



SKILLS REQUIRED

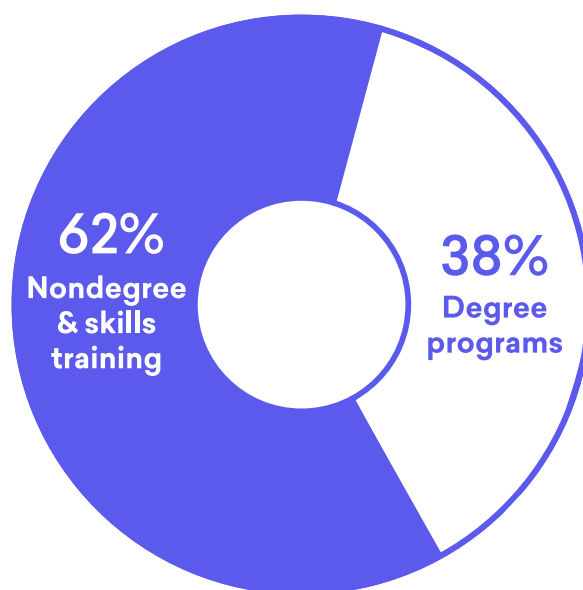
How higher ed can meet the needs of learners
and employers in a **skill-based** economy



have also begun offering their own skill-specific training and pledging to accept these credentials in lieu of a traditional degree. The growing consensus in the private sector seems to be: **skills required, degrees optional**.

At the same time, many learners (including [adults](#) and even [current college students](#)) still express skepticism about the ROI of higher education. [As of October 2020](#), overall postsecondary enrollment was down 3% from a year ago. More troubling, enrollment of first time college students was down 13%. This makes for a stark contrast with the [soaring enrollment](#) of education providers (traditional and otherwise) that offer online, short-term credentials closely aligned to in-demand skills and industry needs.

Americans strongly prefer nondegree programs and skills training over degree programs



2020 Public Viewpoint Survey -
Strada Center for Education Consumer Insights

Embracing the skill-based future of learning and work

We believe that a shared language of work-relevant skills is essential to addressing these challenges. In the pages that follow, we'll show how higher education can adopt the skill-based lexicon of the labor market to create relevant, in-demand programs that attract and serve the diverse, value-focused learners of today—and tomorrow.

The challenges are real, but so are the opportunities. By the end of this ebook, you'll have a positive vision for how your institution can adapt and thrive in an increasingly skill-based economy.

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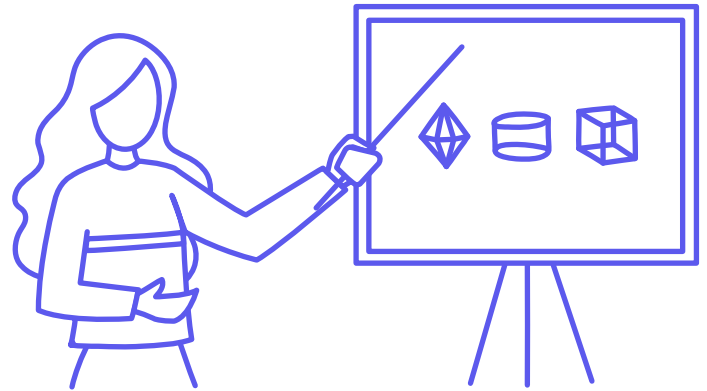
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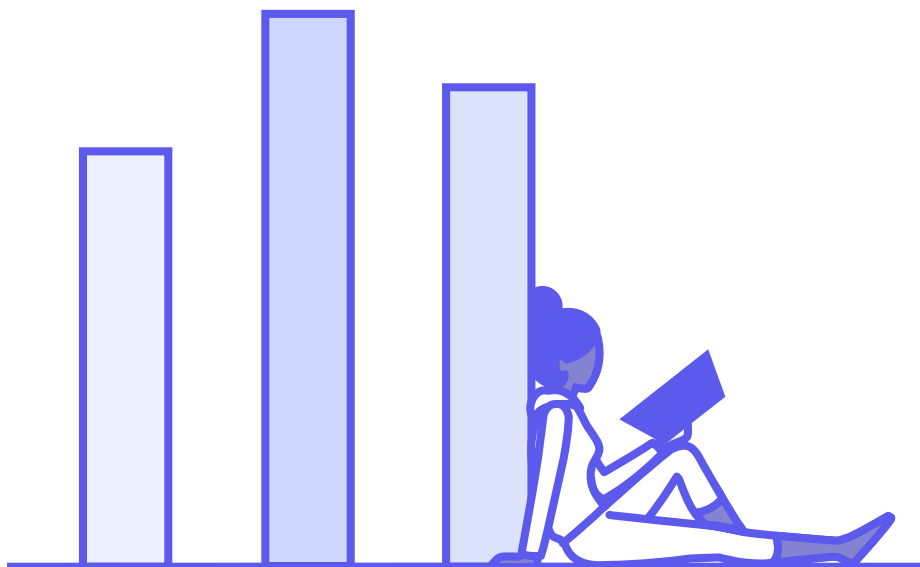
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In this ebook, we offer a guided tour of this skill-based vision for higher education. Along the way we'll point out some of the unique advantages provided by skill data and how institutions can use it to translate curriculum into the language of learners and employers. We'll provide practical illustrations of how a skill-based approach can help institutions design in-demand microcredentials and better articulate the work-relevant skills taught in degree programs. And finally, we'll end by exploring the emerging concept of Learning and Employment Records (LER), and consider how skills-denominated academic programs prepare institutions for the growing push towards more interoperable records of learning.



A note on how to use this ebook - While the chapters are ordered sequentially, they are each designed to stand on their own as they address specific subtopics within the overall theme of skill-based higher education. In other words, feel free to jump around or skip to the section that interests you most. If you start to feel like you missed something, you can always circle back to an earlier chapter.



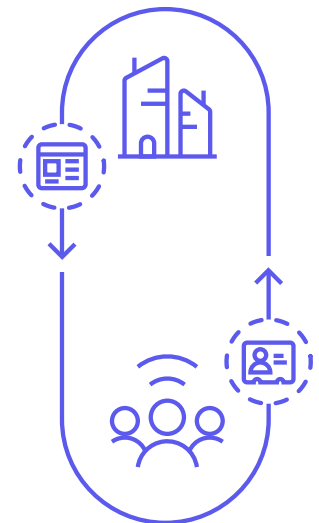


CHAPTER 1

The Significance of Skills for Higher Education

In today's economy, a shared language exists (and is constantly evolving) between employers and job seekers:

- Employers post job openings with increasingly specific skill requirements to attract talent they need.
- Job seekers create online profiles and resumes with increasingly thorough skill descriptions to market themselves to potential employers.



