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Capturing Student Achievement and Learning Pathways at the University of Maryland, Baltimore County: Digital Badging and the Comprehensive Learner Record

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ABSTRACT

In 2015, the University of Maryland, Baltimore County (UMBC) recognized the need to capture knowledge, skills, and abilities acquired by students in both co-curricular and curricular endeavors not being captured in any identifiable way. The Vice President of Information Technology and Chief Information Officer desired to document competencies gained by students in the variety of contexts on campus and to track student, faculty, and staff achievements in a way that would both benefit each individual while also supporting the mission of the institution. This vision led to the adoption of a digital badging initiative resulting in a scalable process for implementing new badges throughout the university community. UMBC's digital badging program became the springboard for the institution's entrance into the Comprehensive Learner Record (CLR) realm whose objective is to capture all credentials earned by students, whether they be awarded before, during, or following their tenure at the institution.

Keywords: Digital Badge, Open Badges, Comprehensive Learner Record (CLR), Credential, Curriculum Mapping, Assessment, Learning Pathways, Competency, Knowledge Skills and Abilities (KSAs)

INTRODUCTION

Historically, the college degree has been the standard by which potential employers ranked candidates applying for jobs. Earning an associate, bachelor's, master's or doctorate degree has been the criteria that signaled appropriate levels of employability for new hires (Selingo, 2017). Traditional methods of student record keeping such as transcripts provide a limited scope of what students actually did during their time in school and are considered binary in nature (pass/fail, letter grades, etc.) (Matkin, 2017). Additionally, degree and college curricula evolve at an extremely slow pace, much slower than what the digital economy requires, and employers often have difficulty ensuring that these graduates have the skills necessary to succeed in the workplace (Selingo, 2017). Furthermore, traditional course grades

only recognize the overall level of achievement of a course's stated objectives and not individual competencies gained during the class; therefore, competencies achieved outside of this defined and established traditional credentialing structure were not documented in a referenceable way for the learner. Many of the competencies being achieved in other activities on campus not only contribute to the development of participants cognitively, socially, and emotionally, but they also prepare them to enter the workforce upon completion of their education. This includes active memberships in student organizations, clubs, service-learning opportunities, and work experiences, to name a few (Parks & Taylor, 2016). Specific knowledge, skills, and abilities gained both in and out of the classroom are key to student success post-graduation. Alternative credentials, such as digital badges, have provided a mechanism to recognize skill acquisition with greater granularity and transparency than the traditional transcript can offer and a meaningful opportunity to document competencies gained in co-curricular spaces.

BACKGROUND

In 2015, the University of Maryland, Baltimore County (UMBC), one of 12 institutions in the University System of Maryland (USM), recognized the need to capture knowledge, skills, and abilities acquired by students in both co-curricular and curricular endeavors that were not being captured in any identifiable way. The Vice President of Information Technology and Chief Information Officer, Jack Suess, originally referred to this effort as "Tracking Activities and Guiding Success (myTAGS)." Here's how Mr. Suess described the effort,

The goal of this project is to broadly use digital credentials, sometimes referred to as badges, as a mechanism for tracking student, staff, and faculty activities and achievements... We are referring to these digital credentials as TAGS - short for tracking achievements & guiding success. By following the emerging standards and best practices for digital credentials, we will have metadata associated with these tags that will be utilized in a variety of different ways to support UMBC's mission.

Some of the expected benefits from this initiative were as follows:

- Building a badging infrastructure that is tied into LinkedIn, UMBC could follow how students progress after graduation. In particular, a specific goal is creating the ability to identify learning experiences that make a difference in future career success;
- Determining how many students are engaging in extracurricular activities and what impact these activities have on graduation rate, time-to-degree, and post-graduation success;
- Providing a guide for students to the best thinking in co-curricular skills that will highlight how to build their career skills or position themselves to succeed in graduate school;
- Identifying interests and expertise that can be pulled into a variety of interdisciplinary research projects; and
- Supporting skill acquisition amongst staff (e.g., project management, leadership, business skills, analytical skills, organization skills).

With Suess' vision as the framework, the institution began the process of defining the strategy through which this concept would be realized. A project plan was developed, key staff became familiar

with the work being done nationally related to the OpenBadges standard and digital badging platforms, and the Senior Director of Instructional Technology was designated project lead. In 2015, the digital badging initiative began with the goal of capturing student acquisition of knowledge, skills, and abilities in all areas of their college experience, including their curricular, co-curricular, and extra-curricular experiences. Capturing these achievements at a level more granular than a course grade, for example, enables students to clearly understand and articulate the new competency gained through the badged experience. The benefits resulting from badging these competencies include but are not limited to the following: transparency regarding what is being learned and assessed; specific evidence of learning encapsulated in the digital badge; and student reflection on learning and areas of growth and potential growth. In the fall of 2019, UMBC's digital badging program became the springboard for the institution's entrance into the Comprehensive Learner Record (CLR) realm whose objective is to capture all credentials (e.g., degrees, badges, certificates, etc.) earned by students, whether they be awarded before, during, or following their tenure at the institution. Thus, the badges resulting from the digital badging initiative, in addition to other achievements earned through other experiences and represented in a variety of ways, now become elements of the students' lifelong learning record which, ultimately, will travel with them as they depart the institution in the form of their CLR (IMS Global Learning Consortium, n.d.).

CHAPTER ORGANIZATION

The remainder of this chapter discusses both the digital badging initiative, which began in 2015, and the Comprehensive Learner Record initiative that started in 2019. The Digital Badging Initiatives section discusses the UMBC-specific badges, the workflow used to implement those badges, and a spotlight on one of the badges in this ecosystem. This section also presents the badges created through a collaborative effort of institutions within the University System of Maryland led by the Kirwan Center for Academic Innovation; it is important to include this work for a complete understanding of UMBC's efforts in the digital badging space. It closes with a visual summary of the entire UMBC badging portfolio. Next, the Comprehensive Learner Record (CLR) section presents the concept of a CLR, UMBC's initial CLR pilot approach and results, and the CLR workflow and implementation strategy. Finally, lessons learned thus far from both initiatives and future implications are discussed.

DIGITAL BADGING INITIATIVES

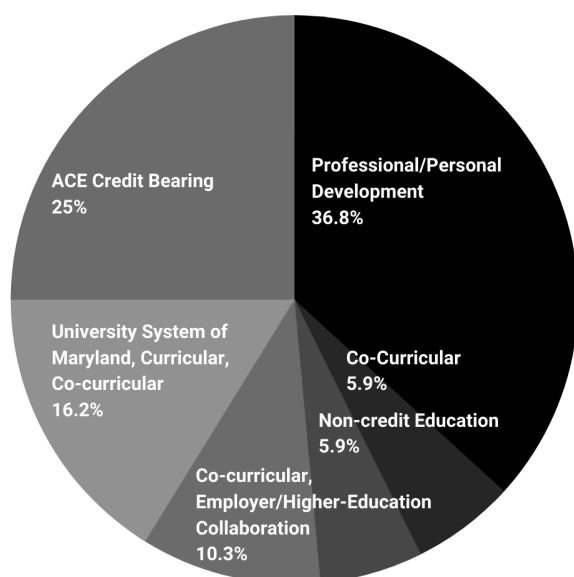
UMBC is implementing badges on two fronts: badges specific to UMBC and offered to their students, faculty and staff, and badges defined as part of a collaborative effort within the University System of Maryland. The implementations of both initiatives are described in this section.

