighed against costs, chief of which is often time. If the learning curve faced is too steep, they might forego the grade or extra credit offered. Additional challenges and opportunities related to complexity include relieving teaching faculty of the sole responsibility of delivering information literacy instruction, a commitment to maintaining the badging program's content and technology, and vying for attention in a crowded academic technology catalog.

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Distributed IL Teaching Burden

With teaching faculty experiencing marked personal and professional burnout post-COVID, distributing the burden of teaching transferable skills can reduce workload and foster collaboration on campus.[31] A distributed IL teaching burden for teaching faculty reduces the complexity they face in being the expert on all topics.

While instruction librarians generally appreciate opportunities to interface with students, adding new assessment responsibilities for a library-hosted IL badging pathway can present time management challenges. Remediating approaches could include training all librarians to participate in assessment efforts in library environments comprised of multiple departments and hiring interns or graduate assistants to help shoulder the assessment burden.

Maintenance and Updates

Librarians offering badging pathways need to maintain and update the offerings regularly to ensure relevant information is presented. Maintenance and updates can apply to the badging technology itself and to the content delivered and assessed via the badges. Both needs will require a commitment to currency, and in an environment where librarians may well be dependent upon others to build and maintain badging initiatives, shared prioritization of the badges above other institutional projects could be difficult to achieve.

Crowded Field of Academic Technologies

A badging pathway has the potential to receive limited uptake in a busy academic technology catalog. Teaching faculty need time to incorporate new technology meaningfully—time that sometimes does not materialize despite the best of intentions. The academic workforce experienced significant stress and resulting fatigue when they pivoted mid-semester Spring 2020 to virtual campuses. As late as 2023, interviewed faculty and staff across a campus community in Australia reported continued work intensification and change fatigue, which was marked by a subtheme of online fatigue.[32] The prospect of learning and integrating a new technology may feel a hill too steep to tackle for many teaching faculty who are still working to regain "normal" rhythm (if that even exists).

In addition to teaching faculty overload, instructional design professionals on campuses are also stretched thin. As universities lean into alternative funding streams incorporating badging, instructional technology departments may be asked to prioritize support of projects designed to capture monetary inflows from non-tuitioned audiences, such as fee-based continuing education, professional development, and certification courses offered by university departments looking to draw additional revenues from new audiences.[33]

Trialability

> *"Trialability is the degree to which an innovation may be experimented with on a limited basis. New ideas that can be tried on the installment plan are generally adopted more rapidly than innovations that are not divisible."*[34]

Rogers found that trialability was more critical for innovator and early adopter categories, as there are few to no observable applications of an innovation that these individuals can judge. When considering "academic libraries" the social system and "adoption of digital badging pathways" the innovation, the numbers of libraries participating might still fall within these earliest adopter categories. Given the widespread utility of badges in overall academic settings, however, librarians hoping to gauge badging effectiveness in institutional settings will find the innovation to be well documented in the scholarly literature, suggesting a decreased importance of trialability in Rogers' estimation.

On the individual level, however—institution, course, student—trialability still remains important. Institutionally, the backbone of the IL badging pathway consists of numerous licensed continuing resources:

- a learning management system or app-based digital pathway platform,
- supporting technological infrastructure,
- licensed, integratable content for badging pathways, and
- software licenses to be used in the development of institution-specific content components.

Project sustainability requires ongoing financial commitment, which reduces trialability if the licensed resources must be procured to attempt a new badging program.

As referenced in the complexity section, adoption may depend on teaching faculty assigning badging components in their classes. Marketing the trialability of a badging program in a manner that feels approachable and being mindful of the institutional calendar, which may set course offerings several semesters in advance, can aid librarians in securing faculty champions.