“ For colleges and universities, the [skill language](#) that emerges from these online [postings and profiles](#) can unlock new insight that enhances the value, effectiveness, and relevance of your institution in an increasingly skill-based economy. ”

For example, institutions that can articulate curricular content in the language of skills are far better positioned to assess program alignment with employer needs and learner interests, in the same terms that those other parties are using.

To better understand how your institution can leverage skill data, let's see how it compares with the traditional tools of labor market research in higher education.

The traditional approach

By now, many colleges and universities have come to prioritize economic analysis as an essential part of fulfilling their mission to serve learners and drive prosperity in their communities. This is typically done at the industry (NAICS) or occupation (SOC) level and then connected back to programs using a crosswalk, like the [CIP-to-SOC crosswalk](#) developed by the National Center for Education Statistics.



This approach is still incredibly important and valuable. Much of the existing labor market data in the United States is based on these taxonomies, and they will continue to play an essential role in labor market research that informs program development and planning. But there are at least two factors that should drive institutions to go beyond the traditional approach:

1. The ubiquity of technology, combined with its rapid rate of change, means the modern economy evolves more quickly than ever. Traditional taxonomies can struggle to keep up and sometimes fail to adequately capture emerging skills and roles.
2. Skills have already become the [focus of attention](#) for many employers, learners, and policymakers. Relying solely on traditional program classifications (i.e. CIP codes) without surfacing the skill content of those programs can obscure their value and relevance in the modern skill-based economy.

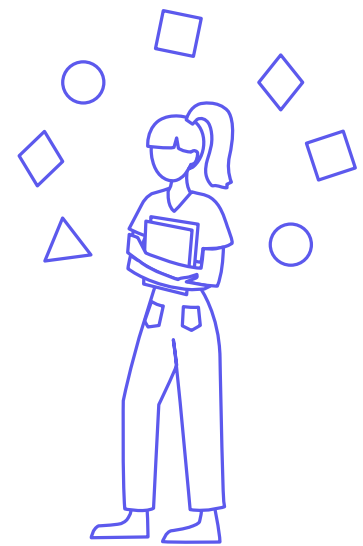
Unique advantages of skill-level data

Now, let's look at a few key advantages of skill-level data that can help compensate for the limitations of traditional labor market research and keep institutions connected to the evolving needs of today's employers and learners.

1) Precise and detailed

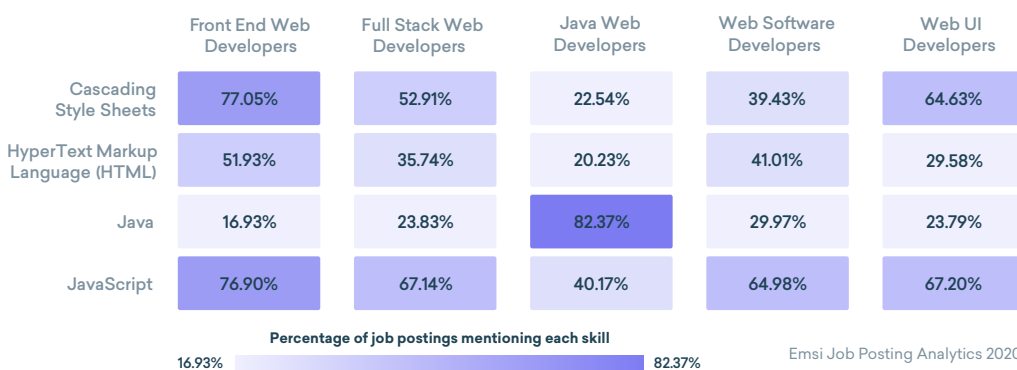
Skills are the “fundamental elements” of work; the basic building blocks that make up the jobs employers need done and the work that professionals do. Consequently, they unlock a more detailed, nuanced understanding of the labor market than we could hope to achieve with occupation SOC codes, or even job titles.

For example, without skills data, we're left to wonder what the difference might be between two different Web Developer job postings from two different companies (or from the same company, for that matter). Are they looking for front end developers, back end developers, or maybe full stack developers? Certainly some skill requirements will overlap, but different roles often emphasize different skills, as [this heatmap](#) of some top web development job titles and skills demonstrates.



This level of precision can inform more targeted programs, including microcredentials or stackable degrees, and more personalized career and academic advising services based on an individual's unique skill gaps and goals.

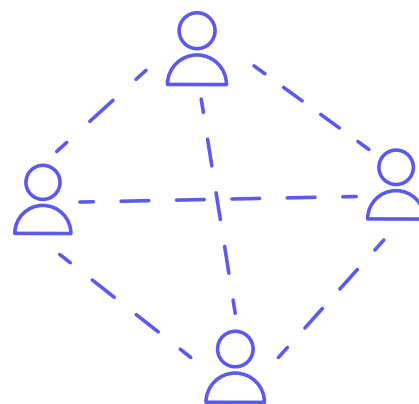
Distribution of Common Web Developer Skills in Postings (Jan - Jul 2020)



2) Shared and connected

Among employers and job seekers, skills are already functioning as a shared language or currency. By viewing academic programs through this same lens, institutions can join the conversation.

Doing so unlocks a plethora of practical benefits. As mentioned earlier, articulating curricular content in the language of skills enables you to assess alignment with employer needs and learner interests in the same skill-based terms that they use in job postings and professional profiles, respectively.



“ Rather than relying on a crosswalk to approximate connections between your programs and the world of work, you can make a direct, apples-to-apples comparison of the skills in demand and the skills in your courses. ”

In short, adopting a shared, skill-based language means less guesswork involved in how your programs connect to the rest of the economic ecosystem.