UMBC Specific Badges

UMBC adopted digital badging as a mechanism for capturing the achievement of competencies within the numerous activities taking place at the institution in a way that would allow badge earners to not only reflect on these newly acquired skills but also to share their achievements with others, including

potential employers (Braxton, et. al, 2019). From 2015-present day, several categories of badges emerged within the UMBC badging ecosystem that provide the institution's stakeholders with a mechanism to capture and share a record of competencies acquired that may support both their academic and professional aspirations. Not only are students' knowledge, skill, and ability acquisitions being captured, but also the new skills gained by faculty and staff as part of their professional development activities. To that end, badges in the following categories have been identified and are currently being implemented at UMBC: curricular, co-curricular including general skills or employment-related competencies, non-credit education, USM-defined, employer-higher education collaborations, American Council on Education (ACE)-endorsed/credit-bearing, and professional development for faculty and staff. At the time of publication of this chapter, UMBC's published portfolio includes 65 badges. Figure 1 illustrates published badges across the badging categories previously described.
















Figure 1. Category distribution of UMBC's published badge portfolio



It is important to note that currently 25% of the badging portfolio, which is the ACE credit bearing category, falls under the purview of UMBC Training Centers. These badges are awarded upon successful completion of courses with a minimum passing score of 70% and are endorsed by the ACE, making them eligible for college credit. Also, 5.9% of the badges fall in the non-credit education category; these credentials are awarded for successful completion of courses offered through the Institute of Extended Learning at the institution. A little more than a third (36.8%) of the badges are in the professional and personal development category; faculty and staff are the audience for many of these credentials. The remaining percentages, approximately a third of the portfolio (32.4%) include curricular and co-curricular badges for students; these badges include the University System of Maryland badges, the Greater Washington Partnership badges, and other badges implemented by organizations within the institution.

Figure 2 shows examples of some of the UMBC badges. For the UMBC-specific badges to be more easily recognized, design criteria have been established regarding their visual appearance. All UMBC-specific badges have five sides with UMBC in the header of the badge. Badge owners can select the preferred color scheme and icon designs for the badges in their programs. The diamond-shaped badges in Figure 2 are University System of Maryland badges; these will be discussed later in this section.

Figure 2. Examples of UMBC badges

	COVID-19 Awareness Student Badge University of Maryland, Baltimore County		COVID-19 Awareness Badge University of Maryland, Baltimore County		CashCourse Badge University of Maryland, Baltimore County
	Employee Cybersecurity Awareness University of Maryland, Baltimore County		UMBC Professional "Edge" Badge University of Maryland, Baltimore County		Building Bridges Across Maryland University of Maryland, Baltimore County
	McNair Conference Presenter 2020 University of Maryland, Baltimore County		Personal Leadership and Project Management University of Maryland, Baltimore County		Effective Supervision University of Maryland, Baltimore County
	Interdisciplinary Collaborator Badge University of Maryland, Baltimore County		Building Bridges: Administrative Leadership Development... University of Maryland, Baltimore County		UMBC-IBM Deep Learning University of Maryland, Baltimore County
	Institute of Extended Learning: Biotech Boot Camp University of Maryland, Baltimore County		UMBC VITA Badge University of Maryland, Baltimore County		Alternate Delivery Program (ADP) Quality Booster University of Maryland, Baltimore County

Badge Development and Implementation

To support the design, development, and implementation of digital badges across the institution, the Instructional Technology team developed a workflow for intake and requirements gathering; initial design meetings; badge design reviews; badge metadata, criteria, and assessment development; badge implementation within the badging platform, and badge awarding to earners. This workflow is presented in Figure 3.

Figure 3. Digital badge workflow



Appendix 1 provides a detailed description of each step in the badge workflow.

Badge Spotlight: Financial Literacy

UMBC's Financial Literacy badge, known as the CashCourse, was the first badge launched in their alternative credentialing ecosystem and is based on content created and shared by [CashCourse.org](https://www.cashcourse.org). The Office of Financial Literacy and Education created the program FinancialSmarts to provide students with the knowledge to make informed and effective financial decisions. CashCourse covers a wide variety of information in financial wellness, such as guidance for budgeting, suggestions for college tuition, and tips to secure employment after graduation.

As the office's longest running program, CashCourse encourages new incoming and transfer students to participate in free, self-paced financial education. Relevant resources, course content, and

engaging activities are delivered through the learning management system (LMS) Blackboard. Students can self-enroll in the course, and upon successful completion of the course's assessments, participants are awarded the CashCourse badge which can be shared on social media platforms, emails, and e-portfolios. The cohorts have one academic year to complete the course. Five cohorts have completed the program to date with the sixth cohort in progress and preparations are underway for the seventh. Nearly 2,000 students have enrolled in CashCourse, and 772 students have been awarded a digital badge.

The course content is updated each year for relevancy and uses feedback collected from students through two online surveys distributed to each cohort to make improvements. The first survey is completed immediately following the course, and the second survey is sent to the participants after a specified period has passed. Responses received from the badge earners to CashCourse have been positive. More than 70% of students enrolled in the course indicated their engagement with the course content influenced a financial decision, and more than 83% of the students believed personal financial education should be included in everyone's educational experience at UMBC. To expand its reach and impact, CashCourse has partnered with several offices on campus, such as Undergraduate Academic Affairs and the Graduate School, to promote financial education.

To encourage full participation in the course and ensure the most financially vulnerable population of students are engaged with the financial literacy programs at UMBC, two incentives are offered: a CashCourse drawing contest and a CashCourse grant program. The CashCourse prize drawing contest randomly awards three students who complete all course modules by a specific day. The cash prize ranges from \$100-\$500. The CashCourse grant program offers a one-time \$500 grant to eligible financially high-need, incoming, first-time freshmen who complete the CashCourse the summer before the start of the semester. During the first year the grant was awarded, 2018-2019, 14 out of 75 enrolled students completed the course and received the grant. In the second year (2019-2020), 26 out of 76 completed the course and received the grant. Recipients of the CashCourse grant are not eligible for the CashCourse prize drawing.

As a result of this program's success, UMBC's Financial Literacy and Education committee was recognized as the recipient of the 2019 Financial Education and Capability Award – Community Champion Award from the CASH Campaign of Maryland. The award highlights the dedication as well as success of organizations that deliver financial education including budgeting, savings, investment, credit, debt, financial decision-making, and understanding values and habits about money.

