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# Strategic Staffing for a Digital Future: Emerging Skills and Roles for Digital-Forward Design

A Digital-Forward Workshop Report

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# Inventing Innovation:

## Roles and Skills for Digital-Forward Design

### Facing the Digital Tsunami

The digital transformation of postsecondary education is well underway and moving more rapidly every day. Digitizing the way our institutions operate, our faculty teach, and our students learn changes much—and requires much to change. This means not just doing things differently, but also acquiring new and different skill sets and roles as new tools for teaching and learning emerge and evolve.

In our preceding workshop,<sup>1</sup> we advanced the concept of ‘digital-forward’ design as a model for incorporating and leveraging the tools and benefits of educational technology into course design. An important finding from that workshop was the need for upskilling of current roles to keep pace with changes, and the emergence of new skills sets and roles as necessary and integral parts of the instructional design ecosystem. Thus, in Winter 2021 we convened the Digital-Forward Skills and Roles Workshop to identify and describe emergent digital-forward skill sets and roles to guide faculty, chief academic and instructional innovation officers, instructional design faculty, managers and staff in the specification, recruiting, and development of highly effective digital-forward instructional design, development, and delivery teams.

This report presumes that digital-forward design is not only useful, but that it will increasingly be a de facto standard of practice in postsecondary education course design. Using the Principles for Digital-Forward Design (see Appendix 1) as a guide, the workshop participants were asked to provide insight and guidance for institutions as they face the digital tsunami of change washing across the campus. Their goals were to:

- Identify current and emergent skill sets and roles that are essential to digital-forward instructional design and pedagogies
- Describe the impact of digital-forward skills and roles on the institution
- Identify strategies colleges can use to assess which digital-forward skill sets and roles they will need in the future and how to acquire them

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## Inventing Innovation

### Digital Skills and Roles Across the Campus

The digital transformation of the campus is not occurring in instruction alone. It has already occurred across much of the administrative enterprise. Here we see an ecosystem of recruiting, student information, purchasing, institutional effectiveness, and many other applications which were once home-grown tools on local servers and are now enterprise systems in the clouds. Notably, the cost of these tools, their percentage of the campus budget and staff, and their irreplaceability have also risen dramatically over the last forty years.

In the 1970s and 80s the campus computer network was likely managed by the computer science department (if the campus had one—sometimes it was a lone IT individual). Now, IT management is a 'C' level role, with a significant staff managing mission-critical applications. It is no stretch of the imagination to see that, over the next decades, instructional operations (the core mission of every institution) will require similar infrastructures and teams to manage digital instructional models, resources and services.

### The Digital-Forward Paradox

All postsecondary institutions prominently cite student success in their mission statements. However, the scholastic ability of the students recruited and taught are very different across the institutional spectrum from technical college to research university. These differences compose a broad range of affordances—and constraints. The paradox of educational technology, which can increase access, personalization, and equity in uniquely impactful ways, is that institutions whose populations could benefit the most from technology—are often those who can least afford to acquire, design, or deploy it.

We asked our workshop participants to take on this challenge.

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# Achieving Digital Forward-Design

*“We always need to consider the learner,  
and their perceptions of a digital-forward space.”*

Workshop Participant

Historically, education has been led by faculty members developing and teaching their own courses. Increasingly, content has become digitalized and directly available to students. As a result the role of the teacher, as the sole progenitor of instruction, has gradually become more complex.

The bundle of roles faculty perform in developing and teaching a course is extensive. In addition to setting the learning objectives, designing the instruction, curating the content, delivering the course, tutoring, mentoring, and assessing the students—faculty also must be able to build their course in a learning management system (LMS), provide tier 1 technical support to students, produce lectures, develop or acquire media, understand the intellectual property rights for that content, analyze data from multiple course tools, and a myriad of other ‘instructional’ roles. All-in-all, the bundled faculty model is an incredibly efficient and effective producer of bespoke, instructor-forward, courses.

It’s important to note in addition to faculty being the most valuable component of instruction, they’re also the most expensive.

Cost pressures have driven colleges to consider the ‘unbundling’ of faculty roles resulting in two instructive findings. The current teaching models are forever evolving especially as technology continues to advance. As a high-value/cost resource, there are some tasks, e.g. tech support, lab assistance, that can be delegated to less costly resources (if those alternative resources provide equal levels of quality).

Additionally, while digital affordances come with benefits to leverage (and challenges to understand and mitigate) they do not come with more time. Indeed, especially when first adopted, they take more time. The list of new tasks added to the teaching bundle e.g. managing a course in an LMS, technical support for course specific applications, and data analysis of activities and assessments, have only taken away time from the teaching, tutoring, and mentoring roles that make a difference in student success.

In today’s college course, to produce high-quality learning and find the time for real teaching—it takes a team.

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## Achieving Digital-Forward Design

Unbundling tasks where faculty have neither the time nor the skillsets makes good operational sense. Providing technical support to students, administering an LMS, directing and editing video segments, proctoring exams at a distance are just a few roles that require specialized skills, training, and experience beyond the core roles of instruction. At community colleges, these tasks take time away from teaching, at universities they take time away from research. And, as we move towards more digital-forward designs, tomorrow's college courses will require—and benefit from—even more specialized skill sets and roles.

Increasingly, roles once presumed to be part of teaching will be delegated to technology.

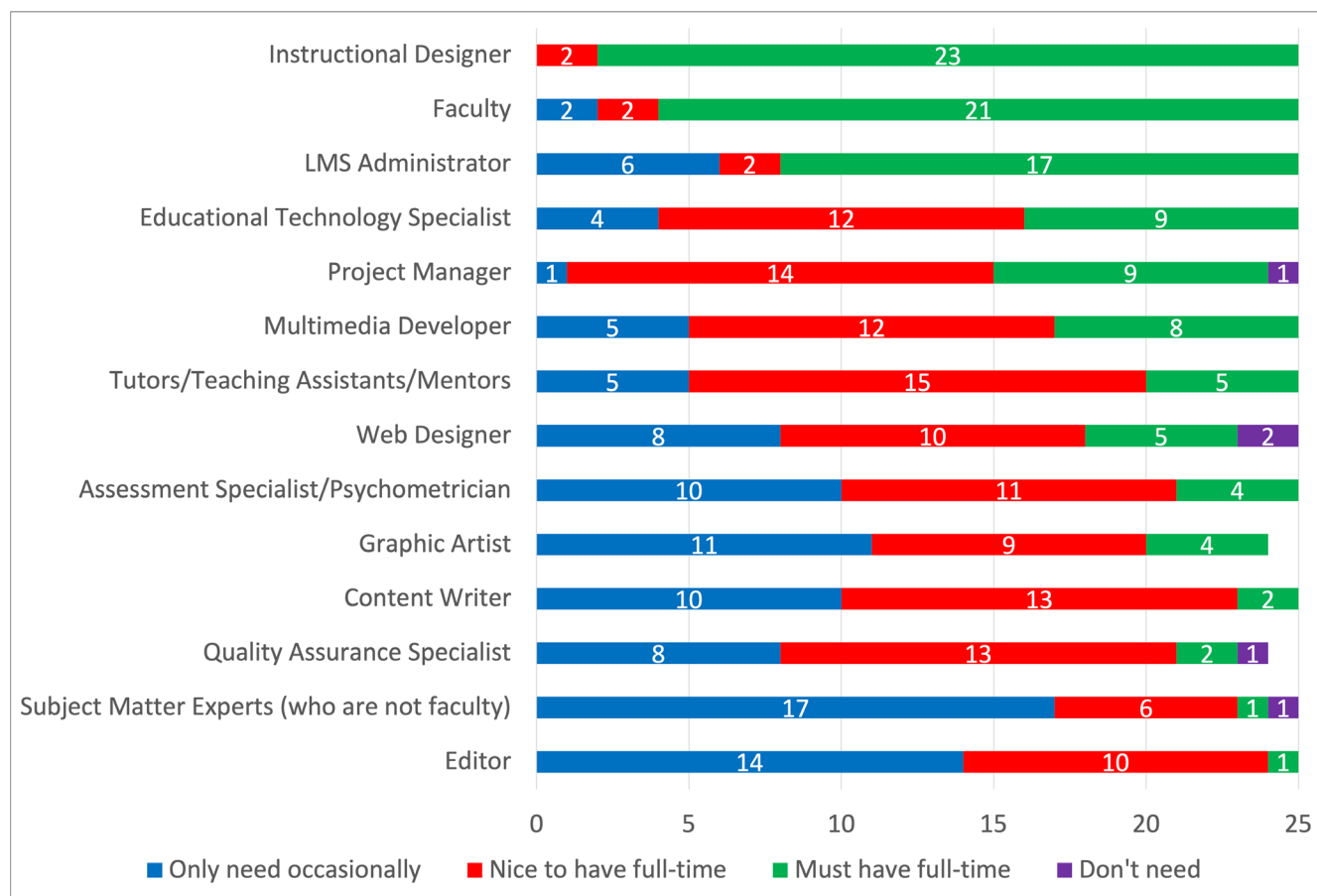
The examples from today presage future transitions. Spelling, grammar, and plagiarism checkers are ubiquitous. Objective tests and quizzes can be digitally scored. No live experience is more revered than 'the Great Lecture,' yet we see the value in recording and distributing it via video so students can view, and review it. Converting common questions to a web-based frequently asked questions (FAQ) list (and more recently to answers delivered by an intelligent agent) mercifully frees faculty from repetitive tasks. Emergent course designs already leverage artificial intelligence (AI) for adaptive coursework, rubrics are becoming automated, and content analysis tools can sort through discussion forums for themes, topics, and more. Considering the implications of these trends, and their need for specialized skill sets, was the objective of the Workshop.

# Current Instructional Design Roles

*"Probably the scariest thing of all is to expect any one person to do everything."*

Workshop Participant

Teaching roles and bundled faculty skills are complex and require a deeper dive in order to fully understand the pairing. The workshop facilitated this analysis by ranking current course design and development job titles\* by their significance to the instructional design process. While the 'n' is small, and institution types unbalanced, the results are sufficiently indicative of the key skill sets, and their relative significance, when creating and managing contemporary college courses.