Observability

"Observability is the degree to which the results of an innovation are visible to others. […] The observability of an innovation, as perceived by members of a social system, is positively related to its rate of adoption."[35]

Observability lies at the core of digital badging's strengths. Not sure why an engineering student should have to take a rhetoric course? Whereas a course code such as RHET 102 does not fully communicate the transferable skills offered in such a course, corollary badges that list specific skills and which rest upon assessment rubrics will lend transparency to the learning outcomes and to what a student is equipped to do. In the face of slipping public confidence in the value of higher education, badges provide visibility for students, parents, and employers.

Leave with Something to Show, even if not a Full Degree

Stop out is a term that scholars have used to describe low degree persistence. The National Center for Education Statistics (NCES) reports a 64 percent graduation rate within six years from the most recently measured 4-year college student cohort (2016). The picture

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dims when they report in 2022 that while 77 percent of full-time enrolled students are retained, the number drops to only 45 percent for part-time students.[36] Pinghui Wu and Lucy McMillan's 2023 research attributes 40 percent of student stop out to financial issues; in an economic environment that saw 2023 consumer price index increases in food, shelter, transportation, recreation, medical care and apparel, financial issues are a reality for many US households.[37] When students participate in badging opportunities, even if they do not complete a degree, they will have earned microcredentials and can display skills obtained on their resumes.[38]

Extra-academic Certification and Credentialing

The educational pendulum is swinging toward specialized training as opposed to full degree attainment, as prospective students weigh cost and time benefits.[39] Credentialing offers a viable income stream for universities, which can offer learners the opportunity to pursue skills accumulation outside of a degree plan.[40]

Samford University Library Experience

Before the Covid-19 pandemic disrupted campus in March 2020, the Samford University Library offered multiple instruction modalities including in-person, virtual, and blended modes. Samford is a private, Christian, high-touch residential institution; accordingly, face-to-face instruction served as the primary library instruction format requested by campus teaching faculty.

When on-campus activities halted in March 2020 and courses moved fully online for the conclusion of the Spring 2020 semester, the library was prepared with pre-existing, if underutilized, digital solutions for library instruction. Digital instruction formats almost doubled in 2019-2020 compared to the prior academic year. Academic year 2020-2021, the most disruptive Covid-19 year for the Samford campus community, saw instruction requests on par with the previous year but with a 700 percent increase in digital sessions. To date, even with on-campus activities fully restored, the library continues to receive strong virtual format library instruction requests (Table 1).

Table 1.
Samford University Library instruction requests, 2018-2023

Academic Year	Instruction Sessions (total)	Instruction Sessions (digital)
2018-2019	185	11
2019-2020	196	20
2020-2021	184	142
2021-2022	172	28
2022-2023	195	25

In Samford Library's experience, a long-standing instruction program reporting structure needed to change to account for growing virtual instruction numbers. Numbers alone do not define success, but they are an important longitudinal measure. As class drop-ins shifted from face-to-face visits to Canvas-hosted virtual lessons, the instruction librarian worked to reflect these in the overall count as well as in the assessment narrative. It remains difficult to account for all Canvas integrations given the stable nature of modules that can roll seamlessly into future semesters' Canvas shells without the liaison librarian's knowledge. Similarly, students may enroll at will in the IL badging

pathway and if they do not identify as doing so on behalf of a class, this could pose a lost assessment opportunity.

With digital instruction options experiencing increased uptake, Samford reference librarians endeavored to facilitate campus community access to the library's digital IL training resources via two projects: one teaching faculty mediated, and one student mediated.

To increase teaching faculty members' autonomy in integrating digital IL lessons into their Canvas courses, a Samford reference librarian developed modules chunking InfoBase Information Literacy - Core components into task- and concept-based modules in Canvas Commons (See https://infobase.com/products/information-literacy-core/). A corollary LibGuide shows teaching faculty how to import modules into their Canvas courses. Module components can be deleted and combined with other course items, allowing for total customization of the digital IL components.