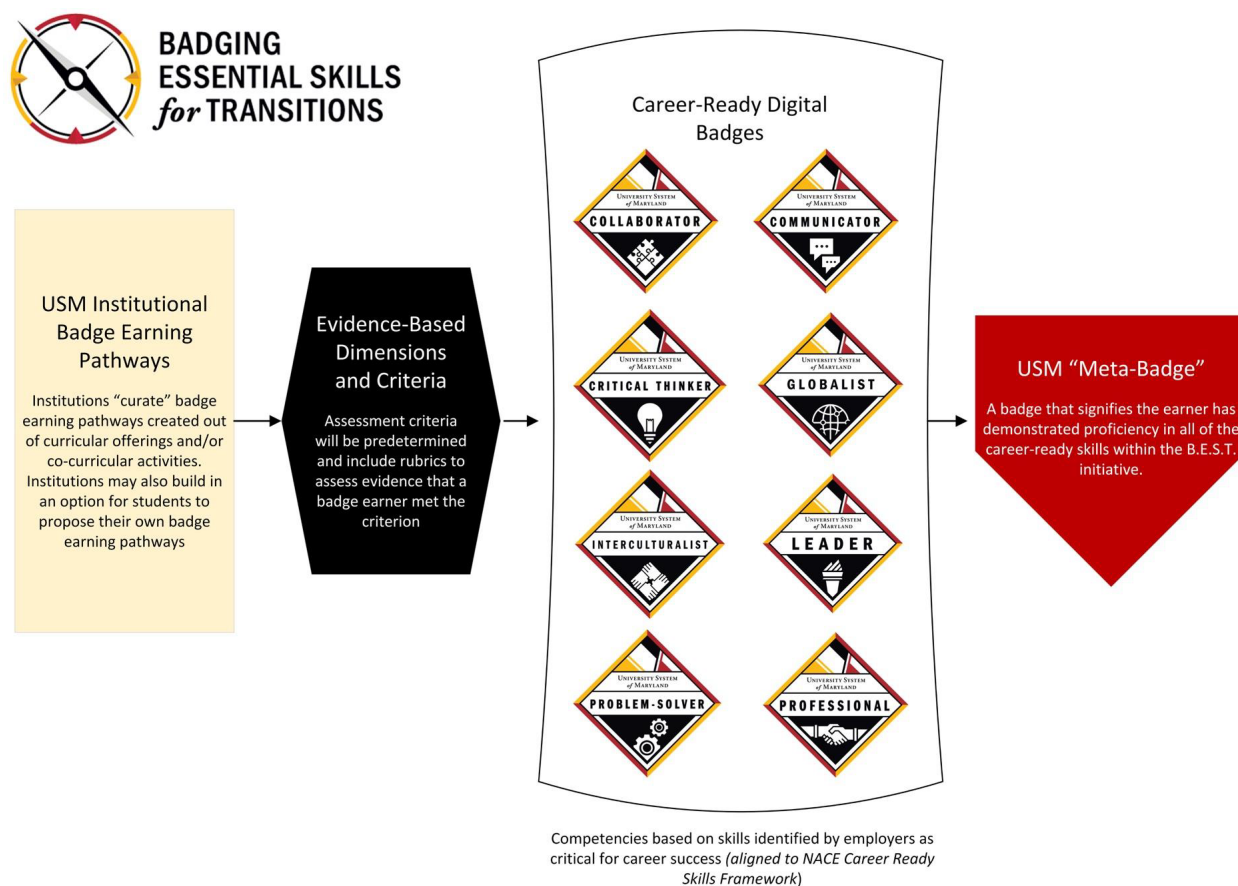
University System of Maryland (USM) Badging Essential Skills for Transitions (B.E.S.T) Initiative

In 2015 just as UMBC was embarking into the digital badging space, the University System of Maryland's Kirwan Center for Academic Innovation was also exploring digital credentialing. The purpose of the Kirwan Center is to support inter-institutional collaboration across the USM institutions and promote academic innovation that results in new opportunities to improve student success and to scale effective practices in a sustainable way. The Kirwan Center was looking for ways to address a problem they were hearing existed with graduates from the USM institutions; many students from these

schools were not able to articulate the career-ready skills they had acquired during their time at the institutions. The solution came in the form of an initiative known as B.E.S.T. - Badging Essential Skills for Transitions. Through the implementation of 8 digital badges focusing on essential career-ready skills identified by the National Association of Colleges and Employers, including collaboration, communication, critical thinking, globalism, interculturalism, leadership, problem solving, and professionalism, nine of the 12 USM schools collaborated to define the frameworks, or dimensions, for these badges, acceptable assessment strategies, and agreed-upon rubrics derived from the Association of American Colleges & Universities' (AAC&U) Value Rubrics on which those assessments would be based. The B.E.S.T. badge dimensions are provided in Appendix 1.

Universities participating in the B.E.S.T. initiative implemented these badges across the curricular and co-curricular spaces on their campuses. UMBC has awarded The Collaborator and The Professional badges, referring to its version of The Professional badge as the “Professional Edge” badge as part of the Career Center internship program. Students earning all eight badges in the B.E.S.T. ecosystem would then earn the USM “Meta-Badge,” recognizing their achieving all the competencies.

Figure 4. B.E.S.T. badging workflow (USM, 2018)



UMBC plans to continue to implement these badges across campus as its digital badging initiative evolves and expands. The benefit to students will be a transparent and clear articulation of skills acquired through participation in both curricular and co-curricular activities to employers, graduate schools, and other interested parties as they transition beyond the university.

COMPREHENSIVE LEARNER RECORD

UMBC's digital badging activity has evolved to embrace the concept of the Comprehensive Learner Record (CLR). As defined by the [IMS Global Learning Consortium](#) (n.d.), the CLR is the "new generation of secure and verifiable learning and employment records supporting all nature of academic and workplace recognition and achievements including courses, competencies and skills and employer-based achievements and milestones." Shendy, et. al. (2019) further states that a CLR is "a digital asset for students to better understand their learning in verifiable format." CLRs are positioned to articulate direct learning outcomes and demonstrate the knowledge, skills, and abilities students have acquired throughout their university experience. Students will have the ability to track lifelong learning pathways; the CLR will allow them to capture and present their learning outcomes and achievements in not only their curricular and co-curricular experiences, but also those acquired prior to their time at the institution as well as those gained beyond the academic institution's borders (Baker & Jankowski, 2020). Jack Suess spoke (IMS, 2020) of the importance of the CLR in capturing a student's entire learning journey at the institution,

The value of a university experience especially for traditional 18-24 year-old students is as much the co-curricular world that they live in. How they are involved in clubs and organizations, the internships they have, the jobs they end up taking on, the skills they learn outside the classroom, are all part of that individual growth that really makes the whole. And so one of the things that was really appealing to me about the Comprehensive Learner Record (CLR) is that it's going to be that manifestation for allowing us to tell the story of the value of university education. At least for UMBC, I am looking at the CLR long term as being a way that we sort of highlight the tenets of a UMBC education and UMBC experience for our undergraduate and graduate students.

CLR's relationship to learning experiences, evidence-based assessment, and employability skills is further detailed in the Chapter "*Comprehensive Learner Record as a Vehicle for Assessment & Learning Transparency in a Skills Economy*" within this book.

CLR Pilot

UMBC's transition from badging individual achievements, to taking a more holistic approach of capturing the lifelong learning journey of a student, was supported through participation in a Lumina Foundation funded grant in collaboration with the National Institute for Learning Outcomes Assessment (NILOA), National Association of Student Personnel Administrators (NASPA), and the American Association of Collegiate Registrars and Admissions Officers (AACRAO). As part of this grant, UMBC began piloting the concept of the Comprehensive Learner Record. To illustrate these capabilities, the

institution used an employer-higher education collaboration known as the Greater Washington Partnership (GWP) and the resulting learning frameworks to demonstrate the efficacy of the CLR (Traverse, et. al, 2019).

In an effort to bridge the gap between higher education and the workforce, the Capital CoLAB aims to target college students in the Greater Washington region (spanning from Baltimore to Richmond) and provide access to exclusive professional development opportunities to attract and retain talent. In collaboration with regional employers, the CoLAB created the Digital Generalist Credential that captures six core competencies to educate non-STEM majors in the areas of Data Security, Data Ethics, Data Visualization, Data Manipulation, Statistics, and Data and Analytics. The badges are shown in Figure 5.

Figure 5. GWP digital generalist badges



The six core Generalist competencies consist of 41 individual knowledge, skills, and abilities (KSAs) serving as the learning framework for the program, which represent what some of the largest employers in the region are seeking when hiring new talent. The Digital Generalist Credential modules were developed within the edX learning management system by Instructional Technology staff at UMBC with faculty from the relevant disciplines acting as subject matter experts (SMEs). The courses are designed to be self-paced learning experiences for non-Science, Technology, Engineering and Math (STEM) learners looking to pursue employment within the Greater Washington region. Current students may opt in at any time to complete these modules during their college career. Learners may choose to do one, two, or all competencies to not only gain new knowledge in the areas of STEM, but to be eligible to earn stackable digital badges along the way.