Ranking according to level of need for current job types associated with course design, development, and deployment.

\* It became evident early on that using job descriptions as proxies for the multitude of diverse roles and skill sets employed in college-level teaching can be problematic. While all these roles (or skill sets) already exist in some form, they often do not exist as a separate role or discrete job. These terms and titles can also connote very different expectations and responsibilities between institutions—and even across institutions. The workshop suggested that it might be better to talk in terms of skills and functions rather than roles and positions.

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## Current Instructional Design Roles

Given the preponderance of instructional designers in the workshop, it is no surprise that their role was highly appreciated. The ranking depicts the primary responsibilities faculty members are expected to manage on their own. It can be noted that while these types of roles are decreasing the institutional size continues to increase and more individuals and resources are becoming available.

### First...Quality

As one participant noted, “quality digital content necessarily requires multiple expert roles.” This quote speaks to the shared concern of the participants. They raised the question of how the quality of the digital content would be impacted. Concerns ranged from the need for training and professional development in new tools and techniques for faculty to the need for experts to assist faculty with the new tools to the ability of students to quickly learn and use new and different tools across different courses.

Logically, this led to questions about the “why” of the multiple roles faculty currently and will be expected to fill in the future. How are they different, why are they needed, and is it reasonable to expect that faculty would possess all these skills and be able to perform all these tasks? Asking these questions is central to ensuring quality across all aspects of course construction, delivery, and assessment. In this view, these rankings can help colleges understand which position(s) is/are most impactful when building quality courses (and programs).

### Bridging divides between faculty and instructional support

As we have seen in other fields, no individual remains an island in the tsunami of digital transformation. This is increasingly true for faculty and their teaching.

The use of digital tools is significant now more than ever. The Covid-19 pandemic universalized the use of the LMS and other digital tools like email, word processing, spreadsheets, spelling and plagiarism checkers. Although the data collection process from these tools needs improvement—as it becomes more and more possible to measure the intricacies of teaching and learning—it will become nearly impossible (some felt bordering on malpractice) not to do so.

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# Roles and Skill Sets are Interdependent

*“Keep in mind that most of us in eLearning, in either higher education or corporate settings, wear more than one hat and have to maintain skills in multiple of the areas.”*

Workshop Participant

The skill sets and the ways they were combined into roles varied widely across the institutions represented by the participants. Some institutions expected faculty to develop most (if not all) content on their own including multimedia and engaging online content. While at others, faculty were assigned an instructional designer (ID) to assist them with almost everything on the survey list except multimedia, library content specialist, and graphic artist (which the institution also supplied). Even then, a lot of those roles overlapped.

Such ‘over-bundling’ of faculty or staff can be setting them up for failure. While faculty with many of these skills might be creating high-quality digital instruction, other faculty may need support across many roles to do the same. When too many skill sets become essential to instructional design, and by implication student success, it can also lead to burnout when the appropriate skills are not available. The more faculty are expected to play multiple (and many new) roles, the more crucial the need for the institution to provide training in these skills. An additional downside to bundling in new skills and roles is the impact on institutional rewards. As one participant stated, “There is general sentiment that time spent on learning design projects detracts from tenure and promotion.” It is important to note that time spent on non-teaching tasks e.g. sleuthing out why an online exam is returning incorrect results, detracts from the core task of teaching.

In most higher education institutions and many corporate organizations, these roles are not discrete positions but are more likely to be found in a single position with several skill sets combined.

As the growth of technologies employed to teach and learn has increased, so has staffing. The role of system administrator for an LMS is common across all sectors of institutions. Increasingly, where institutions can afford it, many of the course design and development roles have been mixed into a single instructional designer (ID). IDs are multi-functional resources that, in addition to structuring courses, can be writers, media producers, webmasters, and quality assurance providers. Today, institutions are likely to have instructional designers to pair with faculty to help them think through their course design and how to change their teaching practices with technology for positive change.

This designer/instructor pairing can inform and support faculty as they build and revise courses. It allows faculty to be faculty and teach without needing to master or manipulate the background technologies. It also gives new or adjunct faculty access to courses that are well designed and contain engaging content, and focused on student needs. Institutions with many adjunct instructors face the challenge of onboarding these new instructors to aligned tools/courses (less time to train them even if

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## Roles and Skills are Interdependent

there is an aligned course). Even with a well-baked course or tool, faculty will still need to know how to use it effectively. Here designers can also provide professional development, an important component that also needs investment.

Tomorrow, many more skills (and roles) will be essential to good design, and good management of a course. To our workshop participants, these new and emergent needs/roles argued even more persuasively than before for team approaches to instructional design, management, and assessment.

Collaborative design is essential to instructional and student success. Faculty, IDs and other professionals need to work together on the overall process and ongoing cycle of designing, building, assuring the quality for users (teachers and students), delivering, capturing data in an ongoing way, analyzing data on user outcomes and feedback, improving the teaching/learning experience. While supporting the importance of collaboration, based on experience, the workshop participants cautioned that when the processes, and the provinces, are not well defined, conflicts can occur. Colleges can struggle with the distinction between and respect given to) roles. For quality, all these roles need to be distinct, yet collaborative.

### The Pivot Away from Lone Rangers

Our workshop participants felt strongly that postsecondary instruction is at a pivotal point in course design, development, deployment, and assessment. Technology is disrupting and transforming the way faculty teach and students learn. To say that faculty are no longer just content providers not only minimizes their role but it misses the entire point. Faculty never were simply content providers. They are the most efficient, effective instructional resources the world has ever known.

However, workshop participants were certain that we are entering an age of specialization, of new roles and skill sets for which faculty were never trained and for which they have scant or no available time to either learn or perform. There is much talk about 'unbundling' the faculty role.

Where once the faculty member was the sole crafter of instruction, we now have instructional designers, media producers, learning management system (LMS) administrator, and online learning coordinators to name a few of the nearly de rigueur staff roles that now support instructional deployment.

It is debatable to what extent instructors will need, or should be required, to acquire new areas of expertise. No one would suggest they should be LMS administrators or computer support professionals but, with increases in data available to them, should instructors become more versed in data science, learning analytics, even cognitive science? The growth of eBooks and automated rubrics allows adaptive courseware to destabilize the notion of the individualist instructor and encourages a turn towards collaboration among many partners. When thinking about "a course" as an independent silo of instruction isolated from other courses is an artifact of a by-gone era. It is one that leaves students sadly underserved by their institutions.

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## Roles and Skills are Interdependent

It is a heuristic of innovation that early efforts focus on the ‘innovator’ Moore, et. al. describe in ‘Crossing the Chasm.’<sup>2</sup> That rugged individual willing to go ‘where no instructor has gone before.’ A Lone Ranger. One who can clearly imagine how an emergent technology will ‘change everything.’ While sometimes derided for their ‘blind passion,’ they are the essential beachhead new models need to get established. These pioneers often become the ‘rock star faculty’ that educational technology purveyors spotlight to promote products to early adopters.

While it is certainly true that Lone Rangers and Rock Stars are essential to innovation, when it comes to crossing the chasm when an early majority begin to use the innovation, the solitary star model does not work.

Even now, and most assuredly in the future, building digital-forward instruction requires a team. Similar sentiments were expressed during the workshop through metaphors including, ‘a conductor orchestrating a symphony’ or ‘a director with students as participants in a play.’ Interestingly, the metaphor gaining most power from the workshop was the faculty as the ‘showrunner’ of a course (and curriculum). A showrunner<sup>3</sup> is the one who has overall creative authority and management responsibility for a television program. “The vision of the show as a whole does not come from the freelance or even the staff writer, but from the showrunner.”<sup>4</sup>

It is this modern parlance that captures the contemporary notion of the faculty and institutional pivots being driven by technology. One coordinating and weaving multiple strands of knowledge and resources into a coherent, gestalt of learning. In a digital-forward world, faculty will be cross-disciplinary ‘courserunners’ guiding a team of professionals.

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# Emerging Digital-Forward Roles and Skill Sets

Digital-forward teaching and learning is an opportunity today—and will be a requirement tomorrow\* As courserunners, faculty will identify and employ many different experts across the entire teaching and learning spectrum.

One example of a highly-skilled, specialized role that has emerged in the past few years is the Learning Engineer.<sup>5</sup> That this term was introduced in 1967 by Herbert Simon,<sup>6</sup> describes a role, combining educational technology with the cognitive and data sciences.\*\* Learning engineering brings the practices of engineers, of technical standards, interoperability standards, modeling and building/testing prototypes to instructional design.

The workshop participants also identified customer-relationship management (CRM) software (think Salesforce) and institutional effectiveness applications like AEFIS,<sup>7</sup> as rapidly emerging, next enterprise-level, 'must-have' platforms required for aggregating, managing, and understanding instructional operations. These new tools will require individuals with deep, specialized skill sets to be added to an instructional services team.

A Learning Analyst, with a skill set of computer/data science knowledge bundled with institutional and instructional effectiveness/assessment expertise, will likely be one of the next, new skill sets to be seen. As digital tools and apps produce more and more data, collecting, curating, analyzing, and ensuring the appropriate use and security of this data will become a highly valuable, and discrete role in the instructional design ecosystem.