The badging pathway aims to reduce teaching faculty burden even further by allowing students to self-initiate and report completion of modules. Content was initially mapped out on paper by the instruction librarian and reviewed by a member of Samford's instructional design (ID) team to see how it might be brought to life. At the time, Canvas had just acquired Badgr Pro, creating the opportunity to utilize additional functionality within an existing system. By the time the program was ready to launch in 2023, Canvas had rebranded their credentialing product as Canvas Credentials. The pathways were created by the instruction coordinator in a campus-facing Canvas shell. Once the instruction coordinator completed the badging components, an ID connected the components to the badging system also designed the course home page in Cidi Labs, a design program that Samford IDs use for virtual workshops and continuing education courses to provide a user experience that is distinct from academic course shells (see Figure 3).

Figure 3. Samford Library information literacy badging pathway homepage.

Each badge is earned upon completion of an assemblage of Samford-created content, Infobase Information Literacy-Core components, and a summative assessment that is evaluated via rubric. Activities for the *Research is Inquiry* badge can be found in Figure 4, and the rubric is included in Figure 5.

✓ Research is Inquiry	✓ Information Creation is a Process
✓ Authority is Constructed and Contextual	✓ Searching is Strategic Exploration
✓ Scholarship is a Conversation	✓ Information has Value
✓ Artificial Intelligence (Special Topic)	✓ Identifying Untrustworthy Information (Special Topic)

Research is Inquiry Badging Pathway

📄 **Research is Inquiry Introductory Video** View	✓
🔗 **Tutorial: Developing a Research Focus (15:00)** View	✓
🔗 **Video: How to Narrow Your Topic (3:34)** View	✓
🔗 **Tutorial: Background Research Tips (15:00)** View	✓
🔗 **Videos: Beginning Research with Wikipedia and Google (5:00)** View	✓
🔗 **Video: Thesis Statements (4:19)** View	✓
📝 **Quiz: Thesis Statements (10:00)** 5 pts View	✓
📝 **Quiz: The Research Process (10:00)** 5 pts View	✓
🚀 **Research is Inquiry Reflection** 9 pts View	✓

Figure 4. Research is Inquiry badging pathway.

Badging Reflections

Criteria	Ratings				Pts
Connection to badging content	3 pts References at least two specific concepts introduced in badging content	2 pts References at least one specific concept introduced in badging content	1 pts Does not reference any specific concepts presented in badging content	0 pts No response provided.	3 pts
Depth of content: How fully does student answer question?	3 pts Responds to questions thoughtfully and expounds on the topic.	2 pts Responds to questions verbatim and offers minimal extra content/thought.	1 pts Responds to questions verbatim and offers no extra content/thought.	0 pts No response provided.	3 pts
Proper English spelling and grammar.	3 pts Easy to read with no major flaws that obscure meaning.	2 pts Choppy or scant answers with noticeable errors.	1 pts Grammar/spelling errors obscure meaning.	0 pts No response provided.	3 pts
				Total Points: 9	

Figure 5. Summative assessment rubric.

The project kept mid-stream students in mind, building on 2016 library instruction program changes to introduce new skills offerings and refreshers based on the *ACRL Framework for Information Literacy for Higher Education*. In this spirit, the instruction coordinator devised the badging pathway to serve as a portfolio of skills that teaching faculty could require as prerequisites for assignments. For example, an instructor could ask a student to email their Authority badge; if the student has already earned the badge, they can submit evidence, and if they haven't, they can complete the pathway and submit badge completion evidence upon receipt.

Badge reviews and updates are planned along with a naming convention that will ensure students are presenting recent-enough credentials to be deemed applicable (for example, MLA 9, APA 7). The skills refresher approach may make good sense for 200- and 300- level courses in which students should have been introduced to institutional research pathways in recent years and need more in-depth pointers on select information skills. The asynchronous format harnesses the flipped classroom model and allows teaching faculty increased instructional time paired with the assurance that students have reviewed IL skills relevant to their course and student learning outcomes.