There are different pathways to earning the Digital Generalist Credential. For UMBC students to be eligible they must have successfully completed (i.e., earned a final grade of 'C' or better) one course in statistics (in lieu of completing the edX Probability and Descriptive and Inferential Statistics module

discussed below) and one course in programming (in lieu of completing the edX Data Manipulation module). UMBC courses that meet this requirement are outlined below:

Statistics

- Statistics 350: Statistics with Applications in the Biological Sciences
- Statistics 351: Applied Statistics for Business and Economics
- Statistics 355: Introduction to Probability and Statistics for Scientists and Engineers

Programming

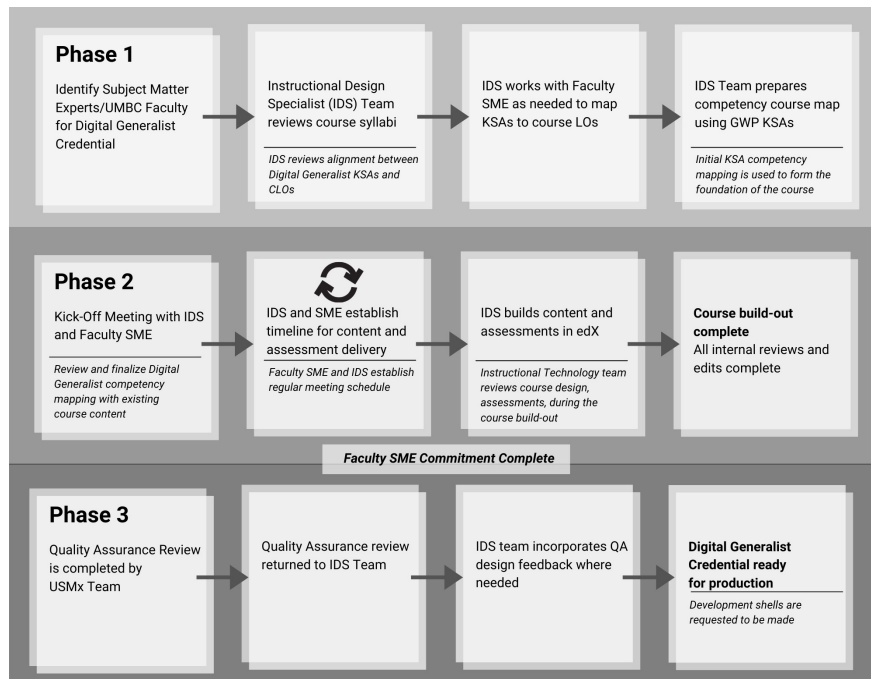
- Computer Science 101: Computational Thinking and Design
- Computer Science 104: Problem Solving and Computer Programming
- Computer Science 201: Computer Science I for Majors
- Information Systems 147: Introduction to Computer Programming

With programs like the Digital Generalist Credential, a CLR illustrates competencies learners have acquired, and their progress towards completion of a credential. Additionally, it provides a mechanism through which students can share and maintain a record of their lifelong learning journey.

GWP Digital Generalist Competencies' Module Development Project

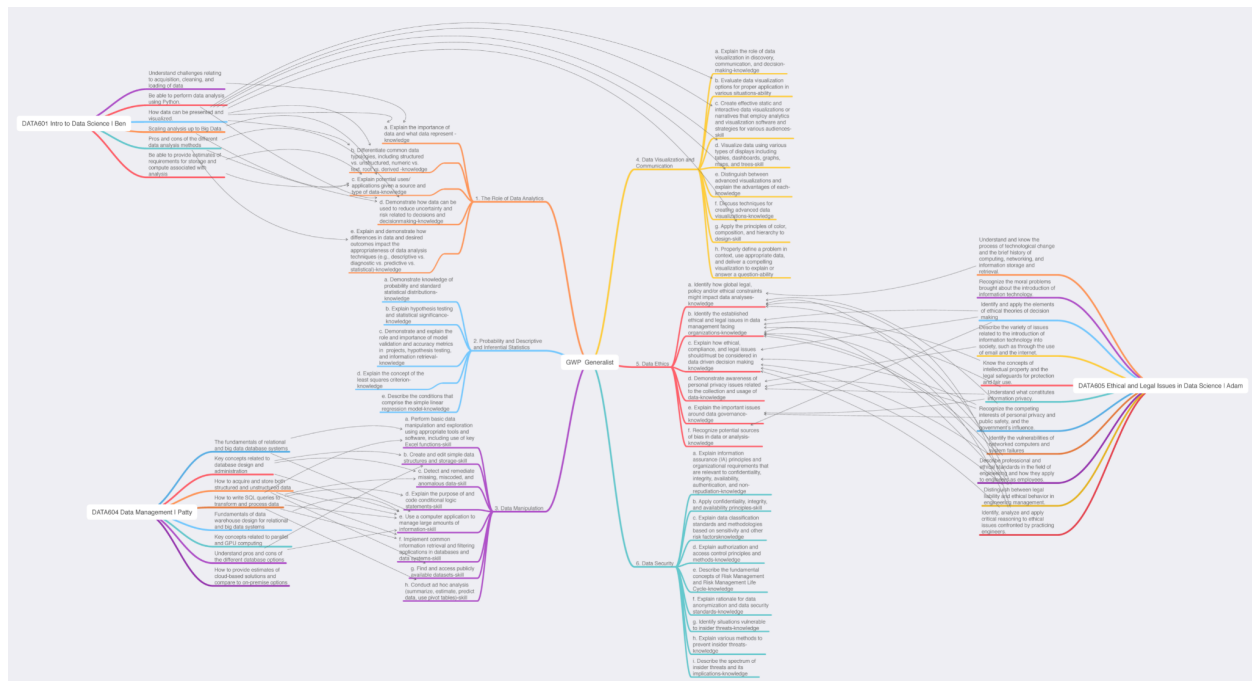
During the Summer and Fall semesters of 2019, select faculty from the Division of Professional Studies (DPS) in the Data Science department began semester-long projects for course redesigns with UMBC's team of Instructional Design Specialists. These projects coincided with the development of the GWP project so that faculty were able to use their time efficiently. The module development workflow is presented in Figure 6.

Figure 6. GWP module development workflow



Many of the Data Science graduate-level courses covered most, if not all, of the Digital Generalist KSAs; this was confirmed through an initial course mapping process between course outcomes and the GWP Generalist KSA learning framework as illustrated in Figure 7.

Figure 7. Example curriculum mapping between DPS Data Science courses and the GWP Digital Generalist KSA learning framework



Gaps were identified in areas of Data Visualization as well as Probability and Descriptive and Inferential Statistics, as those topics were addressed in multiple courses throughout the graduate program; however, content and assessments were not at the introductory level that aligned with the Digital Generalist KSAs. Similarly, the graduate level courses addressed the KSAs at a deeper level which meant the course content would need to be refined to meet the foundational learning experience required by the Digital Generalist credential framework.

After initial mapping of the course outcomes and Generalist KSAs, Instructional Design Specialists began working one-on-one with the identified faculty subject matter experts (SMEs) to develop the modules. Additionally, the Instructional Design Specialists began building the Generalist competency modules using the same processes used in traditional course design; central to that workflow is the use of a course mapping tool as illustrated in Figure 8. The course map tool was used to structure, organize, and scaffold the learning outcomes of the Generalist KSAs in a way that supports student learning through engaging course content and formative assessments, culminating in a final, summative assessment to verify that learning outcomes were met. An example of the content mapping tool used during this process is provided in Figure 8.