3) Real-time and up-to-date

As the nature of work continues to evolve, employers will start talking about the tasks they need done and the skills required to do them before those tasks and skills crystallize into a standardized job title (let alone an occupation with its own SOC code). *This makes skill-level data a crucial early warning system for institutions wanting to identify emerging roles in the labor market.*

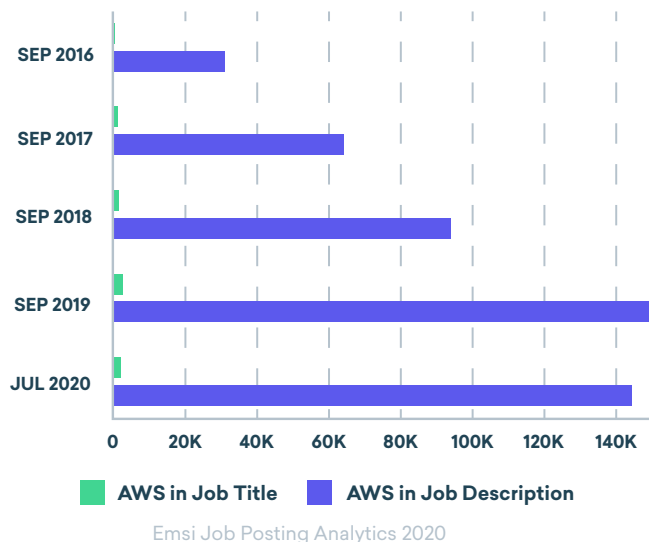
To pick just one example, Amazon Web Services (AWS) has become a critical part of the tech infrastructure for many organizations. However, the term “AWS” is still far more prevalent as a skill included in *job descriptions* (for roles like Software Engineer or Software Architect) than it is as a *job title*.

If you were tracking the skills that appear in employer job postings, you would have detected the popularity of AWS long ago. If you were tracking only job titles, you may not have noticed it until late 2018, or possibly not at all.

The lesson? If you want to have a finger on the pulse of emerging “hot” technologies and skills, you need to track market demand at the skill level, in addition to monitoring industry, occupation, and job title trends.

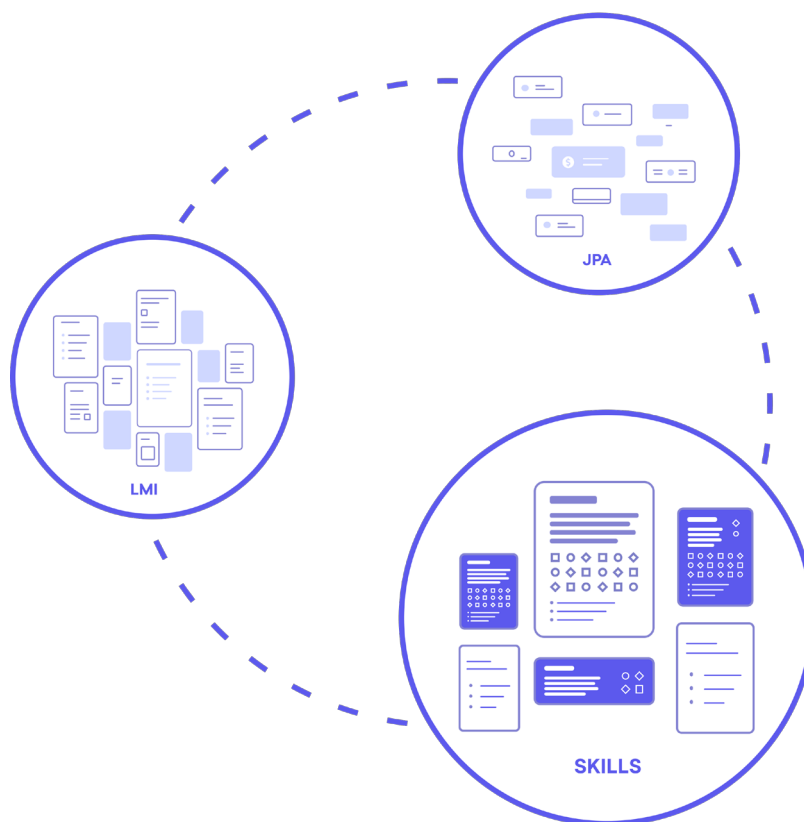
(Note: This is a key reason why the [Emsi Open Skills Library](#) is updated every two weeks to constantly reflect the current vocabulary of the workplace.)

“AWS” appears more often as a skill in job descriptions



Conclusion

The unprecedented level of detail, work-relevance, and recency provided by skills data makes it a powerful tool for understanding and meeting the needs of today’s learners. In the next section, we’ll look at four specific ways colleges and universities can apply this data to improve their institution’s relevance and value.



To achieve this transformation, institutions should translate their courses and programs into the common skill-based language of the labor market: a process we call *skillifying*.

“ **Skillify (verb) – to translate curricular content (e.g. course descriptions or syllabi) into the skill-based language of the modern labor market.** ”

In practical terms, “skillifying” your curriculum means identifying the work-relevant skills that you already teach, in the courses you already offer, and surfacing those skills to faculty, students, and other stakeholders.

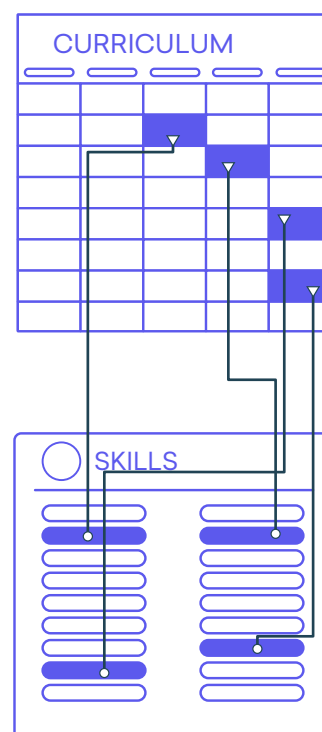
Let’s consider four examples of how a skill-based approach can unlock innovation and help higher education thrive in the modern skill-based economy.

Four key advantages of a skillified curriculum

1) Better align programs with market needs

Because skills are a shared language, articulating your curriculum in these terms allows for a more direct comparison with skill-based signals from the labor market. This means you can more efficiently assess the demand from [employer job postings](#), the supply from [professional profiles](#), and how your curriculum can fill the gaps between them.

Likewise, you’ll be able to offer more targeted curriculum that addresses these gaps at the skill level. For example, perhaps local employers are looking for data visualization skills and mentioning tools like [Tableau](#) or [Power BI](#) when posting for business analyst roles. If you know that you teach these skills in your existing Business Analyst degree program, you could unbundle the program by repackaging relevant courses into a data visualization certificate. The shorter, more focused credential may be a better fit for working professionals looking to upskill.