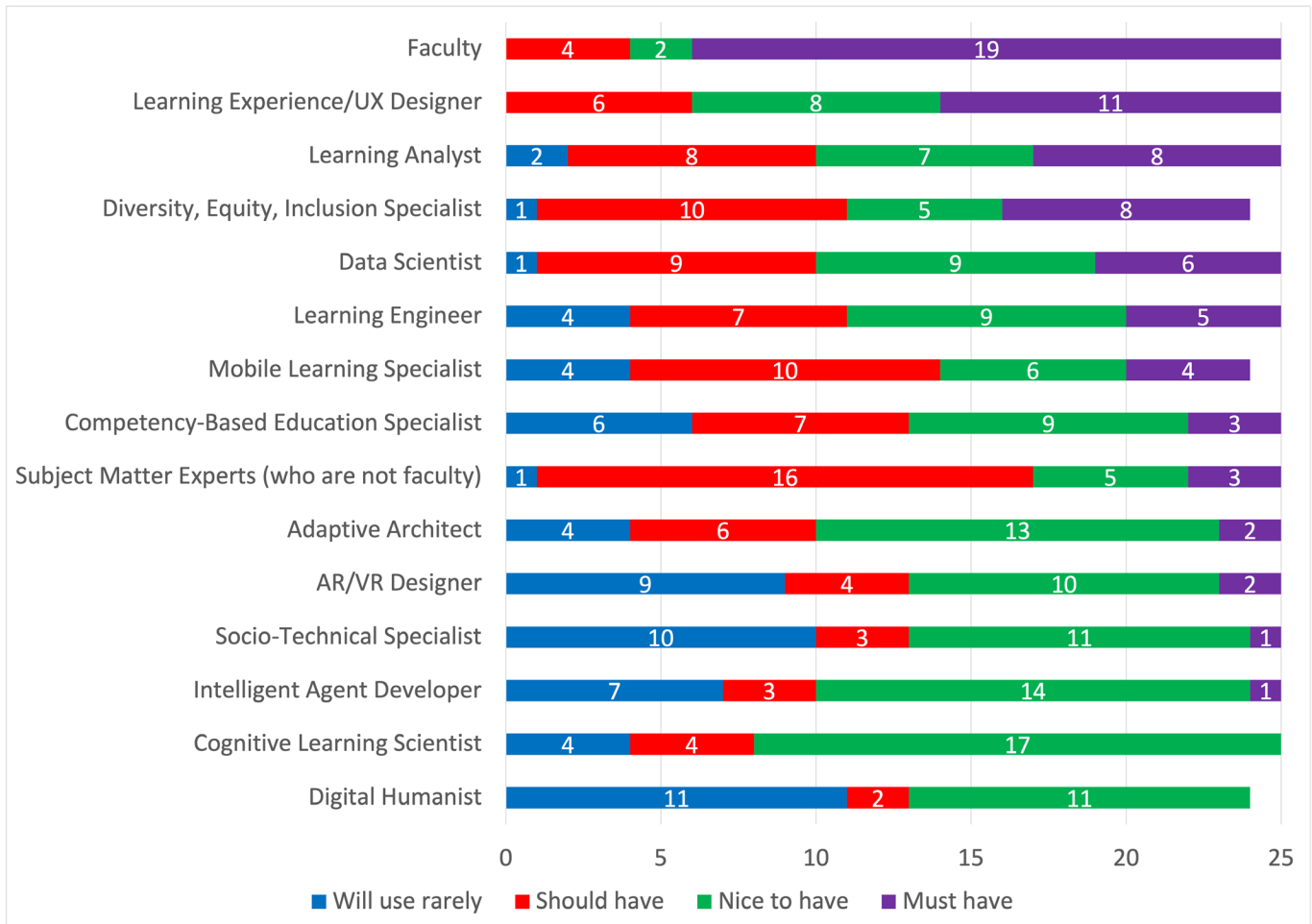
The role of Learning Support/Remediation Specialist emerged from the workshop discussions. Due to the fact that many college-age and adult learners have not yet mastered prerequisite basic academic skills and require varying levels of support, it's critical to invest in expertise in this area. The ideal team member would have deep familiarity with basic skills and tutorial learning applications and their efficacy. Also required would be skills like content- and technology-based integration with online content and assignments. Such a person would ideally research and target the student populations' needs and improve instruction by applying knowledge of available solutions and a strong background in developmental education (i.e. basic speaking, reading, writing, mathematics).

\* All academic sectors have, and need to increase, partnerships with businesses and employers for pathways to the workforce. Digital-forward delivery of postsecondary education is where our not-for-profit competition and the businesses who hire our graduates are going (hint: they are already there). To stay current, relevant, to engage stakeholders, and create employment pipelines for their students, institutions will, regardless of their current status and restraints, need to invest in the new tools and skills needed to implement and manage digital-forward learning. This progression has begun already.

\*\* This time—from 1967 to present—also shows the time it can take for “innovations” in thinking to become practice.

## Emerging Digital-Forward Roles and Skill Sets

The workshop asked participants to identify and rank the new roles and skill sets participants were seeing, or hearing about as their projects and institutions pushed deeper into digital forward design. The responses reveal the existence or emergence of many of the most prominent job titles. By asking participants to categorize the roles by four levels of need (must have, should have, nice to have, and will use rarely) we were able to roughly rank the roles based on their immediate and future importance in digital-forward design projects and teams.



Ranking according to level of need for emerging job types associated with course design, development, and deployment.

## Emerging Digital-Forward Roles and Skill Sets

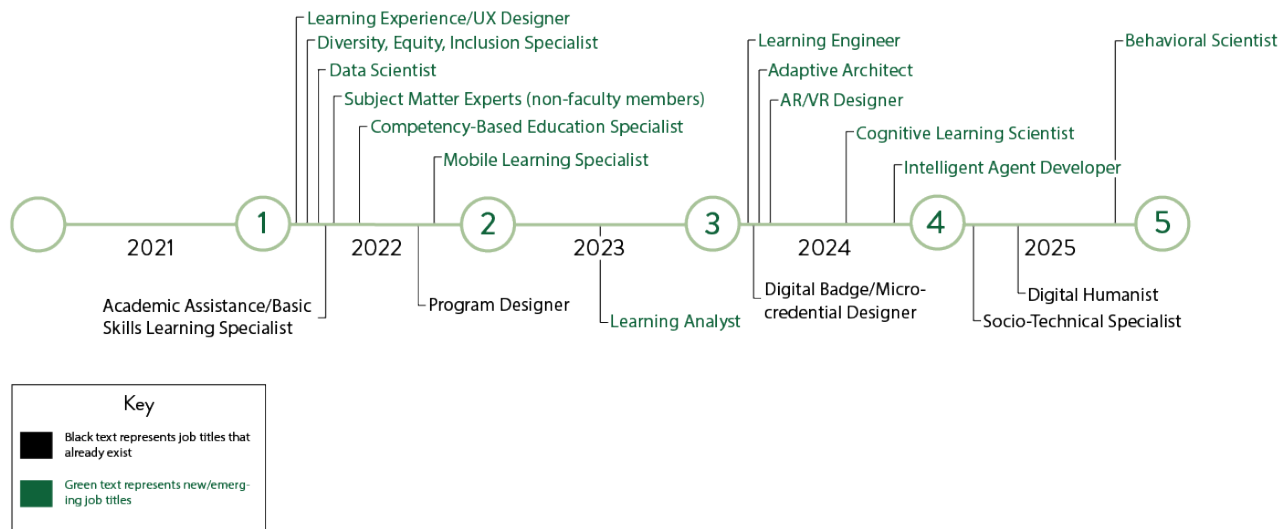
### Half of the Top 10 Emerging Roles Emphasize Student Needs

Evident from the list and ranking is attention to accessibility [#1] and diversity, equity, and inclusion (DEI) [#4]. This reflects the widening range of learner variability in postsecondary education. As Learning Experience/UX Designer is the second highest ranked role, we see three of the top four roles are student focused. In addition, Digital Humanist [#7] and [#9] Socio-Technical Specialist half of the top ten roles address student-facing issues and needs.

The ranking shows that roles that emphasize data (Learning Analyst [#3], Learning Engineer [#6], Data Scientist[#11]) are spread across the rankings indicating increasing emphasis on analyzing what we are doing now and how to engineer evidence-based improvements. The ranking of mode specialities, AR/VR Designer [#5], CBE Specialist [#8], Mobile Learning Specialist [#10], Intelligent Agent Developer [#12], and Adaptive Architect [#13] roughly mirrors the rankings of similar roles (media producer, graphic artist, editor, etc.) in the current role rankings. This indicates that, while these skill sets are expected to also be employed in digital-forward design, attention will be strongly student-centric with technology-based implementations following the lead of inclusive, UX optimized designs.

For an additional perspective, on the rise of new roles and skill sets we asked the participants to estimate how many years they believed it will be until that role is widespread in course development e.g., until at least half of all R1 research institutions have incorporated the role. The results mirror the perceived need scale and indicate a continuing evolution towards the incorporation of more sophisticated and differentiated skill sets over the next four to five years.

## When Will Emerging Roles Emerge?



According to workshop participants, it will take time for roles and skill sets to emerge and become common across postsecondary education.

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## Emerging Digital-Forward Roles and Skill Sets

Evident first is the extended length of time the workshop experts felt it would take before some of these roles became widely instantiated. Indeed, many felt even these time estimates were optimistic. This is indicative of the experience that crossing the chasm from an innovative skill set to an adopted role is neither a given nor a rapid transition. The time-lag between perceived need (now) and ability to procure (years in the future) also speaks to the pace and relevance challenge postsecondary education faces against more nimble competitors who lack the legacy infrastructures of campus-based colleges and universities. Another significant impediment workshop participants noted was the challenge they faced creating new roles within their current personnel frameworks. For example, a new position could take eighteen months or more to wend its way through reviews and approvals. Frequently, they admitted, they might hire under existing titles with the intent to hire or train the new skills into the position.

In reviewing the emergent roles, participants noted that “Some of these roles are more advanced than colleges can benefit from.” It was also noted that the roles are slightly different because they begin to move from operation and technician to oversight of quality and continual management and improvement functions. In essence from design to ongoing delivery and quality assurance.

What is evident from this survey is that the types of new skills needed, and the possible roles within which they will be located, are continuing to increase. The bundle, that was once the single faculty member, has been atomized into its elemental components, each of which has grown in importance as the digitization of instruction has increased. The more we understand about what it takes to design and deliver teaching, the more we can appreciate the compact efficiency of the faculty.

### **Can digital-forward models be developed across different sizes/types of institutions?**

There was universal agreement that the roles (and the skill sets they represented) would vary widely across and between institutions with “each role is neither distinct nor a distinct individual.” This was due, in large part, to the fact that different institutions have different affordances—a point that received much debate.

Noting the extreme differences between them, we asked the workshop participants to consider how the digital-forward paradox would play out in different sectors of the academic hierarchy. The essential staging of the question for the workshop was “When it comes to becoming more digital-forward, do research universities have the advantage?”