Figure 8. Example content mapping tool used in the creation of Competency 5: Data Ethics

	<p>to Inderjit Mund, "Every day, it's estimated that 2.5 quintillion bytes of data are created."</p> <p>https://www.bba.org.uk/news/insight/the-top-5-data-management-challenges-and-how-to-overcome-them/#XdNgYdVKilU</p> <p>Organizations suffer not only from the tasking of making such data usable, but also call into question the ethics of the data collection and managing access to only those authorized or permitted to use it for specifically stated goals. Mund is correct when stating that for most data management facing organizations, their reactive approach is "one of the biggest problems ... that firms often don't realize they have a problem with their data," until it is too late.</p> <p>Ethical Concerns</p> <p>The process of data collection matters, and the user consent to the input, upload and aggregation of personal information is necessary. "Term of Service" or End User License Agreements ("EULAs") help manage expectations for consumers, only if they read them ... which few actually do.</p> <p>https://www.theguardian.com/technology/2015/jun/15/i-read-all-the-small-print-on-the-internet</p> <p>Corporations which try to sleep well on the belief that user consent minimizes their liability due to unethical usage of private customer information or immunity from data breaches, have been proven wrong.</p> <p>In "the Changing Risk and Liability Landscape for IT Security and Data Risks," Emy Donavan correctly reports that:</p> <p><i>Target, Home Depot, Yahoo, Sony, JP Morgan Chase, Equifax and Uber are just some of the global companies that have made headlines for big data breaches. Companies suffering data breaches can experience large losses ... reputational damage and even class action lawsuits from customers whose data and privacy are compromised. Equifax's 2017 breach, which impacted 140 million people in the U.S. alone, leading to the CEO's resignation and costing the company</i></p>	<p>Correct: D</p> <p>(2) When discussing "fragmented data ownership," is it means that:</p> <p>(a) no one really owns "data" (b) there is no clear definition of "data" (c) multiple stakeholders share in the creation of data (d) data is fiction</p> <p>Correct: C</p> <p>(3) When discussing EULAs, it is important to know that:</p> <p>(a) a user is being asked to consent to the terms set by the provider (b) ALL CAPS do not have a higher degree of legal authority (c) by clicking on "I agree," a user is providing consent, unless what they are being asked to do or provide is illegal (d) all of the above</p> <p>Correct: D</p> <p>(4) True or False? Under GDPR, businesses will have to pay a lot more attention to the security of personal data, and they won't be allowed to hold onto it for longer than is necessary.</p> <p>Correct: True</p> <p>(5) True or False? Under GDPR, business will are required to tell authorities about any data security breach within 72 hours of discovering it.</p> <p>Correct: True</p>
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After organizing and chunking the KSAs into a module-style course outline, Instructional Designers worked with the faculty to extract any existing course content that aligned with the learning framework. Faculty had to develop most of the Generalist module content and assessments to address the KSAs at a lower level than what was taught at the graduate level. Faculty provided the Instructional Design team with curated content and assessments through various mediums (e.g., Google documents, Excel spreadsheets, Panopto video lectures, PowerPoints). Content and assessments were then built within the edX platform applying online course design best practices, including Quality Matters, to ensure key criteria like accessibility and a student-centered approach were achieved. EdX Edge is a non-profit course management platform, specifically for the use of small private online courses (SPOCs). Courses on EdX Edge are not published and are not search-engine optimized. Learners must be invited or obtain specific information to enroll into these edX Edge courses.

USMx, the USM-branded version of the edX platform, was first launched by the USM in 2016 to increase access to high-quality education. The edX platform offers two ways to target learners:

- edX: MOOC (massive open online courses) which are open to all learners
- edX Edge: SPOC (small private online courses) which are for smaller, targeted groups of learners

Leveraging the edX Edge platform gave UMBC several advantages over using the institutionally licensed learning management system (LMS), Blackboard: using UMBC'S LMS would limit the reach and scope of the Digital Generalist Credential modules. Learners interested in the competencies would need to have a UMBC account to access corresponding Blackboard courses. By leveraging the edX Edge platform, not only could UMBC students enroll and complete the modules, but students at other USM institutions would also be able to access the modules as part of their college's participation in the GWP program. In fact, UMBC is providing these modules as Open Education Resources to any other USM institution wanting to incorporate them into their program following a comprehensive quality assurance (QA) review conducted by the Kirwan Center for Academic Innovation.

From Competencies to Co-Curricular Learning Outcomes

While the focus of the GWP Digital Generalist credential is to prepare non-STEM majors with the aforementioned skills, undergraduate students majoring in STEM fields also have the opportunity to earn the GWP Digital Generalist credential for their work in Computer Science, Information Systems, and other related courses. As with the graduate courses in the DPS program, an effort was initiated to simultaneously map Information Systems and Computer Science courses that addressed the Digital Generalist KSAs and learning outcomes.

This work resulted in students having two pathways to demonstrate competencies related to the Digital Generalist credential by completing either edX modules or relevant coursework from pre-identified programs and departments. Since the Digital Generalist modules exist independently of the institution's traditional schedule of classes and learning management system, students complete the Digital Generalist modules effectively as a co-curricular experience. To operationalize the achievement of Digital Generalist competencies that occur as a co-curricular experience, and so that student data can be manipulated for more meaningful output, student completion or acquisition of the Digital Generalist competencies are tracked first within edX Edge, then transferred over into the CLR platform. These achievements can then be joined with other credentials earned by students via curricular experiences in the CLR.

Importing Data Into the CLR

Candidates for the Digital Generalist credential are awarded a badge upon completion of the related edX module with a passing score of 80% for each competency. Table 1 provides an example of the section descriptions and assessment schema for one of the Generalist competencies.

Table 1. Example of grading schema for the Role of Data and Analytics

Section Information: The Role of Data and Analytics	Weight
<i>Section 01: What Are Data?: This section will cover the broad definition of data and how data are structured. This section should take approximately 45-55 minutes to complete.</i>	<i>10% (9 questions)</i>
<i>Section 02: Data Typologies: The section will differentiate common data typologies. We will discuss structured vs unstructured data, the difference between numeric versus text, root, and derived data. This section should take approximately 35-45 minutes to complete.</i>	<i>10% (6 questions)</i>
<i>Section 03: Data Use and Application: This section will cover different data applications based on the type of data. This section should take approximately 30-40 minutes to complete.</i>	<i>10% (7 questions)</i>
<i>Section 04: Using Data for Decision-Making: This section will cover ways data is used to make decisions while reducing risk. This section should take approximately 25-35 minutes to complete.</i>	<i>10% (10 questions)</i>
<i>Section 05: Data Analysis Techniques: This section will cover four types of data analysis techniques and their use-cases. This section should take approximately 45-55 minutes to complete.</i>	<i>10% (9 questions)</i>
<i>Final Exam</i>	<i>50% (42 questions)</i>

Students that complete coursework in lieu of the edX modules must earn a passing grade of C or better in courses with equivalent learning outcomes to the modules. These courses are identified for students as part of the GWP pathway descriptions. For example, there are three statistics courses that can be taken as part of the Digital Generalist Pathway instead of completed the probability and statistics edX module: Statistics 350: Statistics with Applications in the Biological Sciences; Statistics 351: Applied Statistics for Business and Economics; or Statistics 355: Introduction to Probability and Statistics for Scientists and Engineers.

The Digital Generalist cohorts follow the same semester schedule of courses at UMBC for fall, spring, and summer to allow candidates opportunities to complete modules throughout the academic year. At the end of each cohort schedule (December, May, August), a bulk download is performed from edX, and a .csv file with the exported grade information for each competency is uploaded to the CLR platform, AEFIS.

CLR Workflow

UMBC's work with the Digital Generalist greatly informed the process moving forward to establish programs, degrees, certificates, and other micro-credentials on campus that could meaningfully populate the CLR. UMBC Instructional Technology staff partnered with various campus stakeholders to determine if specific academic programs at the undergraduate or graduate level are already intentionally designed to meaningfully track competencies throughout the student experience.

Identifying Programs

As UMBC is beginning to expand CLR efforts and workflow more deeply within the traditional academic space, Instructional Technology is striving to demonstrate the power of CLR to faculty across the institution. To do so, specific programs at the undergraduate and graduate level have been targeted that already demonstrate effective implementation of a robust curriculum map, which could be immediately mapped within AEFIS, our institutionally licensed CLR platform. A challenge among programs at any level resides in the quality and accuracy of both program and course level outcomes, which can thereby impact the curriculum map and its implementation within the platform. However, several programs on campus were identified as well positioned to begin the CLR mapping process because of well-defined program outcomes and alignment of course level objectives, content, and assessments.