2) Better engage employers

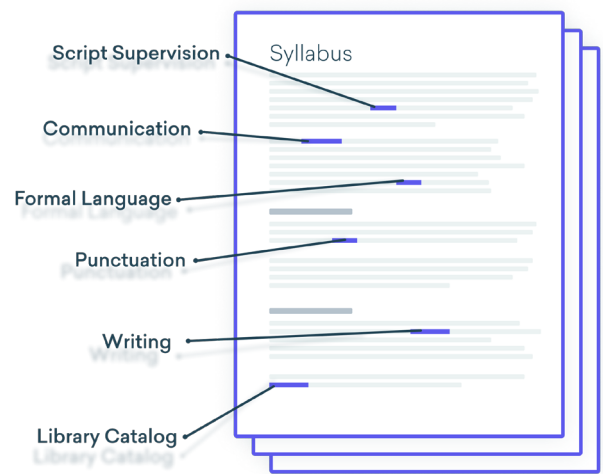
It's easier to be on the same page when you speak the same language. With a skillified curriculum, you're better equipped to collaborate and proactively engage with industry partners, demonstrating how the skills taught in your curriculum can prepare future employees or provide upskilling and advancement opportunities for their current workforce.

Of course, partnerships are a two-way street. With a skillified curriculum, you'll have the structure in place to implement employer feedback on the skills that are most valuable to them, quickly and confidently pinpointing the courses that are best suited to integrate their suggestions.

3) Better market programs to students

[Data continues to pour in](#) confirming that today's learners are eager for education options that provide work-relevant skill training with a recognizable ROI for their career (a trend amplified by COVID).

What better way to engage these learners, including many working adults, than by clearly articulating the skill-content embedded in your academic programs?



“ A skillified curriculum can help you demonstrate to students that they don’t have to choose between a college degree and work-relevant training that translates to career value. They can have both. ”

A skills-denominated curriculum can also enhance your ability to show students how your courses align with their personal skill gaps. For example, the [SkillsMatch](#) platform allows learners to inventory their own skills (based on prior work and learning) and then auto-magically recommends the

most relevant content from your program portfolio, based on the skills you teach.

4) Better equip students to market themselves

When colleges and employers are aligned, everybody wins – especially students. Not only is the curriculum itself more relevant to their career (see point #1 above), but they are also better equipped to articulate the skills they acquire through their education.



- Data Entry
- Complex Problem Solving
- Team Building
- Claim Processing
- HyperText Markup Language
- Business Analysis
- Python (Programming Language)
- SQL (Programming Language)
- Account

Much of this will happen organically as institutions make the skill-content of their courses more transparent to students. But colleges and universities can facilitate this process by formally connecting their courses to labor market skills.

For example, using [a new integration with Badgr](#), institutions can link their digital badges with machine-readable skill data from Emsi’s open skills library. This skill data connects seamlessly to real-time labor market insights including job posting trends, top companies posting, and related skills—all of which are available on public skill pages, like this one for [Kubernetes](#). This gives learners, educators, and employers additional context to understand the labor market value of skills associated with a credential.

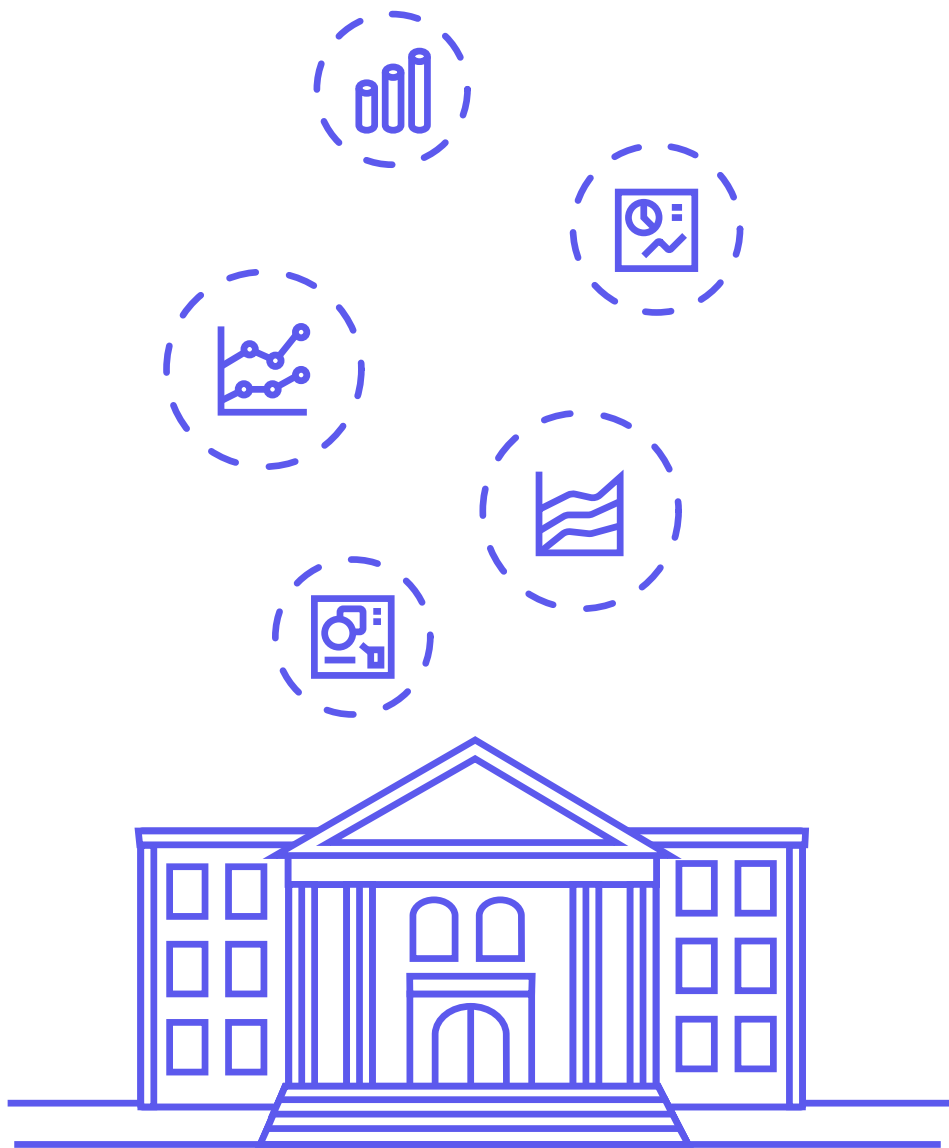


But digital badges aren’t the only option. Equipped with a skillified curriculum, educators can use that information to [incorporate skills into transcripts](#), upload courses’ skill content to shared databases like [Credential Engine](#), or participate in other [Learning and Employment Record](#) initiatives (see **Chapter 6** to learn more about LERs). The key first step for any approach is translating curriculum into the common language of skills.

