ALIGNING USM INNOVATION WITH DIGITAL TECHNOLOGY WORKFORCE NEEDS

"Our analysis of job postings data and discussion with employers demonstrate an existing and growing need for digital tech workers – in terms of quantity, skillsets, skill levels and diversity – as well as a need for foundational digital skills throughout the workforce."

– Greater Washington Partnership

The Greater Washington Partnership's (GWP) Capital CoLAB initiative is working with a selected set of university partners between Richmond, VA and Baltimore, MD to create robust opportunities for individuals to acquire in-demand digital skills credentials, to diversify the digital technology workforce in terms of race/ethnicity and gender through intentional talent identification and development, and to scale educational opportunities to meet the region's significant need for digital technology workers.

The University System of Maryland's (USM) William E. Kirwan Center for Academic Innovation[1] is coordinating a system-wide effort to align existing curricula with the desired knowledge, skills and abilities (KSAs) identified by the CoLAB; develop a library of shared online instructional modules to fill gaps; consistently and rigorously assess students' acquisition of these skills; and make graduates' expertise in these areas more transparent to employers through digital credentials. The benefits for the GWP include greatly expanding the institutional reach of the CoLAB initiative and providing GWP employer members with access to a highly demographically diverse skilled workforce. Additionally, because a suite of online modules have been developed as part of USM's CoLAB efforts, learning opportunities can eventually be made available to a broader pool of candidates beyond traditional 4-year college students, outside IT disciplines/majors, and across a wider geography.

Developing and Scaling the Digital Generalist Credential

The Digital Generalist credential is currently designed for undergraduates pursuing degrees in non-technical fields to prepare them for jobs that will require a general understanding of data and how best to use data to communicate. It validates students' acquisition of basic knowledge, skills, and abilities needed by industry for entry-level positions in a wide variety of occupations and covers six broad areas: data and analytics, probability and statistics, data manipulation, data visualization and communication, data ethics, and data security.

In early 2019, the Kirwan Center identified interested USM institutions with existing candidate academic programs and began working with them to map CoLAB KSAs for the Digital Generalist against their existing curricula and identify gaps that might be addressed through the development of online modules. Additionally, the Kirwan Center worked with lead partner, University of Maryland Baltimore County (UMBC), and various subject-matter experts from around the USM, to produce high-quality, flexible digital skills instructional modules on the USM edX platform that can be used either to round out

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[1] For more information about the Kirwan Center, visit http://www.usmd.edu/cai

existing curricula or as a stand-alone suite leading to the Digital Generalist credential as defined by CoLAB. The online modules developed by UMBC are being pilot tested across USM to augment existing curricula for matriculated students to achieve the KSAs at levels necessary to earn the Digital Generalist credential.

Matriculated students who demonstrate mastery of the CoLAB KSAs will be issued a GWP-endorsed digital badge from their institution to accompany their regular university transcript. These digital badges carry with them a snapshot of the evidence used to assess students' proficiency that employers can view.

Currently, six USM institutions working to develop and launch the Digital Generalist credential:

Institution	Anticipated Launch
Bowie State University	Fall 2021
Frostburg State University	Fall 2021
Towson University	Spring 2021
University of Maryland, Baltimore County	Spring 2021
University of Maryland, College Park	Fall 2021
University of Maryland Global Campus	Summer 2021

Developing and Scaling the Digital Specialist Credentials

In addition to developing the Digital Generalist credential, the CoLAB also created KSAs for a set of three Digital Specialist credentials. These credentials prepare students for jobs involving specialized technical skills in Cybersecurity, Machine Learning, and Data Analytics and are aimed at undergraduate students pursuing 4-year degrees in STEM majors, such as computer science, statistics, and engineering. The Specialist credentials validate students' acquisition of the knowledge, skills, and abilities that regional employers have identified for entry-level positions in these technical career paths.

The Kirwan Center has been coordinating conversations among interested USM institutions and the CoLAB, exploring the best ways to implement these credentials to provide added value for our students and achieve the larger diversity, equity, and inclusion goals of the initiative. Currently, seven institutions within USM are exploring Digital Specialist credentials:

Institution	Machine Learning	Data Analytics	Cybersecurity
Bowie State University		X	X
Frostburg State University			X
Towson University			X
University of Maryland, Baltimore County	X	X	X
University of Maryland, College Park		X	
University of Maryland Eastern Shore	X		X
University of Maryland Global Campus		X	

Next Steps

USM hopes to work with interested GWP CoLAB businesses further to enrich the Digital Generalist online modules by contributing case studies and other experiential- and scenario-based active learning components. Further, as a critically important part of this project to achieve our goals, the Kirwan Center plans to work with the partner USM institutions to compile and incorporate resources aimed specifically at supporting those students not currently well represented in digital technology fields.