Through the Division of Professional Studies, a new post-master's certificate program for College Teaching and Learning Sciences (CTLTS) launched in Fall 2020. At inception, program designers ensured that learning outcomes and competencies gained throughout coursework aligned with course level objectives, program objectives, and ultimately with general functional competencies of the institution. Similarly, programs within the Information Systems and Computer Science departments are beginning the process for accreditation review, particularly from the Accreditation Board for Engineering and Technology (ABET); as a result, they have a clearly defined learning framework with which to ensure their curriculum aligns appropriately. These three programs are ideal examples to demonstrate the power of curriculum mapping and its impact in simplifying the CLR implementation process.

Alignment

It is worth noting that a common challenge among mapping program outcomes to course outcomes and learning objectives is that current course outcomes may not be reflective of empirical learning experiences within the course. For example, many of the courses that completed the mapping process early in the Summer/Fall of 2019 between GWP Generalist KSAs and DPS Data Analytics courses did not previously receive support on best practices related to defining measurable learning objectives. If alignment between assessments and learning outcomes are weak, inconsistent, or not present within a course, this presents a challenge to accurately input the curriculum map within the CLR platform. To ensure programs do not experience this problem, the UMBC team recognized the need to adopt a toolkit for faculty to use during the steps of establishing clear, measurable course learning outcomes to align with how student learning is assessed. This toolkit will be discussed later in the chapter.

Aligning Blackboard Assignments to Competencies

After reviewing relevant curriculum maps to ensure alignment between learning experiences against course, program, and institutional learning objectives, the curriculum maps were created within UMBC's CLR platform, AEFIS. AEFIS is able to integrate the student information system data (including courses, course sections, and instructors) and LMS grade data. Once the curriculum map was created within AEFIS, and the connection between AEFIS, UMBC's instance of Blackboard Learn, and PeopleSoft were all established, the Instructional Design team was able to map assignments from Blackboard course sections to outcomes from the curriculum map.

This is an important process for faculty and instructional designers to engage in, not only to ensure alignment, but to also populate a meaningful CLR for students that will better operationalize regular assessments into competency-based learning experiences. In the introductory course within the CTLS certificate program, a summative writing assessment assigned at the conclusion of the course aligns with all the course learning objectives. Per a threshold designated by the program coordinators and Graduate School, if students earn at least an 80% on this assignment, students have met the stated course learning objectives. The demonstration of mastery on this summative assignment can automatically populate a student's CLR because of the curriculum mapping and assignment linking within AEFIS.

While students still earn a grade within Blackboard, which therefore impacts their grade in a course, students will also be able to display evidence that they have mastered a competency, which is more meaningful than grade data alone.

Expanding Curriculum Mapping and CLR Implementation

Creating a Faculty Toolkit

The opportunity presented by curriculum mapping to identify granular competencies achieved in a course allows for student demonstration of mastery gained throughout a program of study, and thereby does not necessarily rely on a single course grade to indicate skill acquisition. To scale the power of CLR through UMBC's instance of AEFIS, the Instructional Technology team will need to delegate and

decentralize the implementation and data entry of the curriculum map and alignment of learning objectives and course assessments to identified faculty or staff within colleges or departments. To be successful in this transition, the Instructional Technology team is developing a faculty toolkit with instructions and mapping templates to support this process.

In addition to supporting faculty through well-formed, student-centered course learning objectives, the toolkit aims to provide faculty the resources needed to successfully enter this information into AEFIS. The toolkit has two distinct purposes: 1) to support faculty in creating student-centered, measurable learning objectives; and 2) to provide training resources for faculty or staff to enter these objectives into AEFIS. An example of the tool used to map program outcomes to course outcomes is shown in Figure 9.

Figure 9. Example of a tool used to map program outcomes to course outcomes

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
		College Teaching and Learning Science		Program Level Outcomes														
		Post-Master's Certificate Program		1	2	3	4	5						AEFIS Code				
		PSYC 501																
		Applied Learning Science																
		Demonstrate an understanding of adult learning theory, andragogy, self-directed learning and transformative learning.		x										C3				
PSYC501	CO1	Create an effective course syllabus and writing measurable learning outcomes.		x	x	x								C4				
PSYC501	CO2	Demonstrate application of critical race theory and diversity issues in planning learning sessions.			x	x								C5				
PSYC501	CO3	Create a lesson plan that considers accommodations and special learning needs of college learners.		x	x	x								C6				
PSYC501	CO4	Incorporate technology and learning management systems as part of a course.		x		x								C7				
PSYC501	CO5	Apply critical thinking to common controversies in higher education.		x	x									C8				
PSYC501	CO6	Apply successful communication skills in oral and written format.				x								C9				
PSYC501	CO7																	
		PSYC 502																

CTLIS Program Level Outcomes
 1. Demonstrate an understanding of learning science and application to the diverse needs of college learners in the learning environment.
 2. Apply evidenced based strategies and approaches to engage diverse college learners
 3. Implement best practices in curriculum and course development
 4. Design relevant and culturally responsive evaluation and assessment of learning.
 5. Develop metacognitive skills and engage in self-reflective behaviors to determine effectiveness of the teaching and learning environment.

CLR Pilot Outcomes

In the Fall of 2020, 24 unique learners participated in an initial pilot of five out of the six Digital Generalist modules (Competency 2 was not complete at this time). These students had already successfully completed one of the approved course equivalencies in statistics to be eligible for the pilot. To successfully complete each competency, students had to earn an 80% or better on the final assessment in each module. Completion rates varied among the 24 learners, and of those, six completed all five modules. As they had also completed a course-equivalency for Competency 2, these six learners were awarded the Digital Generalist Credential badge.

Similarly, in the Spring of 2021, a pilot was conducted within an undergraduate course (IS369: Research Seminar: Writings in Information Systems). In this instance, seven students completed at least one module, and two students completed all six modules thereby earning the Digital Generalist badge. Note: The Competency 2 module was available for this second pilot. Table 2 summarizes completion results.

Table 2. Completion results of Fall 2020 and Spring 2021 Digital Generalist Credential pilots

Digital Generalist Credential Modules in edX	Fall 2020 <i>Pilot with DoIT Student Workers</i>		Spring 2021 <i>Pilot - Information Systems 369 (Research Seminar) Students</i>	
	# Enrolled	# Completed (>80%)	# Enrolled	# Completed (>80%)
01 The Role of Data and Analytics	23	20	18	7
02 Probability and Descriptive and Inferential Statistics	-	-	19	4
03 Data Manipulation	14	10	14	5
04 Data Visualization and Communication	23	14	13	4
05 Data Ethics	23	19	12	3
06 Data Security	23	18	14	3
Digital Generalist (Completion of all six (or course equivalency)		6		2

These results reinforced our process in working with faculty SMEs to design these competency modules. First, it was important to present each competency in its own module; this allows students to select which competencies they would like to complete for a digital badge. Second, we believe that while there is an ultimate credential to which all of the individual competencies “stack”, earning credentials or achieving competency should not be an all or nothing proposition. That is, while a student may not have completed all six competencies successfully, the intent of the CLR would necessitate that they are still able to document and share the achievement of whatever subset of competencies they acquired by way of an individual badge for each competency. So rather than only awarding eight Digital Generalist badges to students who completed all six competencies, 107 individual competency badges were able to be awarded to “partial completers” in addition to the eight Generalist badges.

LESSONS LEARNED AND FUTURE IMPLICATIONS

The nature of these types of innovation and academic transformation initiatives is fluid. Innovation requires flexibility in approach, time, and space to experiment, fail, and apply lessons learned to the next iteration. Also, leveraging tools currently available may not be ideal to achieve all the identified goals, but are “good enough” to test some ideas and approaches as better tools are in development. Finally, a solid, skilled team is necessary to tackle these challenges, and it is imperative that

team leadership has a firm grasp of effective collaboration, strategic thinking, and change management skills and approaches to work in these areas.