Next steps

This list is not comprehensive, but we hope it gets you thinking (and excited) about the possibilities of leveraging skill data to unlock value and accelerate growth at your institution.

In the next section, we'll take a deeper dive into one of the most significant advantages of having a skillified curriculum: the ability to align skills taught in your curriculum with skills sought by employers to develop and launch high-ROI, in-demand microcredentials.



To get started, institutions can [skillify](#) their curriculum, translating it into the same skill-based language used by employers and job seekers. Using a shared language allows you to find alignment between taught skills and sought skills, and use that insight to develop high-ROI credentials that advance learners towards their career goals.



The current landscape

Shorter. Skill-focused. Work-relevant.

These are the top criteria that [today's learners are using](#) to sort through their (ever-increasing) options for education. To adapt, many colleges and universities are exploring development of more focused, short-term, and stackable microcredentials.



Building these credentials effectively, so that they deliver maximum value to students while making the most of your existing program portfolio, requires clarity in two key areas: *The skills employers are looking for and the skills you teach.*

1) The skills employers are looking for (and list in their job postings)

Employer job postings provide near real-time insight into the jobs employers need done and the skills required to do them. With this data, institutions can assess overall labor market demand at the national level, or focus on the in-demand skills within a specific region.



While a nationwide perspective might be relevant for larger, online institutions, a state or county-specific view can be especially important for regional institutions and community colleges. Since [alumni migration often varies by institution type](#), it's important to use whatever lens is most relevant for your institution and student body.

For institutions that collaborate (or would like to collaborate) with a few key industry partners, it can also be valuable to take an employer-specific approach. Analyzing postings from one or more key

employers yields a more focused list of skills to inform curriculum development and conversations with employer partners. [Some institutions](#) have even found that this data is a valuable source of insight to the employers themselves (who don't always track their own openings in such a systematic, skill-specific way).

Demand analysis can even be done at the level of job titles. This can mean drilling down into a specific role at a single employer to identify their unique skill requirements, or comparing similar jobs across multiple employers to identify common skill requirements (e.g. "What skills do all business analysts have in common at the top employers in my region?").

2) The skills you teach (and list in your curricular content)

If job postings give us a signal to understand the skills and proficiencies that employers are asking for, course descriptions and syllabi provide the same kind of insight when it comes to understanding the skills that you teach (a.k.a. "curricular skills").



Like job posting analysis, curricular skills analysis can be done at multiple levels. You could start by taking an inventory of skills taught across the entire institution. This big-picture view enables you to see your program portfolio through the lens of work-relevant skills – the way employers and job seekers might view it. But you can also drill down to "[skillify](#)" a particular college, program, course, or even "sub-course" units like competencies, modules, or learning activities.

At any of these levels, you can discover where skill content may be duplicated across departments, programs, courses, etc. This overlap might be the result of an intentional decision to reinforce essential skills. Or, it might be an instance of unnecessary redundancy, highlighting an opportunity to streamline course sequences into a more efficient pathway.

In either case, a systematic evaluation of taught skills can help you lay out the curricular "building blocks" that you have to work with when it comes time to design new credentials. As we'll see in a

moment, it also lays the groundwork for communicating the work-relevance of credentials to prospective learners, industry partners, and other outside stakeholders.

Comparing sought vs. taught

Now that employer postings and your curriculum speak the same skill language, you're ready to pinpoint alignment between the two. Like the job posting and curricular skills analysis discussed earlier, this comparison of taught vs. sought skills can be done at various levels. For example, an institution might assess how its entire program portfolio aligns with employer demand in their state, through a skills lens.



But, for developing microcredentials, it's usually helpful to narrow the focus by leveraging one of the unique advantages afforded by skill data (see **Chapter 1**): greater precision and granularity than what's possible with traditional labor market information alone (e.g. CIP-to-SOC crosswalks).

This could mean comparing the skills taught in a department or program to in-demand skills within your region or even at a particular employer. At the most detailed level, it could involve aligning skills taught in a particular course to the skills required for a particular job.

For example, Emsi's [skill library](#) enables institutions to parse skills listed in a job posting, identify which of those skills they already teach (and in what courses), and use this insight to begin organizing relevant courses into a new credential (see below). This highly targeted approach is ideal for rapidly developing professional development and continuing education pathways to serve a key employer partner.

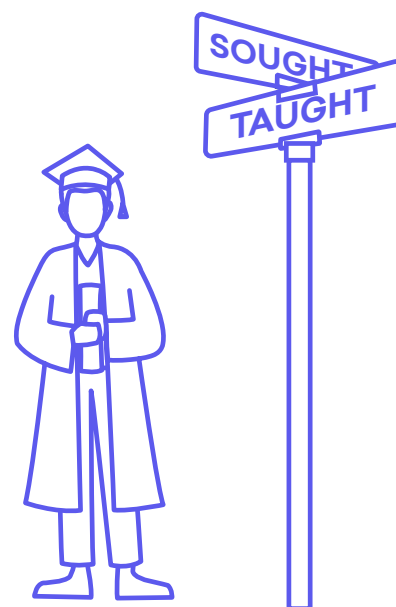
The screenshot shows the Skillabi web application interface. At the top, there's a navigation bar with 'Skillabi', a dropdown menu, 'Dashboard', and 'Logout'. Below the navigation bar, there's a section titled 'Start With a Job Posting' with three numbered steps: 1. Paste in a job posting and select skills, 2. See which skills you already teach and where you teach them, 3. Package existing curriculum into a new group to train for this role. The main content area is split into two panels. The left panel, 'Add Job Posting Description', shows a text area with a job posting for a 'DevOps Engineer' in Moscow, ID, with various skills like 'web scraping', 'resilient data architecture', and 'quality control' highlighted. The right panel, 'Skills From Text', shows a list of skills extracted from the text, including 'DevOps', 'Web Scraping', 'Resilience', 'Data Architecture', 'Quality Control', 'Scrapy (Web Crawler)', 'HyperText Markup Language (HTML)', 'JavaScript (Programming Language)', 'Cascading Style Sheets (CSS)', and 'XPath'. Each skill has a checkbox and a 'Show Context' button.