The response was, frankly, yes. And also, no.

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## Emerging Digital-Forward Roles and Skill Sets

When it comes to exploring and deploying new technologies, research universities have a tremendous advantage. Their faculty have an inquiry-oriented mindset and an affinity for solving complex problems. They have the discretionary funds, or ways to raise them, to focus significant resources on new learning models. They can incentivize participation in redesign with awards or stipends, they can compete for grants and other funding.

Conversely, research universities are large, decentralized, and diverse. They can be pulled in many directions making “focusing on the mission” difficult. Their faculty care deeply about ,and are most explicitly rewarded for research, putting time spent designing and employing digital-forward models in competition with their research and career agendas. The blessing of resources can become a limitation when funding and rewards are not aligned with institutional priorities and the mission of student success. Collaboration can be time-consuming and more frustrating than rewarding. Promotion and tenure rarely rates teaching innovations as highly as research and grant production.

Even when aligned and funded, research universities seldom have easy access to students with the types of preparation, time, and learning challenges for which digital-forward models have the most need—and promise.

Blessed with selectively chosen, high-achieving students, research faculty are often challenged to deploy experiments that measure inequitably prepared students affordably and expeditiously. Students at research universities, a convenient and frequent study set, are already so skilled at, and were explicitly selected for, their proven ability to learn in the dominant paradigms of academe that they are inaccurate representations of their more challenged peers at technical and community colleges.

Mid-tier institutions, e.g. comprehensive or regional universities, typically have similar affordances and face many of the same challenges as research universities—but at a smaller scale. Leadership-driven initiatives for student success can still have extensive impact but may focus on a few change levers such as tutoring or adaptive tools—rather than a larger set of levers a research university could manage and afford.

It is with community and technical colleges that the greatest disparity, in both types of students and availability of resources, is to be found. This differential is significant in terms of student needs, which are high, and the resources to meet those needs, which are low—if they exist at all.

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# Assessing Your Skills Needs & Gaps

*“Existing positions are kind of lagging behind what we actually need.”*

Given the breadth of skills that make up the roles discussed above, faculty and staff at institutions of higher education may wonder where to start. How does an institution identify the areas where it has unique capability and knowledge, and how does it identify what it needs (today or in the future)?

There is no clear route from Point A to Point B in this process, as each institution will have its own needs and its own capabilities in meeting those needs. The authors of this report work for large R1 institutions and recognize that many smaller institutions cannot afford to simply hire for the variety of skill sets above. Fortunately, those who participated in this workshop represented a broad continuum of school types and sizes.

From their expertise, we have created this section and the next to help each unique institution address its own needs. In this section of the report, we focus on assessing needs—determining existing capabilities and what skills are still in need. In the section that follows, we address three strategies for acquiring those skills using the “buy, build, or borrow” framework.<sup>8</sup>

## The Gap Analysis

The gap analysis is a straightforward, though sometimes time-consuming tool usually used for understanding a business’s goals and how to achieve them. For the digital-forward learning environment, we take a similar but adapted approach: each institution or department first identifies what skills it would need in order to achieve the outcomes of one or more of the roles discussed above. It then takes an inventory of its employees’ existing skills and matches, where applicable, existing skills to needed skills. Whatever is leftover from the needed skills is the ‘gap’ (and the following section of the report would help to fill the gap).

## Identifying Stakeholders and Leaders

Identifying needed skills can take time and requires input from many stakeholders. For example, an English faculty member may say that they need someone who can help them better address their students’ needs with online writing and composition tools. They have in mind an Instructional Designer, but someone in Information Technology might say that they need someone who can parse the data from the school’s LMS to identify the weaknesses of the English composition students. They also have in mind a Data Scientist. In the digital-forward environment, a Learning Engineer may be able to do both; but these two stakeholders may be unaware of such a role and how to acquire someone with both skill sets.

The first step for any institution would be to identify a talented leader(s) who is capable of steering the gap analysis project. Internal politics often play a role in choosing such a leader, and we would not presume to tell the reader how to navigate their own institution’s political climate. Nevertheless, leadership, empathy, communication, organization, and a sense of equity are all valuable skills that this person (or persons) should have.

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## Assessing Your Skills Needs & Gap

Once identified, this person should put together a team that represents the voices of the stakeholders. This includes, but is not limited to, students, faculty, administration, and staff from a range of backgrounds: data management, information technology, instructional design, and so on.

### Setting Goals and Identifying Skills

We recommend that the gap analysis start at the highest organizational level that is applicable. That is, if the scope of the skill-building is to support a department, start at the department level; but if the scope is institution-wide, start there. Address, first, what the organizational aspirations are for digital-forward learning. This could run the gamut from a limited project, like hiring the Learning Engineer to help the aforementioned English professor and IT administrator, to an institution-wide shift to competency-based, technology supported degree programs. Either way, identifying clear goals is paramount and must drive the entire purpose of acquiring new skills and building new roles.

Once identified, these goals should drive the identification of the types of skills the organization needs. To aid in this process, this report's appendices 2 and 3 list a series of current and emerging "Ability to..." statements, crafted by the workshop participants. Appendix 2 identifies the abilities that people in existing roles should have and Appendix 3t identifies the abilities needed for emerging roles.

We recommend that the reader use these Ability-to statements as a checklist to determine what roles and skill sets your organization will need in order to achieve the identified goals. (There are some caveats; see below.)

Once the needed skills have been determined, take an inventory of the skills that your current staff, faculty, and possibly external suppliers can provide. There are a variety of tools that can help, including [Clifton StrengthsFinder](#) and [Wiley's DiSC](#). The reader could also consult the institution's Human Resources department for additional ideas on assessing current skills.

### Caveat Employer

In general, existing tools are not designed to identify all of the skills that will be needed for digital-forward learning. Leveraging the Ability-to statements in a survey or form distributed to existing staff can provide a more specific picture of the existing skills landscape (and gaps). Furthermore, most existing degree programs do not produce graduates who are easily identifiable in these emerging roles. For example, hiring a Socio-Technical Specialist may require identifying job candidates with degrees in organizational psychology and management.

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## Assessing Your Skills Needs & Gap

### Considerations and Limitations

Emerging roles in digital-forward learning are, by definition, not completely defined. An institution may hire an organizational psychologist to take on the role of Socio-Technical Specialist, but with the understanding that the role itself will evolve. When hiring for such skills, the ability to adapt is paramount. One workshop participant explained it as such, “The very idea that you can catalog something that will come in the future and then hire for it is problematic. By the time you can get a job posted, the skills may be out of date. The most important skill has to be the ability to learn the next, newest skill.”

Additionally, identifying skills gaps and hiring need to be grounded in financial realities. Despite the fact that budgets may already be set, the gap analysis can be used to justify additional financial support. The leader of the gap analysis project should be prepared to advocate for investment in the institution’s future by justifying budget requests that are tied to a strategic vision.

### The Gap Analysis Never Stops

Lastly, as this report has repeatedly discussed, the future of learning will continue to shift and evolve. We recommend that the reader use the gap analysis strategy and maintain the data that are generated in the process. In future years, it will be important to return to the gap analysis and consider even doing another. Consider questions such as: After three years, have we filled the gaps as we needed? Have our actions created any new skills gaps we weren’t even aware of? What new skills needs have educational, social, economic, and/or technological changes generated?

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# Bridging the Skills Gaps

*“We are going to need the ability to compare roles at the skill set level”*

Workshop Participant

When we speak about identifying and increasing the skills necessary for digital learning, first and foremost, one must bear in mind that there is no singular definition of a role that can do exactly what is needed for everyone. Instead, we invite the reader to think about a constellation of skills and that they may be combined in multiple different ways to fit the needs of different types of teams and institutions.

Starting at the institutional level, differences in sizes of student populations and budgets will require different methods for sourcing skills. Whereas a large R1 university may be able to budget to hire someone to cover particular skill needs, a small college may need to creatively source those skills from existing staff, faculty, or external services.

For that purpose, we break the following discussion into three types of skill sourcing drawing on an existing human resource framework known as *Buy, Build, or Borrow*.<sup>9</sup> In perhaps overly-simple terms, “buy” means to hire, “build” means to train/develop existing staff, and “borrow” means to creatively source the skills from others in the institution who can do what is needed. Each has its pros and cons. For example, buying or hiring staff may help the institution to add one or more employees with a range of skills, but requires an on-going funding commitment. Building can be attractive but, if new skills and responsibilities are simply added to existing expectations, frustration and burnout can obviate any cost savings. Borrowing skills from others can save costs but puts the team at the mercy of others’ availability and may not provide exactly the skills that are needed. Ultimately, the flexible use of all three tactics is necessary.

There is another angle to consider, as pointed out during the workshop. A possible development might be that the only organizations able to hire the kinds of talent needed for producing quality content and courseware will be digital firms, that is, vendors whose materials and services institutions will buy. In this scenario, rather than hiring specialized design, data, analysis, and media talent they need to meet their digital-forward goals, colleges and universities may simply buy digital-forward services and/or courses.

## Considerations for Buying

Hiring a full-time, permanent staff member may be the best option if the skills needed and the availability of the employee warrant it. Budgetary issues, though, may make this difficult, especially as U.S. higher education climbs back from the fiscal difficulties faced during the pandemic. (As of this writing, it is difficult to know how the hiring landscape in higher education is recovering. In August 2020, the Chronicle of Higher Education predicted that more colleges and universities would turn to temporary positions that did not commit institutions to long-term salary outlays.<sup>10</sup> Whether that is still the case is unclear.)

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## Bridging the Skills Gaps

Temporary employment may be an option for institutions or departments looking to bolster the skills they have in digital learning. Staffing agencies, Online Program Management (OPM) companies, and technology vendors can provide talent that can work in instructional design, assessment, development, and data science. However, finding skills in areas on the horizon, such as learning engineering, adaptive architect, or a digital humanist may be more difficult in contract or temporary employees. Evolving existing roles into new skill areas often takes several years; these are not positions that graduate programs, by and large, are addressing yet. So, the responsibility will fall on existing instructional designers and data scientists to upskill over time and define these new roles within academic settings.