Additionally, workflows for both the badging and CLR initiatives currently require the use of multiple tools to move from concept through design to implementation. Subsequently, there are vendors, like AEFIS, working to streamline this process and integrate the tools needed from end-to-end in the workflow, but none are implemented completely at the time of publication of this chapter.

As academia continues to find its footing in the alternative credentialing space, large corporations like Google, Walmart, and IBM lead the way among employers defining and implementing credentialing programs for current and future employees (Gallagher and Zanville, 2021). With major corporations taking on the role as educational providers as well, higher education must reconsider its role and be open to partnerships with industry to both define new types of credentials while evolving their existing ones to support the requirements of lifelong learning. This may include the consideration of adding new credentials beyond the degree and digital badges like micromasters or other microcredentials and online degrees to their portfolio that could be offered through Massively Open Online Course (MOOC) platforms like Coursera or edX (Gallagher, 2019).

When working with employers to define competencies needed by students upon graduation and then implementing courses to address those competencies, there is a need to strike a balance between creating “evergreen” course content and supporting dynamically changing industry standards. Instructional designers and faculty have to consider what types of course and content structure will be most effective in maintaining these types of course modules over time.

In the future, this reconsideration of course structure and duration may extend into the term-based course offerings traditionally implemented at institutions. For example, might there be a benefit to embedding competency-based badges into existing courses that recognize 21st century skills or other specific competencies acquired in the classroom? If so, are there mechanisms to track these badges within the current implementations of learning management systems? How might new pathways of learning be integrated into the current curriculum and/or co-curricular activities and captured by badges? A CLR? How can all of these outcomes be tracked and presented in a way that gives students greater agency over their learning? How might faculty and staff efforts to support this work be recognized? For faculty, how might support of these initiatives factor into the promotion and tenure process? These questions and many more may be considered as the concepts of digital badging and lifelong learning records gain greater exposure within K-16 education. UMBC is positioned to evolve its credential offerings with these concepts in mind.

CONCLUSION

UMBC is working to create a connected system of learning for its students. The institution recognizes that students acquire knowledge, skills, and abilities across the campus as well as through other learning experiences that may have occurred before coming to UMBC. Their competency and skill development will occur along different and varied pathways that include courses, experiential learning, work experience, club or team participation, and many more learning opportunities (Civati, 2021). It is the goal of UMBC to both facilitate and help document a record of lifelong learning, a journey that

extends far beyond the conferral of a UMBC degree. This goal requires the institution to implement a system that allows students to curate, organize, and share the variety of credentials earned including badges, degrees, and certificates that can travel with them, demonstrating mastery of acquired knowledge, skills, and abilities for the digital economy.

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KEY TERMS AND DEFINITIONS

AEFIS: Assessment, Evaluation, Feedback, and Intervention System (AEFIS) is a cloud-based assessment management system that facilitates the collection and application of learning assessment data and the implementation of a Comprehensive Learner Record (CLR).

Digital Badge: A validated indicator of knowledge, skill, ability, or level of competency that can be earned as part of a learning experience.

Badging Ecosystem: The environment in which digital badges exist that includes badge issuers, recipients, displayers, consumers and all of the functions and capabilities of each of those entities.

B.E.S.T.: Badging Essential Skills for Transitions (B.E.S.T.) is University System of Maryland (USM) initiative which consists of eight badges focused on career readiness competencies that align with those developed by the National Association of Colleges and Employers.

Capital CoLAB: Collaborative of Leaders in Academia and Business (CoLAB) is an action-oriented partnership of business and academic institutions that develops the talent needed for the jobs of today and tomorrow.

Comprehensive Learner Record (CLR): A new generation of secure and verifiable learning and employment records supporting all nature of academic and workplace recognition and achievements including courses, competencies and skills and employer-based achievements and milestones (IMS Global Learning Consortium (n.d.)).

Credential: A qualification, achievement, personal quality, or aspect of a person's background, typically when used to indicate that they are suitable for something.

Credly/Acclaim: An open badge platform where users can issue digital badges and view analytics associated with the badge(s).

edX Edge: Learning management system used by the University System of Maryland to deliver small private online courses (SPOC) and used to deliver the Greater Washington Partnership (GWP) Digital Generalist competency modules.

Greater Washington Partnership: A civic alliance of the region's largest employers in the Capital region from Baltimore to Richmond.

Quality Matters: The global organization leading quality assurance in online and innovative digital teaching and learning environments. It provides professional development, a set of rubrics, and a course peer review process that work together to support faculty in improving the quality of online and blended courses.

APPENDIX 1

Table 3. Detailed description of steps in the digital badge workflow

Phase 1 for UMBC's Badge Workflow: Administrative Preparation	
Steps	Description of the Process
Step 1. Submit a Request Ticket	Programs interested in creating a badge or system of badges must first submit a help desk request through UMBC's ticketing system. After reviewing the request, an initial meeting is arranged with stakeholders to define the scope of the prospective badge. This includes a broad understanding of the badge, desired outcomes, associated values, and the process by which learners will earn the badge. At least 1-3 badge goals are established during this step.
Step 2. Identify the Badge Team	<p>During, and occasionally after the initial meeting, members of the badge team are identified and responsibilities are assigned. Members of the badge team consist of Content, Technical, and Visual owners.</p> <ul style="list-style-type: none"> • The Content owner is responsible for overseeing and "owning" the badge. This role may be ongoing as the owner(s) could work with Instructional Technology for continuous badge distribution. • The Technical owner is responsible for the implementation of the badge or badge system. At UMBC, the Instructional Technology team serves as the technical owner of all badges and implements the badges within the badging platform. • The Visual owner is responsible for the graphic design. This role considers branding guidelines and receives the necessary visual approvals.

	<p>Each of these roles may have more than one contributor. Additionally, a contributor may assist with more than one role. A reflection period follows, giving time for each party to share comments or ideas among management and collaborators. Feedback is then used to make improvements to the overall process.</p>
Step 3. Collect the Badge Metadata	<p>Once the badge team is identified, metadata for the digital badge is collected. The desired details gathered are the badge:</p> <ul style="list-style-type: none"> ● Type ● Name ● Purpose ● Description ● Criteria ● Evidence ● Assessment type ● Minimum requirement(s) ● Time to earn ● Levels ● Standard alignment. <p>The credential type indicates the category such as experience, learning, validation, and certification. The purpose plainly states what the badge is seeking to address. The description explains the badge in a clear and concise manner; it also assists as being an effective social media messaging tool by displaying gained competencies. The criteria states what a participant must accomplish in order to earn the badge. The criteria is completed with careful consideration as it is what a badge consumer and badger earner will see when viewing the credential online. If the badge is artifact driven, the badge team considers what will be required as evidence, where it will reside, and how long it will be stored.</p> <p>With a focus on criterion referenced assessment, the assessment strategy selected will demonstrate learners meeting the desired badging outcomes. There are several assessment types to choose from, including but not limited to: expert, peer, portfolio, algorithmic, national certification, industry specific, and test. The minimum requirements are supportive if there are requirements or prerequisites to participate in the badging program. If there are levels to the badge, the team will decide if participants must acquire the badges in order or if the badges can be accumulated at random towards an overarching digital credential.</p>