Use Emsi skills to see how courses align with employers' skill requirements

The intersection of sought and taught

This sought vs. taught analysis can help you identify a “sweet spot” for developing microcredentials—where the unique capabilities and expertise of your institution intersect with the workforce needs of regional or national employers (a.k.a. career opportunities for students).

For example, your analysis of job postings may uncover strong demand for proficiency in [geographic information systems \(GIS\)](#) at major employers like Aecom and Leidos. A skill-based inventory of your academic portfolio may surface courses that teach this same skill along with related software like [ArcGIS](#) or [CARTO](#).



Based on this overlap, you could begin exploring ways to unbundle a full geographic sciences degree program by repackaging relevant courses into a GIS-focused credential. A skill-based inventory of existing courses (as outlined above) can help inform how you sequence and arrange these courses. The end result is a focused, work-relevant credential that may be a better fit for working professionals looking to upskill or career changers looking to expand their skill set.

When the skills don't align

Of course, not all of your taught skills will align perfectly with employer needs. But even in those instances, the skill-level insight gleaned from your sought vs. taught analysis can inform positive next steps.

- In some cases, you may simply need to update course descriptions to do a better job communicating their skill content in the terms that employers use. In other words, the misalignment may simply be a misunderstanding.
- In some cases, you may be teaching skills that really are valued by employers, but aren't explicitly listed in their job postings (possibly because they assume all candidates will possess these

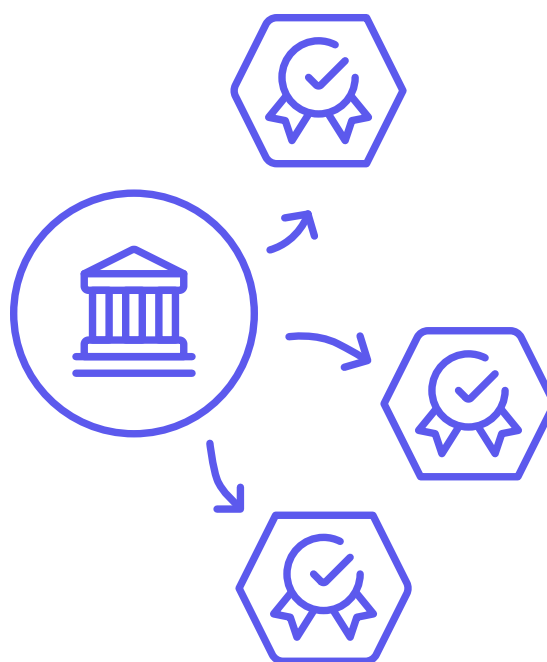
skills, or simply because they failed to create the perfect posting). This raises an important point to keep in mind: Job postings are an incredibly powerful but not infallible guide to what employers are looking for in an employee. As always, good judgment is required to interpret the data.

- But in some cases, the misalignment may be real. As you discover where you teach content that employers aren't asking for and where employers are asking for skills that you don't teach, you can use this data to update existing programs or create new educational offerings that address the misalignment and fill the gaps. This may require more time and effort than unbundling and repackaging existing curriculum, but it also offers a chance to pilot changes on a small (micro!) scale that could inform broader program innovation later on.

Deploying your credential

A critical last step of creating any credential is deciding how you'll deliver this new content to learners. When it comes to microcredentials, there's no shortage of options, ranging from proprietary in-house solutions to partnering with well-known MOOC platforms like Coursera and EdX. Whichever delivery mechanism you choose, you can leverage your curricular skill inventory (as described above) to help you communicate the skill content of your credentials to prospective learners, employer partners, and other outside stakeholders.

Some platforms make this easy by allowing you to embed skill data directly into the credential itself. For example, institutions using [Badgr](#) can tag a credential with associated skills from Emsi's open skills database, as demonstrated in the "Skills"



section of this [example badge](#). The [integration](#) automatically links this machine-readable skill data to related information (e.g. skill definitions, job posting trends, related skills, etc.) that helps communicate the labor market relevance of each skill.

Regardless of how you deploy your credential, articulating and calling out its skill content is key for attracting potential learners who are focused on work-relevance, as well as equipping completers to communicate the value of their credential to potential employers.

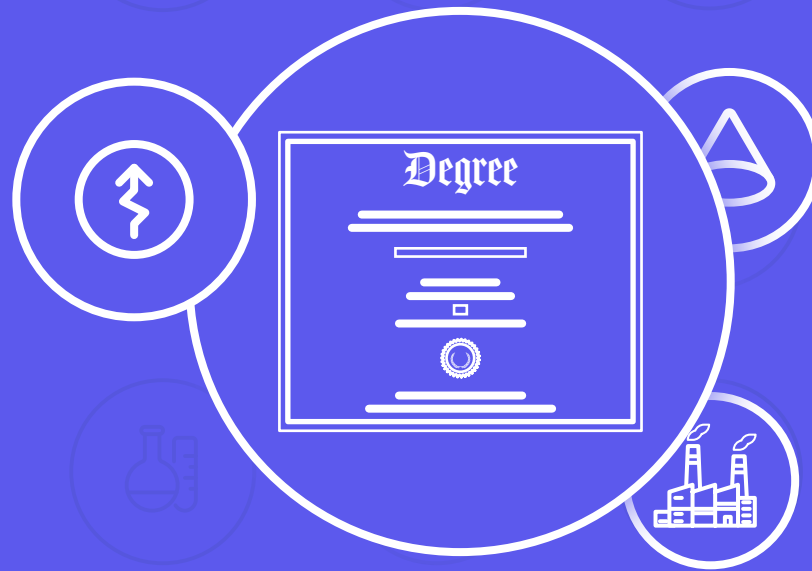
Next steps

Among prospective learners of all ages and backgrounds, the demand for short-term credentials that teach work-relevant skills is stronger than ever. Attracting and serving these learners requires an approach to program development that matches their priorities. By combining a skill-based assessment of employer needs with a skill-based assessment of academic offerings, institutions get the detailed data they need to build effective, in-demand credentials.

And what does this skill-based approach mean for traditional degree programs? Do skills replace degrees? Or can institutions use skill data to actually enhance the relevance and value of their degree programs?

We'll tackle these important questions in the next chapter.