Eventually, participating USM institutions might use the online modules to expand their offerings by providing current employees of GWP CoLAB businesses opportunities to "skill-up," giving those companies an advantage in developing and retaining their current talent.

Timeline

Phase 1 (2019-2021): Develop and implement Digital Generalist and Digital Specialist credentials with USM students
- Develop and pilot the Digital Generalist credential at subset of USM institutions.
- Develop a set of common, authentic assessments.
- Create a continuous improvement process and feedback loop for modules and credentials.
- Develop a roadmap to implement the Digital Specialist credentials at subset of USM institutions.

Phase 2 (2022-2023): Expand opportunities to include incumbent workers at GWP CoLAB businesses
- Develop Digital Specialist credentials.
- Test established Digital Generalist credentials for GWP employer partner workforce.
- Create specialized cohorts of incumbent workers for professional development opportunities.

Phase 3 (2023-2024): Expand across entire region (and beyond)
- Test established Digital Specialist credentials.
- Begin exploring how Digital Generalist and Digital Specialist credentials might be "stacked" into pathways into certificate or degree programs.
- Further explore ways our edX partnership might be leveraged to support the dissemination of these learning opportunities to anyone in the region interested in upskilling.

Leveraging our "Systemness" to Advance CoLAB Goals

USM is a "microcosm" of 4-year public higher education comprising three research-intensive campuses, four comprehensive institutions located in a mix of urban and rural settings, three historically black universities, one adult-serving online institution, a degree-conferring center for environmental science, and three regional centers.[2] Across these 15 institutions and academic centers, the student talent pool for the Digital Generalist and Digital Specialist credentials is well aligned to GWP's goal of diversifying the digital technology workforce. In 2020, the USM had a combined undergraduate and graduate student population of more than 170,000; 35% were underrepresented minority students (Black, Latinx, or Indigenous students) and 53% were women. Out of 48,000 STEM students across the USM in 2020, 30% were underrepresented minority students and 33% were women.

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[2] For more information about the University System of Maryland, visit http://www.usmd.edu

As a *system* of public 4-year universities, USM institutions work closely together to leverage their collective expertise and resources, share best practices, increase effectiveness and efficiency, and advance USM's mission to improve the quality of life in Maryland in ways that no single institution can accomplish individually. To support this "systemness," in 2013 the USM Board of Regents established the William E. Kirwan Center for Academic Innovation to lead statewide efforts to implement, evaluate, and scale and sustain innovations aimed at enhancing student learning and achievement of high-quality credentials. The Kirwan Center is helping advance the CoLAB university–business collaboration in the following ways:

- The Kirwan Center is leveraging several years of work related to validating graduates' "career-ready skills" as part of its Badging Essential Skills for Transitions (B.E.S.T.) initiative.[3] Through B.E.S.T., the Kirwan Center has coordinated the work of nine USM institutions to develop skill building pathways leading to badges by actively curating, mapping, and aligning curricular and co-curricular activities against the career competencies championed by the National Association of Colleges and Employers. This initiative has examined ways to help build institutional capacity to rigorously assess student work that is aligned with the competencies and ensure consistency of expectations across the participating institutions. Numerous strands of this project can be adapted to benefit the development of Digital Generalist and Digital Specialist credentials that validate and make visible students' proficiency in the specific KSAs associated with each.

- The Kirwan Center is participating in national efforts to more fully document student learning through a verifiable record of their knowledge, skills, and accomplishments. The Comprehensive Learner Record (CLR) seeks to capture, record, and communicate learning when and where it happens in a student's higher education experience. This includes learning outcomes from courses, programs and degrees, as well as experiences a student has outside the classroom that help develop their career-ready skills and abilities, such as internships, undergraduate research, and service learning. This will not only benefit students and admitting institutions, but also employers by better communicating not only what students were *taught*, but also what they have *learned* during their time on our campuses

- The Kirwan Center is helping USM institutions explore a transformative model of online education that includes innovative curricula, alternative credentials, and rapid development based on student and market demands. The Kirwan Center's USMx initiative[4], which includes courses/programs developed on the edX MOOC platform, is capitalizing on the affordances of online learning to more effectively reach potential students in new ways by expanding access to instructional content beyond the traditional "matriculated" student, reducing the overall cost of attendance, and improving achievement through personalized modules and credentials.

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[3] See http://www.usmd.edu/cai/best
[4] See https://www.usmd.edu/cai/online-learning