Conversely, there are some needed skills in the digital-forward environment that are particularly well-suited to contract workers. For example, in building a digital-forward course, there may be a need for graphic design, videography and editing, animation, website design, and even voiceover talent. Gig-work sites such as Upwork, Guru, and Fiverr are flush with people who can do such work for reasonable fees on an as-needed basis. OPMs are often well-suited and positioned for market research and marketing, advising, and enrollment when starting new online programs.

Our workshop participants also brought up two cautionary situations in relying on temporary or contract employees: first, the lack of knowledge of institutional culture. There is something to be said for employees who know the college or university where they work, the students they serve, the faculty with whom they work, and so on. That institutional knowledge is lost every time a temporary employee's contract ends and another temporary employee must be hired. Second, information security is best handled by permanent, full-time employees who not only have long institutional knowledge, but also are accountable for maintaining data, software, and hardware.

### Considerations for Building

An emerging model, called 'staff-as-a-strategy'<sup>11</sup> is becoming more widely utilized when institutions invest in a new application e.g. CRM and soon discover they need not just one administrator, but a team, to run and take full advantage of an enterprise level resource. When upskilling current staff departments should take a long view of what is needed. Workshop participants noted that professional development is often seen as a series of one-offs, where an employee does anything from enrolling in a short course on LinkedIn Learning or a similar site to enrolling in a full degree program. In these cases there should be alignment between the current and future needs of the department or institution. In order to build capacity for the emergent roles discussed in this report, institutions need to be deliberate and map out a multi-year vision that includes providing for specific professional development that meets long-term skill needs. These plans should also align with planned technology growth. For example, if a department decides to build an existing employee's skills in AR/VR design, budgets must also account for the required hardware and software to build such learning modules.

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## Bridging the Skills Gaps

Building skills need not be limited to full-time employees. Graduate students, interns, and temp-to-perm employees can also benefit and work their way into full-time positions. Workshop participants discussed the internal marketing that could be used to recruit existing staff and students into professional development. Workshops that engage the community around digital-forward learning can also serve to identify staff and students that would be interested in pursuing skill-building over a longer period of time. Discussion boards and email listservs can provide similar engagement in an asynchronous fashion. Meanwhile, these interactions further demonstrate the department's or institution's commitment to continuous improvement.

Another consideration, particularly for larger institutions, is to build more career ladders for existing staff. For example, one workshop participant noted that at his university, there used to be only one type of instructional designer role. Now there are four "levels" of designers, each with greater levels of responsibility and required skills. Professional development is available to allow staff to move up the ladder. In building digital-forward learning, such ladders could be used to move staff into newly created roles, such as upskilling an Instructional Designer to become a Learning Engineer.

Leadership roles should also be considered in building existing staff members' skills. Technical skills can be provided to anyone, but it is also important to identify those who have soft skills that lend themselves well to leading a team, including communication, planning and strategy, and a passion for the institution's mission.

### Considerations for Borrowing

One model of 'borrowing' talent is to contract for services from a department within the institution. For example, a science department might procure services from the campus media department for creating instructional video content. This model will not work when existing departments or experts are not available, either because they are busy or they do not exist. Take for example the skills of a Learning Analyst. Such a role could require the skills of subject matter expertise, data design and collection skills of a computer scientist, and the analysis and translation skills of a cognitive scientist. A set of skills not likely to be found in one 'borrow-able' person.

That is precisely the issue with most of these forthcoming roles: they simply do not exist yet. Thus creating roles that combine such skills will, at least in the near time, require creatively sourcing those skills from others in the institution. If creatively sourcing the essential department skills is the only option (as opposed to hiring or developing current staff), then grant funding would be particularly valuable. Rather than relying on various people to "donate" some of their time, a grant could dictate particular skill contributions in exchange for funding.

Workshop participants urged caution when relying (solely) on student workers. Not only may they lack the advanced skills required for many of the roles described in this report (such as analysts or learning engineers), they also have time constraints. After all, their primary objective at the institution is, and should be, finishing their educational program and graduating. Graduation affects this development as well. This causes a loss of institutional knowledge that must be rebuilt for new student employees and interns.

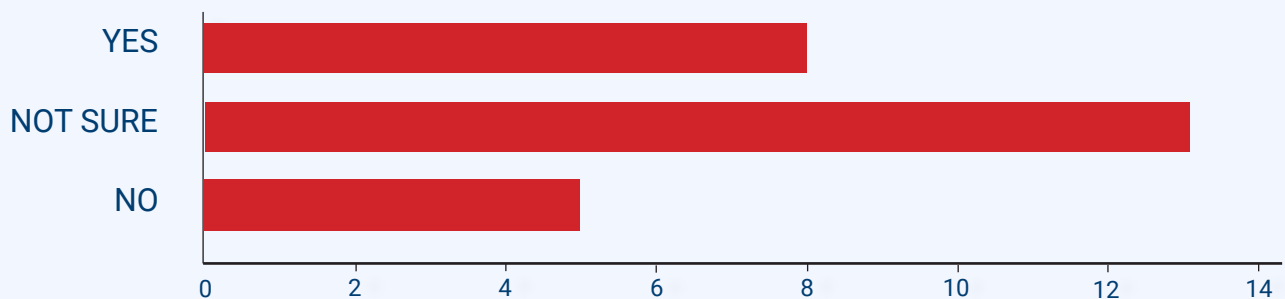
## Bridging the Skills Gaps

However, when there is demand for someone who can work on a singular project, particularly if that project can be completed before or when the student is slated to finish their program, then student workers may be a valuable means of sourcing skills. Consider, too, that in the realm of technological advancements, students are often on the cutting edge, be it in data visualization, programming, or AR/VR, to name a few. Meanwhile, students are also closer to the educational programs that a department may be building, and they often have creativity and imagination that can give program developers valuable perspectives on student needs.

One additional caution, that is perhaps paradoxical, is that the better a department becomes at creatively sourcing skills and talent, the less likely they may be to get approval to hire permanent employees or pay for professional development.

### Is technology serving our diverse student populations adequately?

*As the fields of instructional design, and instruction in general, evolve - the skills needed to develop inclusive, equitable instruction for diverse populations is one not all designers feel they are sufficiently prepared for.*



We always need to consider the learner, and their perceptions of a digital-forward space. An administration that frames, and is invested in, addressing equity through digital-forward innovation has an advantage over institutions who don't think they even have an equity issue. Workshop comments like these noted that conversations about equity and social justice can be a gateway to having conversations about digital-forward design. Institutions more focused on these issues are also more willing to test/experiment.

Student needs and their success are foremost in digital forward design planning and practice. As the workshop explored the impact of increased technology in instruction, several themes emerged. Primary among these was navigation of the technological spaces a digital forward course design would create. While students are generally adept at navigating digital social, information, and entertainment spaces, they often need to learn new class-specific applications in their postsecondary courses. Learning these tools and mastering basic computer literacy can

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## Bridging the Skills Gap

be a challenge for adult learners who had little computer-based learning experiences in their prior education. Accessibility is another concern. The more tools a student needs to navigate between and use to complete assignments, the more complex the affordances and accessibility can become. Broadband access, as more tools and more interactivity are incorporated, become a potentially limiting factor as well.

These are serious, and potentially debilitating, considerations for designers and builders of digital forward instruction.

Conversely, when students of varying backgrounds have more access to materials and degrees that they might not be able to get through other means, the equity equation can be positively tipped in their direction. Personalizing instruction with technology can provide access in ways that faculty are hard pressed to provide in the amount and on the timelines of inequitably prepared and working learners. Thus, the aforementioned challenges become not barriers—but guides—to improved digital solutions for all learners and instructors.

While flexible, digital forward models of instruction and learning can increase the ability to include and serve broader populations, an interesting aspect was noted by workshop participants. Some noted that, “because we attract such great students, student success initiatives fall on deaf ears many times. Our students are capable.” This posed a challenge, as the more capable and well resourced began to experiment and innovate with digital forward tools and models—also had the least need, and thus pain/impetus, to address.

So there are issues of equity in relation to technology and the intersection of equity with course design, development, and access to optimal learning experiences. As attention to diversity, equity and inclusion increase, we can expect more research and development into the socio-cultural components that are incorporated in the field of online program design.

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# Managing Academic Change: The Art of Wrestling Eels

The academic enterprise is in the midst of a decades-long transformation from hand-crafted teaching to digitally enabled learning. Data is the currency of this revolution and the ability to create, collect, curate, and understand educational data will be pivotal to student—and institutional—success.

In “ReWriting Writing” we looked at the “digital instructional infrastructure” both students and faculty might need for a digital forward course design. As is evident from that report, and from this workshop on digital-forward skills and roles, achieving a new level of understanding of what digital means, and how it might evolve, is only one piece of the puzzle.

For institutions ready for, or already driving towards, digital-forward change, we present the following:

**Changes are needed to current paradigms.** We have already seen that teaching can be virtual. Is it as rich as in-person? Some would say not yet. Some would say not ever. Digital-Forward is not the only answer. How an institution with its unique circumstances and culture reacts to change is more relevant to surviving, or even surfing, the waves of change. While there will be loss with digital transitions, there will also be gains — often for inequitably prepared students who need them the most.

**Change needs Leadership.** Inviting digital-forward thinking into the campus, and infusing it into instruction requires both an effective executive sponsor and a well-supported champion. Leadership commitment at the highest levels, and throughout the academic enterprise, are essential to mounting effective and persistent responses to technology-driven change. It will be leaders who effectively describe the need for, and create the pathways towards, innovation that will have the greatest advantage. Without cultural and fiscal support for digital-forward practices and products even the most effective adoptions will struggle, and their impact will be siloed and sporadic.

**Student engagement is crucial.** Student success is the responsibility of every academic professional. An institution that is willing to engage in innovation and embrace change will see digital-forward strategies and tactics as a framework to guide them into the future. Digital-forward design teams are facilitators of the student experience. Students look to faculty to humanize the learning experience. The digital-forward guidelines help teams consider the learners’ perceptions of the digital-forward learning spaces and experiences.