CHAPTER 4

Skills AND Degrees: Adapting Degrees for a Skill-Based Economy

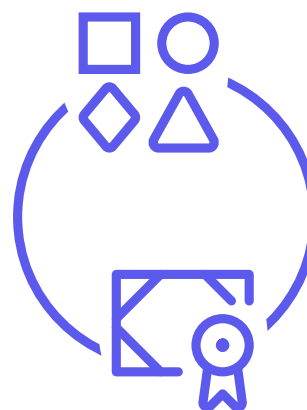
The growing demand for work-relevant, nondegree, skill-based education is well documented. But what does this mean for the traditional four-year degree (or its cousins at the associates and graduate levels)?

While many have framed this as an either-or scenario—where the rise of skill-based learning leads inexorably to the decline of degrees—

there is reason to believe that skills can not only co-exist with degrees, but actually enhance their relevance and value for today’s learners. As Western Governors University president Scott Pulsipher said at a [meeting of the Workforce Policy Advisory Board](#) in July, “it’s often perceived as skills versus degrees. But in reality, in a skills-denominated future, it is that tide that lifts all boats. Because even those who possess degrees, they can better articulate the skills and competencies that they now have for the future of work.”

And > Or

Rather than viewing college degrees and work-relevant skills as mutually exclusive, institutions can leverage the unique advantages of skills data to adapt degree programs for today’s skill-based economy. Here are two specific ways to begin this transformation:



1) Know and show the work-relevant skills associated with your degrees

The first major step institutions can take to counteract the perception of “skills vs. degrees” is to translate their degree programs into the language of work-relevant skills. The more you can describe degrees (and their constituent courses and learning outcomes) in terms of their skill content, the more effectively you can engage with and serve today’s increasingly skill-focused employers, policy makers, and learners.

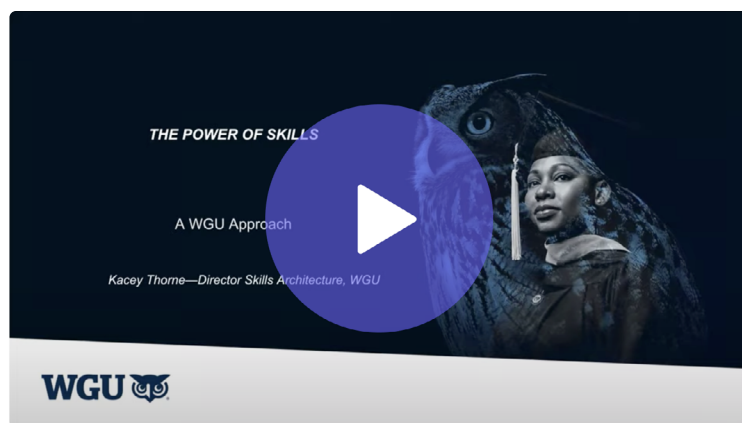
As we explained in **Chapter 2**, this “[skillification](#)” of curriculum enables your institution to show students that they don’t have to choose between a college degree and work-relevant training that translates to career value. They can have both.

Start by identifying the work-relevant skills that you already teach, and where those skills are distributed across your program portfolio. This can be done by parsing and tagging curricular content (course descriptions, syllabi, learning outcomes, etc.) with [work-relevant skill terms](#) used by employers in job postings and working professionals in their online profiles.

With this insight, you can immediately begin improving course descriptions and program pages on your institution’s site. These improvements allow you to highlight a degree’s value and relevance, using language that employers and job-seekers recognize, and do so in the places where prospective learners are most likely to browse while weighing their options.

This skill-tagging also lays the groundwork for a direct comparison between the skills you teach and the skills employers are seeking. We previously looked in depth at how this “sought skills” vs. “taught skills” analysis can inform microcredential development (see **Chapter 3**). But many of the same principles can be applied to program review at a broader scale to ensure that degree programs teach the in-demand skills graduates need to succeed.

Just as important, institutions can demonstrate this alignment to current and prospective students, giving them clarity and confidence about the relevance and value of their education.



Watch Luke Jankovic (Emsi) and Kacey Thorne (WGU) explain how skillifying curriculum breaks down the barrier between degrees and skills.

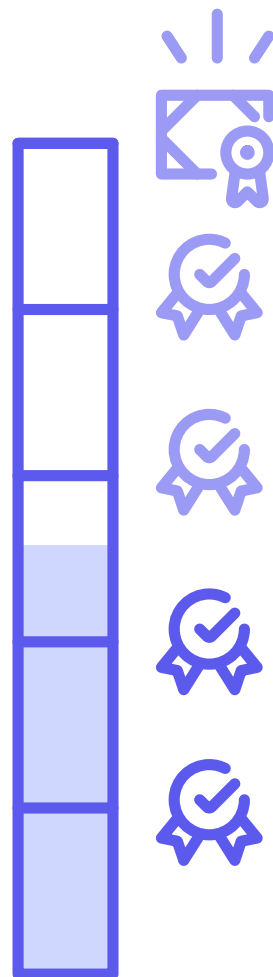
2) Unbundle degrees into skill-based, stackable microcredentials

Another way to reimagine the degree for the future of education and work is to think of it as the culmination of smaller units of learning rather than as a four-year, all-or-nothing proposition. A skillified curriculum facilitates this by providing a consistent, skill-based grid through which to evaluate academic offerings and assess how various units within your program portfolio relate to each other as well as to employer demand.

Viewed through this lens, the skillified degree plan offers a kind of skill-based blueprint which can be used to architect how shorter, focused credentials might stack into a full degree.

This more modular, skill-based approach to degrees can have a variety of benefits, from boosting accessibility to facilitating lifelong learning:

- Unbundling degrees into more bite-sized educational units offers learners a shorter time horizon and faster ROI.
- This, in turn, reduces the risk of enrolling and having to drop out with nothing to show for it. In this way, offering recognizable, skill-specific credentials along the way to a degree may expand accessibility and increase enrollment in the long run.
- Along with providing additional off-ramps, stackable, skill-based credentials can provide additional on-ramps for learners to return for additional education, as needed.
- Institutions can further facilitate this lifelong learning by [helping individuals inventory their existing skills and map their skill gaps to the institution's curriculum](#), thereby guiding learners to their next best step.



While there are other important considerations involved in designing stackable credentials, the point here is simply that a skillified curriculum can help colleges and universities reimagine and repurpose existing degree programs to better serve the needs of today's skill-focused learners.