	<p>The time to complete the badge plays a large role in the system design, whether the process will be self-paced or instructor-led. The duration to complete the system and earn the badge is also considered; this could be hours, days, weeks, or months, and could be recurrent or a one-time experience. Last but not the least, standard alignment creates consistency between the learning outcomes, system activities, and final assessment. The standard alignment also guides the badging system development and holds stakeholders accountable for the delivered content. The metadata collected is used to develop digital credentials in an open badge platform where earners can share their achievements publicly; the information also differentiates the badge among other digital credentials.</p>
Phase 2 for UMBC's Badge Workflow: Badge Distribution	
Steps	Description of the Process
Step 4. Design the Badge	<p>The Visual owner will create or identify the person responsible for designing a badge graphic between 600x600 and 2048x2048 pixels. This could be a member from the requested party, a member from Instructional Technology, or other known graphic designers. The visual is crafted while being mindful of branding guidelines. An icon plus a set of words best representing the issuer and the purpose of the badge are additional factors to be considered.</p>
Step 5. Draft the Badge Distribution Process	<p>Once the badge metadata and visual graphic are collected, the badge is built on an open badge platform. Prior to issuing the badge, the team will draft the distribution process. The distribution plan involves:</p> <ul style="list-style-type: none"> ● Determining how earners will be notified of their badge ● When badges will be awarded and issued ● Where earners can locate and share their badges <p>Once this information is identified, the badge team drafts a notification to alert earners of their achievement, the day to expect the badge, and the company sending the badge. Credly/Acclaim is the open badge platform used at UMBC to create, manage, and issue digital badges. The badge team decides if duplicates will occur and how frequently the badge will be issued to individuals completing the badge system.</p>

Step 6. Issue the Badge	Upon confirmation of the date and time, the badge is issued to individuals verified as completing all badge requirements and demonstrating mastery of the related competency through the badging platform in the given timeframe. Recipients receive an email with instructions on how to claim and share the badge. The badge can be showcased in email signatures, on social media platforms, and in a shared link. Credly/Acclaim provides the option issue per earner or to import a list of up to 5,000 earners using their csv template for bulk issuing.
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APPENDIX 2

Table 4. B.E.S.T. digital badge dimensions (USM, 2018)

B.E.S.T. Badge Name	Description	Dimensions
The Collaborator	The COLLABORATOR BADGE validates that the earner has demonstrated the skills necessary to be a successful and contributing member of a professional team.	<p>The Collaborator advances the work of a team by effectively:</p> <ul style="list-style-type: none"> • Articulating one's own role on the team and the roles of others. • Integrating team members' diverse viewpoints. • Motivating and supporting others on the team. • Building upon or synthesizing the contributions of others. • Offering ideas, suggestions, alternative solutions, and feedback. • Accounting for one's own assigned role and responsibilities on the team. • Negotiating, managing, and resolving conflicts when they arise

<p>The Communicator</p>	<p>The COMMUNICATOR BADGE validates that the earner has demonstrated ability to articulate thoughts and ideas clearly and effectively in written and/or oral forms.</p>	<p>The Communicator expresses thoughts and ideas by effectively:</p> <ul style="list-style-type: none"> • Using syntax, grammar, and/or vocabulary appropriate to the context and modality. • Ensuring messages are organized, clear, and consistent with any supporting material. • Tailoring the message and delivery method to the topic, audience, purpose, and context. • Reflecting on one's own messages and adjusting as appropriate. • Critically analyzing others' messages. • Engaging diverse and competing perspectives and the ways they influence communication.
<p>The Critical Thinker</p>	<p>The CRITICAL THINKER BADGE validates that the earner has demonstrated the ability to analyze and evaluate thinking and commit to constant improvement.</p>	<p>The Critical Thinker excels in the art of analyzing and evaluating thinking with a view to improving it by effectively:</p> <ul style="list-style-type: none"> • Raising vital questions and problems, formulating them clearly and precisely. • Gathering and assessing relevant information, using abstract ideas to interpret it effectively. • Coming to well-reasoned conclusions and solutions, testing them against relevant criteria and standards. • Thinking open-mindedly within alternative systems of thought.

		<ul style="list-style-type: none"> • Recognizing and assessing, as need be, one's own assumptions, implications, and practical consequences. • Communicating effectively with others in figuring out solutions to complex problems.
The Globalist	<p>The GLOBALIST BADGE validates that the earner understands international issues, learns from and works with people from diverse linguistic and cultural backgrounds, and possesses skills to function productively in an interdependent world community. The individual demonstrates critical analysis of and engagement with global systems, including natural, physical, social, cultural, economic, and political systems.</p>	<p>The Globalist demonstrates global awareness by effectively:</p> <ul style="list-style-type: none"> • Recognizing differences across and within world cultures and the diverse viewpoints that emerge from these differences. • Identifying developments and trends associated with historical or contemporary global issues. • Developing a sense of personal and civic responsibility with respect to global issues. • Applying communication skills and strategies, including the ability to use another language, to interact effectively with people from other cultures. • Analyzing the power structures, complexities and

		<p>interdependencies of global systems.</p> <ul style="list-style-type: none"> • Evaluating solutions to global challenges using interdisciplinary perspectives.
The Interculturalist	<p>The INTERCULTURAL IST BADGE validates that the earner values, respects, and learns from diverse cultures, races, ages, genders, sexual orientations, and religions. The individual demonstrates openness, inclusiveness, sensitivity, and the ability to interact respectfully with all people and understand individuals' differences.</p>	<p>The Interculturalist navigates cultural boundaries by effectively:</p> <ul style="list-style-type: none"> • Identifying one's cultural norms and values. • Articulating how one's experience shapes cultural norms and values and how culture shapes personal experience. • Analyzing how cultural norms and values affect one's interactions with others. • Recognizing the commonalities and differences that exist among people and cultures and how these factors influence one's relationships with others. • Understanding the influence of history, geography, religion, gender, race, ethnicity, and other factors on one's identity and the identities of others. • Questioning explicit and implicit forms of power,

		<p>privilege, inequality, and inequity.</p> <ul style="list-style-type: none"> • Engaging with people and ideas from other cultures with courage, sensitivity, openness, and curiosity.
The Leader	<p>The LEADER BADGE validates that the earner has demonstrated the ability to leverage the strengths of others to achieve common goals and use interpersonal skills to coach and develop others. The individual can assess and manage self and others; use empathetic skills to guide and motivate; and organize, prioritize, and delegate work.</p>	<p>The Leader leverages the strengths of others to achieve common goals by effectively:</p> <ul style="list-style-type: none"> • Assessing individual and collective strengths, weaknesses, and capacities to achieve the desired goal. • Engaging diverse or competing perspectives. • Motivating others. • Articulating a vision and strategy. • Organizing, prioritizing, and delegating work, roles, and responsibilities. • Reflecting on how one's leadership affects process and outcomes and adjusting as appropriate. • Reviewing outcomes and assessing implications for future plans.

The Problem Solver	<p>The PROBLEM SOLVER BADGE validates that the earner has demonstrated the skills necessary to resolve complex problems/challenges through exercising sound reasoning to analyze issues, make decisions, and overcome challenges. The individual can obtain, interpret, and use knowledge, facts, and data in this process, and may demonstrate originality and inventiveness.</p>	<p>The Problem Solver tackles challenges alone or in teams by effectively:</p> <ul style="list-style-type: none"> • Articulating the problem. • Identifying the desired end result. • Brainstorming creative options for achieving the desired end result. • Analyzing and selecting the option that best achieves the desired end result. • Developing a plan of action that will achieve the desired end result. • Enacting the plan of action and adapting as needed. • Evaluating the outcomes in relationship to the desired goals.
The Professional	<p>The PROFESSIONAL BADGE validates that the earner has demonstrated personal accountability, effective work habits, integrity, personal accountability and commitment.</p>	<p>The Professional strives for excellence by effectively:</p> <ul style="list-style-type: none"> • Taking responsibility for one's actions and outcomes. • Examining the implications of one's own behavior and decisions. • Acknowledging mistakes and learning from them. • Following through on commitments. • Persevering in the face of challenges and changes. • Acting with the interest of the larger community in mind. • Evaluating one's own performance over time and adjusting.