**Faculty are the value and the variable.** Colleges need to shed the stigma of digitally enhanced instruction as providing a “lower quality” education. The largest variable in student success is not technology—it is the faculty. A vocal contingent of the workshop participants expounded strongly on consideration of, and the need to respect and protect, the academic freedom of faculty. The impact of technology on intellectual freedom can be both liberating—and stultifying. While these issues are irresolvable their consequences are all too real. Suffice it to say that technology, like freedom, is not neutral and must be carefully considered at every turn. Creating a safe space for faculty/cultivating a space for innovative culture can be a gateway to many other conversations about pedagogy, practice—and change.

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## Managing Economic Change: The Art of Wrestling Eels

**Faculty are Moving from Lone Rangers to Courserunners.** Digital-forward course design moves faculty from a Lone Ranger of teaching to a collaborative, coordinating, courserunner for learning. As the skills needed to manage and survive in an increasingly digital world multiply, the successful institution will build strong teams with complementary roles that respect and value the contributions of its members. No longer the master crafter of all things instructional, the faculty member will become the courserunner, the intellectual guide orchestrating a team of near-equal players with multiple deep expertise. Such work requires the coordination of various expert roles. It is not something that can be done in isolation nor something an individual faculty member can hope to have the knowledge and diverse skill sets to implement every facet of a course. Quality digital-forward design necessarily requires multiple expert roles and a balance of strong human and technical skills.

**Organizing for 'Nimble-ity.'** While in some ways our ecosystem of essential applications is the necessary evolution of digital transformation, it is also the gordian knot binding us to the past. Building and managing a robust technology infrastructure is a puzzle of highly complex applications under constant change and attack. One where our current investments, think the student information system (SIS), purchasing, even parking management and meal cards are integrated so tightly into the enterprise, and into each other, that any change (indeed all change) is to be avoided until absolutely two-years past necessary. And anything 'new' must be sequestered, quarantined, and examined with deep suspicion until it either surmounts the scrutiny or succumbs through popularity.

**Timelines and Black Swan Events.** Leaders should realize, and need to effectively communicate, that postsecondary education is in the midst of a decades-long transformation from an analog to a digital enterprise. COVID-19 has forced faculty online and to use new technologies/tools; larger institutions had the resources to help work across various units to train faculty and get them thinking of how to continue using the tools in online or hybrid models. COVID-19 has improved communication/collaboration across courses and departments. There are several views of the speed at which the digital transformation of academia is advancing. The spectrum ranges from minimum change at minimum speed ('America has been the top educator for decades so we must be doing it right and don't need to change') to high-pitched paroxysms of imminent disruption and evolution ('the LMS is the killer-app of education'). While the truth actually falls somewhere in between the two.

**Rightsizing to Institutional Capacity.** When we asked the workshop participants, 'What are the characteristics that make Digital-Forward possible at an institution?' their response was: resources, funding, and time. When we asked, 'What are the characteristics that make Digital-Forward difficult at an institution?' their response was the same: resources, funding and time. As the differences between institutional sectors were so extreme and endemic, the workshop participants were unable (as is the rest of academe and society) to provide solutions but rather acknowledged that 'It all comes down to cost.' Just as we can imagine where technology will take us, even though its current capabilities are far more limited, so too will we find ways to build in the technologies and personnel we currently are trying to bolt-on to our existing models.

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## Managing Economic Change: The Art of Wrestling Eels

### Where to focus now

**Sponsoring difficult conversations.** Innovation can be the gateway to many conversations. Recognizing that framing questions with solely positive connotations (as innovators and early adopters are wont to do) can be problematic, the workshop also considered the negative aspects of a digital forward perspective—of which there are several. It is important for leaders to do the same. These negative aspects, which often result from the digital transformation of society in general and would exist irrespective of digital forward design, are important to acknowledge and cannot be left unaddressed. Even if the solutions are not evident yet. Hopefully, the skills, roles, and practices covered in this, and the previous ReWriting Writing, report provide institutions with a framework and the means to address such transformations and disruptions positively.

**More data—and more analytical capability.** Demographers are fond of saying ‘Demographics are destiny.’ Their point being that information gives insight. Learning analytics has the potential to not only show us what happened in a course—but gradually provide real-time telemetry of what is happening with each student. To get there we need data to be consistent and shareable. Whether you subscribe to the data-driven, or the data-informed, decision-making camp there is substantial evidence that better data results in better decisions—and produces better outcomes. Faculty are still getting acquainted with digital instructional data, instructional application providers are only beginning to reframe their products to produce and analyze more data (much less make that data shareable). We are at a midpoint where there is too much data being produced for faculty to manually manipulate it into actionable inferences and not enough data for digital applications to be effective. As the amount of data produced by, and derived from, instruction increases, this will change. Effective digital-forward teams will enable institutions, faculty, and students to survive and thrive.

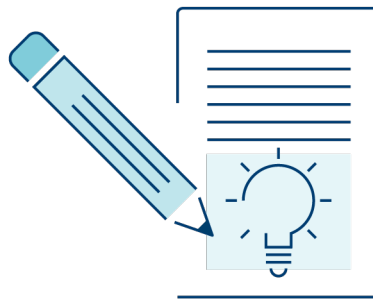
**Expect to Staff.** Embracing digital-forward principles, building instructional teams that can actualize those principles. Institutions that cannot add staff lines to hire in the expertise, will need to build skills by training existing personnel. In some cases, some current positions may need to be reskilled in order to serve the roles listed above. It may call for a retraining or recalibration of the degree programs that prepare our IDs. HR is hiring IDs—to become the other roles and skills. We need a bigger bundle (counter theory to unbundling).

**Changing the equity equation.** The workshop saw strong potential for digital-forward courses to address and bridge the challenges that inequitably enabled and/or prepared students face in postsecondary education. Access, especially flexible asynchronous models, already provide that ability for working and geographically challenged students to learn in their own times and places. But challenges there still remain e.g. costs for computers and access to broadband. Electronic textbooks with adaptive components, the incorporation of cognitive assistants represent a new wave of equity supporting models where students can catch-up and keep up with their more advantaged peers. Changes to the time-based credit hours to competency-based assessment—that keep the learning constant and make time the variable—can do even more to rebalance the bell-curve, rank-and-sort, models of today.

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## Managing Economic Change: The Art of Wrestling Eels

**Go Boldly into that Digital Future.** It is necessary for all institutions, across all sectors, to be thinking Digital-Forward. Building awareness and understanding of, and the ability to incorporate, digital tools, tactics, and strategies into instruction is essential to staying current with (and in some cases relevant to) the evolving nature of teaching and learning in a digital society—and enterprise. As peer institutions adopt and market competition increases, the pressure on all institutions to keep pace with these types of digital transformations will increase. In times of transformation, the mindset of the campus, its leaders, and its academic culture are critical to relevance and survival.



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# Appendix 1

## The Principles of Digital-Forward Design<sup>12</sup>

- 1. Equity:** Prioritize accessible, inclusive learning environments that provide support relative to each student's level of need, where every student can get the instruction and support needed to achieve mastery of the learning objectives.
- 2. Engagement:** Foster connections among students, instructors, and content that inspire, motivate, and promote progress in learning through relevant support of learner experiences, agency, metacognitive reflection, planning, and actions.
- 3. Interaction:** Facilitate both instructor- and student-initiated activities and communications that are dialogic, generative, and actionable.
- 4. Instruction:** Use multi-directional approaches to sharing foundational course knowledge so that learners can acquire the most critical components of writing. Assignments are developed and designed to assess these skills.
- 5. Process and Practice:** Guide students to monitor their own learning progress by reviewing the writing process, their work, and feedback and assessments of and for their learning.
- 6. Feedback:** Encourage rapid, evaluative feedback that encompasses many perspectives, providing detail, meaning, development, and action.
- 7. Timeliness:** Facilitate inquiries, interactions, feedback, and formative and summative assessments such that they are usable, and initiated and responded to with a minimum of delay.
- 8. Availability:** Make available to the learner as his or her schedule dictates all appropriate aspects of the course, instruction, and the learning community.
- 9. Tutoring and Remediation:** Use a variety of flexible instructional practices and formative assessments to identify and support students who may need more time to acquire or demonstrate mastery of a skill or concept.
- 10. Flexibility:** Approach course design and deadlines with the knowledge that changes to either or both might be needed to fully address the needs of the class and/or individual learners. Course designs can be adjusted to accommodate student needs.
- 11. Scalability:** Support the attention available to each student such that it does not degrade as the number of students increases.
- 12. Evidence-based Decision Making:** Foster the use of data that is relevant and actionable, supporting instruction, learning, and continuous improvement.

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# Appendix 2

## Ability-to Statements for Current Skill Sets

In this section and the one that follows, the reader will find a list of roles that are key to digital-forward learning. Each role has a series of statements of skills that were crafted by workshop participants. These statements should be read as, “A person in this role should have the ability to...” The lists are thorough, though we do not consider them to be exhaustive. The intent is to provide organizations with a starting point in the gap analysis described in the section of this report, “Assessing Your Skills Needs & Gaps.” When using these lists, we encourage the reader to consider the needs of her or his organization’s specific needs and incorporate those into the gap analysis.

Appendix 2 presents ability-to statements for current roles or skill sets. Appendix 3 presents ability-to statements for emerging roles. As such roles are still coming into focus, the skill sets in Appendix 3 are less defined and open to customization. In both Appendices, the lists of skill sets are in no particular order.