Modules currently on offer include the six ACRL frames and two special topics aligning with timely campus discussions. Modules consist of (1) a Samford-specific introductory video created in Canva Professional, (2) instructional content from InfoBase Information Literacy - Core, and (3) a summative reflection assessment querying students' understanding of the concept, its application to their future career, and faith-based considerations. Librarians enrolled in the badging course receive a notification when a participant submits a summative reflection assessment, and they can proceed to assess it via an embedded rubric. When a participant earns the minimum passing score or higher, the badging pathway automatically emails the participant an email with a link to their digital badge, which they can then present to a professor if required. Participants earn a microbadge upon completion of any of the eight pathways; upon completion of all six Frames-based pathways, they earn an Information Literacy macrobadge (see Figure 6).

Fall 2023 was identified as a pilot semester and the badging pathway was pitched to Core Rhetoric and Core Seminar teaching faculty (Samford's equivalent of composition 101 and 102). The library made the decision to open the opportunity to the entire campus in Spring 2024, at which point the instruction coordinator emailed the self-enrollment Canvas course link to all campus faculty and staff to share with students enrolled in their courses. To date, several teaching faculty have enrolled to explore the offering but have yet to integrate its use into their courses.

The overall process to develop the badging pathway has been lengthy but rewarding. Since initial conversations regarding the project took place in Summer 2021, the instruction coordinator has worked with the library faculty and with four different instructional designers to bring a paper draft to life within Canvas. Point persons and job titles have changed over these three years, as have institutional technology licenses and functionality within platforms. Remarkably, the pathway has persisted and now stands at the ready, offering hours of asynchronous information literacy content delivery and assessment mechanisms. Plans for Fall 2024 include updates to the two special topics (AI and dis/mis/malinformation), and a video demonstrating use to be distributed campus wide in the fall instruction email.
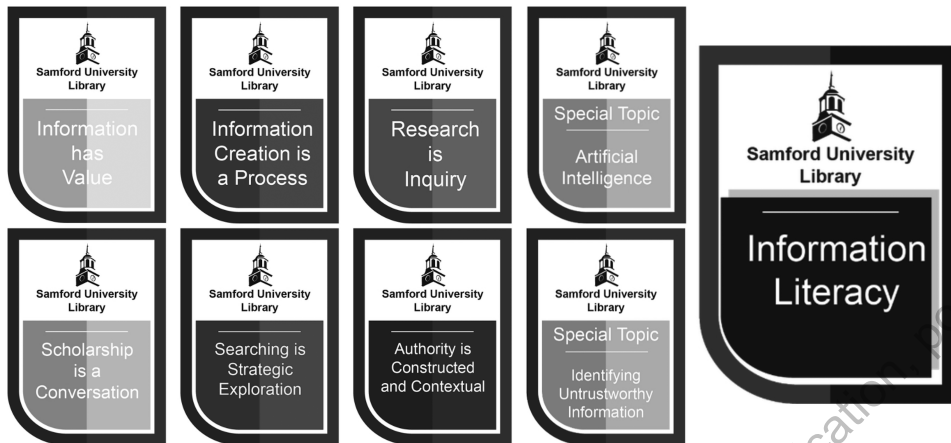
Figure 6. IL badging pathways offered through Samford University Library.

The library remains optimistic regarding adoption of the IL badging pathway in future semesters as faculty have time to explore its potential and to meaningfully incorporate it into their course syllabi. The desire to see a faster adoption rate on campus was indeed foreseen by Rogers; in a 2001 interview for the *Journal of Management Inquiry*, when asked by the interviewer for disciplines and topics ripe for diffusion research, he responded that more notable might be the high number of existing studies. Rogers attributed the bulk of the studies to investigating slower-than-desired adoption rates and strategies aimed at speeding up the process within a social system.[41] Samford librarians working with the IL badging pathway are hopeful that this approach to IL instruction will lead to students' recognition that IL is comprised of a set of transferable skills that can be learned, honed, and applied in their daily lives.