### Instructional Designer

- Empathize with professors
- Create and apply branding elements/style sheets
- Understand scaffolding in taxonomy of learning
- Understand and apply basic project management skills
- Apply pedagogical theory to course design
- Make suggestions and work with faculty for formative activities
- Apply targeted universalism, global approaches by student audience
- Research and apply emergent technologies in online education
- Run faculty workshops and student focus groups
- Support the formatting of content, chunking, presenting digestible content pieces
- Utilize storytelling in communication and design
- Apply complex problem solving skills
- Create curriculum maps
- Develop lasting connections across multidisciplinary teams
- Apply pedagogical and adult learning theory for assessment and evaluation principles
- Give and take critique/criticism in a fruitful way

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## Appendix 2: Ability-to Statements for Current Skill Sets

### Faculty

- Determine the curriculum content and sequence. What is important for students to learn? When?
- Determine important learning objectives for students. What should they know and be able to do at the end of the course?
- Develop relationships with students
- Coach students throughout their learning
- Formatively assess students for learning gains and needs
- Provide effective feedback from assessments
- Adapt to new and ongoing assessment
- Operationalize course management
- Anticipate students' pain points with learning
- Continuously improve own knowledge and instructional techniques
- Identify when students are not engaged and adapt to their needs
- Make changes to "master" courses

### Tutors/Teaching Assistants/Mentors

- Apply learning in different contexts
- Interpret faculty members' requests and instructions to explain to students
- Provide student perspective to curriculum

### Quality Assurance Specialist

- Conduct usability testing
- Check for bugs/broken links/errors on technical side
- Align standards of learning
- Check assessments for functionality with respect to what the student sees
- Conduct post-course reviews
- Look for variability between alignment activities, assignments, and engagement strategies
- Consult with colleges and academic units on hiring and assigning faculty for online course design, development, and teaching
- Work with academic units, faculty and online program staff to manage faculty stipends and other incentives related to quality assurance programs
- Provide professional development to faculty and instructional designers
- Work with academic units and faculty to ensure that managed program expectations are understood and fulfilled
- Work with academic units, faculty and staff to create, revise and promote processes for effectively scaling programs and course

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## Appendix 2: Ability-to Statements for Current Skill Sets

### Quality Assurance Specialist

- Work with academic units, faculty and staff to design, develop, maintain and promote community-building efforts for program faculty
- Work with academic units, faculty and staff on the implementation, management and promotion of Quality Matters and other quality assurance processes and instruments
- Stay current on literature related to program and course quality control, assurance and enhancement
- Design and deliver workshops, webinars and training on program and course quality, scaling programs and courses, using the master course model, and other topics

### Project Manager

- Successfully wrangle diverse stakeholders without formal authority
- Distill actionable tasks from conversation
- Understand course timeline development per semester
- Estimate time and resources required accurately
- See the big picture plus all working and moving parts
- Allocate time and resources appropriately
- Negotiate among competing goals
- Manage people
- Communicate project progress to stakeholders
- Understand the teams' roles
- Trouble-shoot and adjust based on unplanned items
- See the perspective from the end user's point of view
- Surface the voice of all stakeholders
- Liaison well with other organizational teams and staff members
- Maintain lists of task dependencies
- Understand the final deliverables specific to each course
- Take ownership of a project and complete it successfully
- Plan the project and necessary communication
- Meet inflexible deadlines
- Be familiar with domain-specific knowledge

### Web Designer

- Incorporate learning science principles
- Ensure compliance with accessibility standards
- Write HTML, CSS and javascript
- Understand the educational environment, systems, integrations
- Communicate to design for needs, applying design standards for usability

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## Appendix 2: Ability-to Statements for Current Skill Sets

### Web Designer

- Design for coherence and consistency across related learning experiences
- Communicate the design intent to developers
- Express design so that its usable
- Interact with web APIs and learning tech standards such as LTI
- Understand and empathize with the student learner audience
- Evaluate designs against user acceptance criteria
- Interact with users and conduct user testing
- Integrate with existing learning technologies (Learning Management Systems, Content Management Systems, etc.)
- Make all resources light, easy to download

### Subject Matter Experts (who are not faculty)

- See the novice perspective
- Provide contextually-relevant material
- Communicate domain specific information to instructional designers
- Understand how to chunk learning and that value of doing so
- Complete deliverables on time
- Communicate and translate complex knowledge for faculty and learners
- Identify common learning misconceptions
- Apply technical skills appropriately (i.e., using the right tool for the job)
- Understand theory and hands-on skills, and how they interrelate
- Provide useful directed feedback

### Educational Technology Specialist

- Understand learning systems and platforms—more than specific systems, understand how systems work
- Analyze complex technology problems and troubleshoot
- Implement ed tech solutions for the identified audience and context
- Provide for the “customer’s” needs (students, faculty, other roles in this list)
- Train and support LMS and integrated technologies in the digital learning environment
- Determine which technologies should be used
- Understand learning tools in depth and how they can be applied to solve problems
- Configure tools to create a seamless tech environment

### Content Writer

- Master written language and explain concepts for a variety of audiences
- Create rich multimedia with multiple formats
- Represent information in ways that address learning objectives

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## Appendix 2: Ability-to Statements for Current Skill Sets

### Multimedia Developer

- Create a range of media items—videos, animations, whiteboard, audio clips, etc. to enhance content and teach to a specific level of learning
- Create widgets and LTI applications
- Manage projects
- Quickly learn and adapt/implement emerging technologies
- Convince professors to move from informational content (e.g., PPT) to more interpretive and narrative content
- Communicate to faculty the usefulness of various platforms for sharing content
- Secure permissions for media items used, and inform others of need to do that
- Understand implications of copyright
- Act as a consultant with faculty and SMEs to solicit what they want how to communicate it
- Match learning needs to specific media, i.e., what medium is best for different learning needs
- Apply inclusion principles and ensure that students are accurately represented by demographics and other differentiators
- Train instructors on how to look good on camera, “do a good take”
- Measure engagement with content/instruction
- Accurately represent/incorporate data

### Graphic Artist

- Apply principles of Universal Design for Learning
- Understand implications of copyright
- Act as a consultant with faculty and SMEs to solicit what they want how to communicate it
- Create graphics where needed that are appropriate to content
- Create mobile-friendly and mobile-first graphic elements
- Adhere to style sheets/branding of the institution
- Work with assessment experts or other curriculum designers to turn graphics and other multimedia into learning activities
- Measure engagement with content/instruction

### LMS Administrator

- Understand the connections between student information systems to the LMS and the affordances of LMS
- Understand the security of LMSs and compliance with FERPA
- Communicate with various teams (faculty, administration, other roles in this list)
- Understand and explain all features and benefits of the platform to various levels of users
- Understand and communicate the impact of enabling features (knowing how a change impacts all users)

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## Appendix 2: Ability-to Statements for Current Skill Sets

### LMS Administrator

- Identify strengths and shortcomings of the LMS
- Engineer around the LMS
- Troubleshoot multisystem models/skills
- Develop and iterate clear processes for creating and testing the LMS
- Manage-up suggested improvements and concerns in LMS governance

### Assessment Specialist/Psychometrician

- Create appropriate instruments for a wide variety of assessment opportunities
- Explain assessment instrument/approach decisions
- Produce instruments (assessments, surveys) and the reports for these instruments
- Understand the data components of assessment to develop reporting points and questions
- Ethically use the data with justice and inclusivity in mind

### Editor

- Conduct reviews of learning content for purpose and audience
- Master the vision/voice and communicate that into the editorial process
- Concisely communicate without losing intent
- Clarify and challenge you to think through your content more clearly
- Apply appropriate editing styles (APA, Chicago, MLA, etc.)
- Translate jargon into understandable “plain” language
- Address bias in language/content

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# APPENDIX 3

## Ability-to Statements for Emergent Skill Sets

### Learning Experience/UX Designer

- Understand different pedagogical approaches
- Master the entire end-to-end user experience
- Apply user-centered design that also supports emotional needs of students
- Understand and apply principles of accessibility, interaction design and course quality
- Expertise in a the following areas
- Stay current on the innovations, research and learning technology in their area of specialty
- Make recommendations and provide training for stakeholders in their area of specialty
- Lead or manage multiple projects related to the learning experience and their area of specialty
- Work with stakeholders in Product Development to improve current learning and design outstanding new learning experiences.

### Digital Humanist

- Understanding human psychology in depth
- Empathize with stakeholders
- Understand individual needs and display emotional intelligence
- Engage with technology within an ethical framework
  - Do no harm
  - Promote equity and inclusion
  - Use technology to remove barriers to learning
- Coach, mentor and guide others to employ digital humanist principles
- Evaluate the digital presence of a course and make constructive contributions to course enhancements

### Intelligent Agent (Bot) Developer

- Master technologies to create intelligent agents
- Build bot or test bots that are presented
- Apply principles of user experience design
- Create logic models
- Analyze end-user processes

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## Appendix 3: Ability-to Statements for Emergent Skill Sets

### Intelligent Agent (Bot) Developer

- Develop and analyze algorithms
- Convert FAQs into an interactive experience

### Diversity, Equity, Inclusion Specialist

- Provide concrete and actionable guidance to improve DEI in specific course materials
- Surface and address behaviors and beliefs in a way that creates positive change
- Identify intersectionality issues
- Form regulatory or policy compliance
- Understand the socioeconomic status of the student population and the resources to which they have access
- Understand local populations, know exactly which student you're working with and their specific challenges to incorporate into course material
- Provide strategic incorporation of DEI lenses across the institution
- Create & deliver training materials that result in new behaviors
- Remain empathetic in interactions with everyone
- Establish metrics for the efficacy of DEI design
- Train faculty to de-escalate situations based student needs
- Provide bias training and understanding and identify in conversation what needs further discussion
- Synthesize research-based practices and evaluate common practices
- Stay current with developments in the field
- Help instructors create DEI projects within the course
- Understand Perkins resources for special populations
- Influence others to practice what they preach

### Socio-Technical Specialist

- Maximize the socio-technical ecosystem
- Optimize the right tool for a given outcome
- Conduct social science research
- Inform the selection and implementation of technologies to meet particular needs.
- Adapt tools, processes, etc. to new situations
- Research new resources and make recommendations for future implementations, making the best decisions for end users
- Understand alternatives to technology
- Measure the accessibility of technologies
- Articulate what's possible
- Straddle and negotiate technology and learning specialists' issues
- Conduct cost analyses and build relationships with the finance office

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## Appendix 3: Ability-to Statements for Emergent Skill Sets

### Cognitive Learning Scientist

- Articulate their skillset versus other learning science theories
- Evaluate student learning across the curriculum
- Incorporate universal design
- Use technology to reinforce retention, reminders, trigger future learning
- Measure how things improve with their advice
- Create new knowledge about effective allocation of learning practices
- Conduct research on what's happening in this institution
- Integrate multiple fields into the science of learning
- Make connections between one course and program
- Work with IDs and SMEs to offer unique approaches to unique class types (e.g., natural science vs. English)
- Conduct design based research
- Perform a Cognitive Task Analysis

### ADA/Accessibility Specialist

- Interpret and apply institutional and potentially state policies/mandates as a part of ADA regulations
- Maintain awareness of disability related issues with respect to accessing information, communication, instructional materials, and emerging technologies
- Develop scalable support systems (e.g., a one-stop-shop for faculty and students to find resources) for the institution
- Serve as an ambassador between accessibility offices and where course design takes place
- Build community around the importance of accessibility and Universal Design for Learning
- Identify the learning needs/preferences of specific learner populations beyond mere compliance
- Have empathy and an empathetic point of view for advocacy
- Analyze materials for conformance and identify remediation needs or tools
- Grant writing and soliciting funds
- Communicate and resolve conflict to help faculty and staff not to see them as just the "accessibility police"
- Provide guidance for software choices to LMS administrators and learning technologists
- Build on software/technology choices, and research and implement them

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## Appendix 3: Ability-to Statements for Emergent Skill Sets

### Learning Engineer

- Make changes and drive initiatives at a program level (whereas IDs specialize more in individual courses)
- Understanding of UX/UI design
- Collect/review data to make recommendations for curriculum, content, program, etc.
- Think about workflows, use Agile and scrum
- Apply student-centered design principles
- Apply learning theory and data science research methods for decision making or guiding policy and practice
- Develop research on learning and data science that assist in making decisions
- Inform the continuous improvement process, tracking data for needed improvements

### Data Scientist

- Understand ethical questions of data collection, analysis, and evaluation and their effects on student and faculty populations
- Train others on data collection methods and how to use that data
- Expertly apply skills to demonstrate the effectiveness of what is happening at the course, program, or institutional level
- Work with IRB to establish workflows for Scholarship of Teaching and Learning research at an organizational level
- Work with stakeholders to identify research questions and select methods and communicate findings
- Create a culture of data literacy
- Apply mixed method approaches and be well-versed in different methodologies
- Serve as a liaison and inform others on data-based decision making
- Conduct action-based research so students feel empowered by their data
- Formalize surveys to solicit feedback from students

### AR/VR Designer

- Design and produce 3D, immersive simulations and scenarios
- Understand principles of learning design
- Conduct analyses for user experience design

### Mobile Learning Specialist

- Design and develop digital assets that are mobile responsive
- Understand and design to the contexts of mobile use for students for Notifications, Reminders, Learning, Classroom Interactions, etc.
- Ensure cross-platform operability and adaptability of the learning content
- Compose existing tools or create new tools if needed to enhance the student experience
- Understand and conduct human/user interface studies

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## Appendix 3: Ability-to Statements for Emergent Skill Sets

### Subject Matter Experts (who are not faculty)

- Create/curate content and assessments from multiple sources
- Align content and assessments to competencies/learning outcomes
- Apply knowledge of copyright
- Make connections within industry and incorporate applied experience of the field
- Translate subject matter into instructional assets

### Learning Analyst

- Understand the differences between n-research and N-research (social science methodologies and data science methodologies)
- Understand common fallacies and the difference between correlation and causation
- Understand the difference between a research study and an organization/performance analysis
- Help faculty and staff make decisions
- Work with SMEs to translate the mathematics of stories (strong math and people skills)
- Understand common “student success” tools

### Competency-Based Education Specialist

- Understand the laws around CBE
- Gather information from the field (i.e., the most relevant competencies) and translate those into recommended performances
- Gauge levels of competence and how they map to course and program completion
- Understand external guidance on CBE and translate into relevant policies and communication
- Communicate the difference between a content-oriented class and a mastery-oriented class
- Deconstruct and reconstruct content into competencies for designers
- Understand self-directed learning and support ID understanding of self-directed learning
- Develop rubrics of competencies

### Adaptive Architect

- Modularize content in domain-appropriate chunks
- Scaffold skills/content in domain-specific and efficient ways

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# APPENDIX 4

## Equity FIRST Consideration for Digital-Forward Skill Inventory

This information was graciously provided by Kelly Anguiano of equityworksNW, a presenter to, and participant in, the Digital-Forward Roles and Skills workshop. The document is intended to inform and support users as they move from language which is often deficit-minded to language which is more diversity- and equity-minded.

Equity-minded language	Diversity-minded language	Deficit-minded language
<p>Equity-minded language calls out institutionalized racism as the root cause for equity gaps related to race and ethnicity.</p> <p>Equity-minded language calls out/speaks to specific student populations (i.e., African American/Black, LatinX, Indigenous American, Asian American, Pacific Islander and Southeast Asian, Alaskan Native students).</p>	<p>Diversity-minded language speaks generically to challenges and barriers experienced by students of color.</p> <p>Diversity-minded language aggregates these populations and references students of color, which does not acknowledge or attend to cultural dynamics unique to particular student populations.</p>	<p>Deficit-minded language identifies under-prepared and disadvantaged students as the primary driver of equity gaps related to race and ethnicity.</p> <p>Deficit-minded language again defines students by projected negative conditions, such as under-privileged and other pejorative terms.</p>

## Appendix 4: Equity FIRST Consideration for Digital-Forward Skill Inventory

Equity-minded language	Diversity-minded language	Deficit-minded language
Racial equity / ethnic equity	Equity	Economically disadvantaged
Hispanic Serving Institution (HSI), AANAPISI, HBCU, PWI, Tribal Colleges	Equitable	Poor
Ethnicity	Culture / Cultural	At-risk
Race / racial	Diversity / diverse	Underprepared / disadvantaged
Latinx/ Latino / Latina/ Hispanic African American / Black	Underrepresented / underserved	Untraditional / non-traditional
Asian/Asian American	Multicultural	Underprivileged
Pacific Islander/Southeast Asian/Alaskan wNative Native American	Students of color	Learning styles
Low-income/ income	Minority Serving Institution	Achievement gap / attainment gap
Equity-minded	Demographics	Lower readiness
Culturally relevant / responsive / sustaining pedagogy	All Students / students	Less prepared
Social justice	Directly impacted	Remediation
Anti-racist	Minority	Knowledge gaps
Racism	Working class	
Inequality	First-generation	
Minoritized	Disproportionately impacted	
Socioeconomic status		

## Appendix 4: Equity FIRST Consideration for Digital-Forward Skill Inventory

Courseware Life Cycle		Equity FIRST Competency
Ideation & Testing	Student Outcomes	<ul style="list-style-type: none"> <li><input type="checkbox"/> Routinely asks for and looks at data disaggregated by race/ethnicity.</li> <li><input type="checkbox"/> Routinely provides progress and completion data disaggregated by race and income. Alternatively, provides access to data and guidance on disaggregation by race and income.</li> </ul>
	Product Teams	<ul style="list-style-type: none"> <li><input type="checkbox"/> Builds diverse, interdisciplinary teams for product conception and design.</li> <li><input type="checkbox"/> Engages in continued professional learning opportunities related to race and pedagogy, generally and within their discipline.</li> <li><input type="checkbox"/> Can explain the difference between diversity and equity.</li> </ul>
	Design Involvement	<ul style="list-style-type: none"> <li><input type="checkbox"/> Routinely provides evidence from equity focused researchers and practitioners who focus on culturally specific learning dynamics within an array of student populations.</li> <li><input type="checkbox"/> Routinely advocates for prioritizing equity for racially minoritized students.</li> <li><input type="checkbox"/> Routinely makes opportunities available for racially minoritized students to participate and seeks the inclusion of student’s voices.</li> </ul>
	Pilot Testing	<ul style="list-style-type: none"> <li><input type="checkbox"/> Routinely includes evidence and research used to inform the design (i.e., artificial intelligence, predictive analytics, learning science, interpretation of outcomes data) is normed on students by race and income at varying types of institutions of higher education.</li> <li><input type="checkbox"/> Routinely shares transparently how evidence and research of student outcomes by race and income are incorporated into the design, implementation and continuous improvement class content.</li> </ul>

## Appendix 4: Equity FIRST Consideration for Digital-Forward Skill Inventory

Courseware Life Cycle		Equity FIRST Competency
Product Design	Student Agency	<ul style="list-style-type: none"> <li><input type="checkbox"/> Recognizes that getting to know students is a necessary practice.</li> <li><input type="checkbox"/> Routinely uses the power of their position to benefit racially minoritized students.</li> <li><input type="checkbox"/> Routinely provides racially minoritized students with institutional knowledge.</li> </ul>
	Accessibility	<ul style="list-style-type: none"> <li><input type="checkbox"/> Believes that noticing race and patterns of racial/ethnic inequality are valid and important practices.</li> <li><input type="checkbox"/> Can explain that the knowledge and experiences of racially minoritized students are valid sources for learning.</li> <li><input type="checkbox"/> Routinely uses culturally relevant, inclusive, sustaining materials and pedagogies.</li> <li><input type="checkbox"/> Employs strategies that allow students to get to know the instructor and the other students in the class.</li> </ul>
	Instruction and Feedback	<ul style="list-style-type: none"> <li><input type="checkbox"/> Believes that practitioners have a responsibility to eliminate racial/ethnic inequity.</li> <li><input type="checkbox"/> Examines course assessments to see whether racialized patterns are present in grading.</li> <li><input type="checkbox"/> Can articulate the difference between being color-conscious and being color-blind.</li> <li><input type="checkbox"/> Routinely identifies and describes equity gaps in racially explicit language.</li> </ul>
	Culturally Responsive	<ul style="list-style-type: none"> <li><input type="checkbox"/> Can explain why racially minoritized students have a right to an education that affirms their racial/ethnic heritage.</li> <li><input type="checkbox"/> Routinely identifies statements (their own and others) that are deficit- or equity-minded.</li> <li><input type="checkbox"/> Can explain how American society and institutions (broadly) and education (specifically) are defined by racialized norms, cultures, spaces, policies, practices.</li> <li><input type="checkbox"/> Routinely speaks to colleagues about critical reflection and inquiry-based change.</li> </ul>

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# End Notes

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