Conclusion

Statistics presented earlier in this paper showed digital badging institutional adoption by surveyed UPCEA institutions. While acknowledging the digital bent of the institutions surveyed, we can use these data points to envision the trajectory of this innovation's adoption within the social system of higher education using Rogers' Diffusion of Innovation theory and his S-curve. With initial scholarly literature on this topic appearing in 2011, a fixed point of 20 percent in 2016, and 80 percent saturation in 2023, the S-curve begins to take shape (see Figure 7).

How do UPCEA trends compare to the wider higher education community? It is difficult to disentangle badging statistics in the literature from the broader digital credentials discussion, which includes badging and numerous other types of credentials. The analysis proves scalable, though, and can be brought down to the local level; how many institutions in your region offer digital badging? In your state? How many departments at your institution offer digital badges?

Determining the adoption status of an innovation within your target social system does more than satisfy curiosity, as Rogers discusses communication channels and strate-
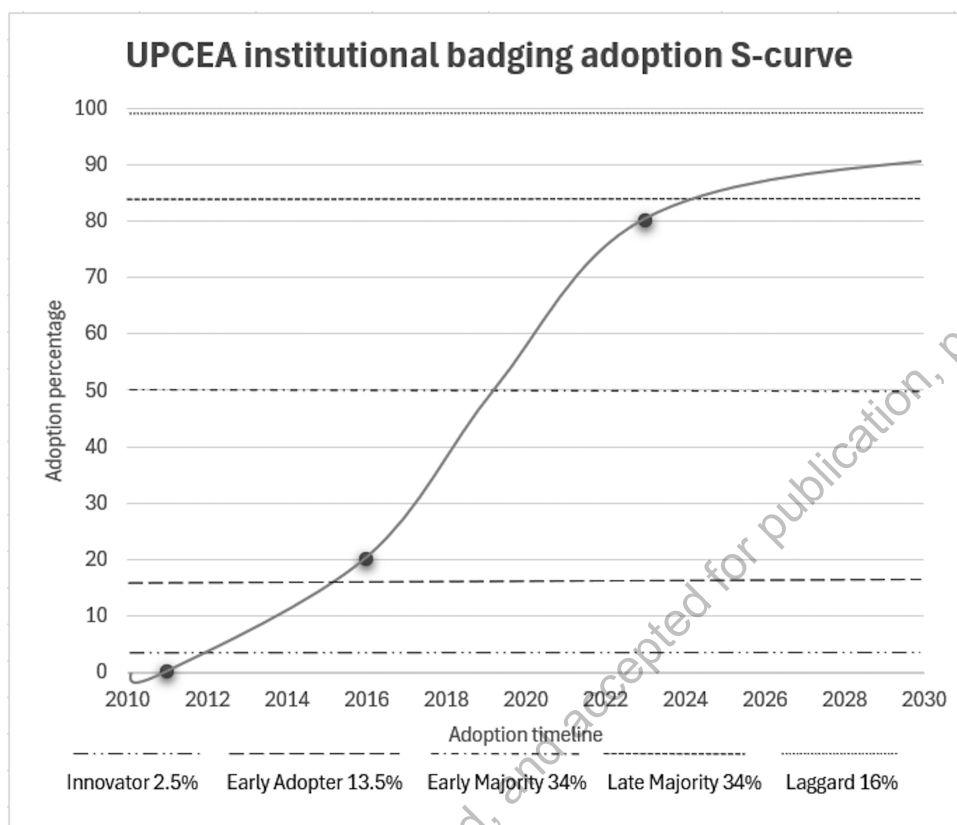
Figure 7. Digital badging adoption rate at surveyed UPCEA institutions.

gies to effectively reach each of the adopter categories. He offers detailed ideal types for each population segment, profiling characteristics including personality values (innovators are characterized as venturesome, early adopters as leaders and role models, and late adopters as skeptical); and communication behavior (word of mouth, marketing campaigns). Rogers' theoretical model is highly flexible and practical, offering much to inform a library's innovation planning.

Lauren M. Young is a librarian and instruction coordinator for reference and research services at the Samford University Library. She may be reached at lyoung2@samford.edu. Her ORCID is 0000-0002-2318-5226.

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