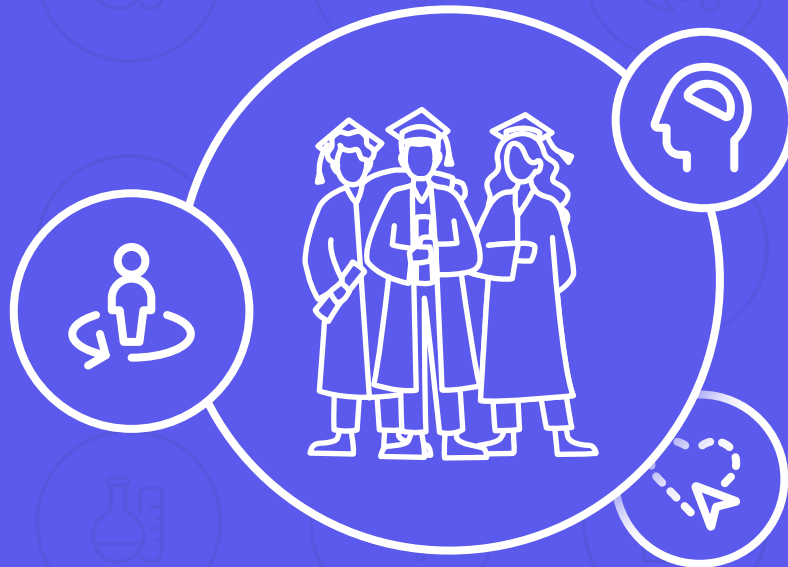
Just as appetizers don't compete with entrees on a dinner menu, there's no reason to think microcredentials have to compete with (rather than complement) degrees in an institution's program portfolio. For some learners, the short-term credential may be all they need. For others it might be just the start of their academic journey. One is not inherently better than the other. It's a question of fit; one that only the student can ultimately answer, based on their needs and goals.

Why it matters

Much like STEM and the Liberal Arts (a subject [we've written about at length in partnership with the Strada Education Network](#)), skills and degrees are two compatible concepts, often pitted against each other, that are actually better together. Getting this relationship right matters not just for institutions, but for learners as well. Colleges and universities that can offer students work-relevant degrees delivered via flexible, stackable pathways have the potential to not only help working (or out-of-work) adults in the short-term, but to continue offering on-ramps to higher learning as individuals advance through their lives and careers.

In the next section, we'll consider another area where it's important to avoid a false dichotomy: the question of human skills and technical skills in higher education and work.





CHAPTER 5

In-Demand, Under-Appreciated: The Value of Human Skills

A brief look at how human skills help capture the value of the college experience

In the discussion about skills, hard or technical skills (like programming languages or accounting concepts) tend to get most of the attention. But [research continues to show](#) that businesses value human skills (also known as soft skills, 21st century skills, etc.) at least as much as their hard/technical counterparts, even during economic downturns like we experienced in 2020.

For colleges and universities, this presents an opportunity to highlight how the unique learning experiences your institution

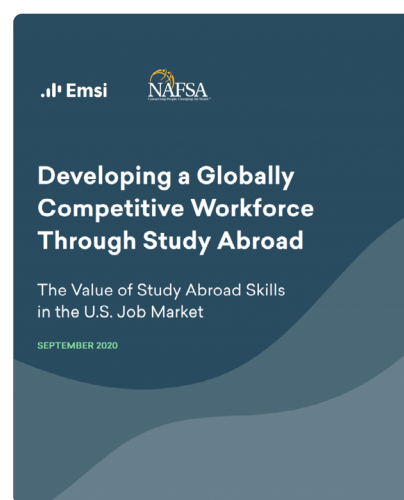
provides can help students develop these essential skills. For example, an environmental science degree may include long-term, collaborative fieldwork that fosters human skills like “[Teamwork](#),” “[Communications](#),” and “[Project Planning](#)” in addition to deepening students’ technical domain knowledge in areas like “[Soil Science](#)” or “[Watershed Management](#).” (Of course, COVID may hamper such experiences for the moment, but many institutions are already [finding ways to improvise and adapt](#) until these invaluable learning activities can resume.)

As with technical skills, there’s a particular way that employers and job seekers often talk about these human skills. Emsi’s [open skills library](#) captures and catalogues these terms so that institutions can apply this insight to their own curriculum and course descriptions (otherwise known as [skillifying](#)). As a result, colleges and universities can identify where these skills are taught in their programs. Just as important, they can help learners recognize and articulate this important aspect of their education, in the language of the labor market.

Case study: The value of study abroad skills in the U.S. job market

A recent report from [NAFSA](#) provides a real-life example of how human skills can help capture the value of an otherwise hard-to-quantify learning experience. [In partnership with Emsi](#), NAFSA identified relevant “soft skills” (e.g. [Adaptability](#), [Creativity](#), [Prioritization](#)) and “global skills” (e.g. [Culturally Sensitive](#), [Foreign Language](#), [Intercultural Communication](#)) that students develop through a study abroad experience. Emsi then mapped these skills to employer demand in the U.S. as exhibited through job postings.

The compelling findings demonstrate how study abroad experiences not only enrich students’ lives, but also make them more competitive in the job market by fostering key skills that employers value. You can [access the NAFSA report for free to see for yourself!](#)



Access the free report at [NAFSA.org](#)

Technically human, humanly technical

As skill-based approaches to education and hiring continue to [go mainstream](#), it's important to maintain a holistic perspective that values both the technical and human aspects of learning and work. After all, as [Emsi and Strada have pointed out before](#), human skills play an important role in work readiness by enabling learners to transfer their knowledge from domain to domain in the face of job obsolescence, and to learn new skills over the course of their working lives. Highlighting these critical skills in course and program descriptions is a key way for institutions to communicate the value of the education they provide, in the classroom and beyond.

In our next (and final) chapter, we'll turn to the vital question of how learners can record and share their skill-based learning achievements. In particular, we'll review recent progress towards a more comprehensive, interoperable *Learning and Employment Record (LER)* that promises to help learners, employers, and educators work together more effectively.





CHAPTER 6

Using Skills to Create Interoperable Learning Records

A beginner's guide to the LER

The Learning and Employment Record (LER) is an emerging concept that powerfully illustrates the potential of skill-based solutions to facilitate life-long pathways between learning and work. LER initiatives touch on a broad array of issues, from technology and data governance to public policy and private sector hiring practices. Much could

be said and there are many players involved. In this chapter, we aim to provide a basic introduction to the subject by helping you get up to speed on what an LER is, why it matters, and how you can advance towards offering more skill-based, interoperable learning records at your institution.

As the U.S. economy and higher education landscape have evolved, so has the need for a more modern learning record that supports new skill-based approaches to hiring and learning, while breaking down the silos that have historically separated classroom learning from the world of work. This need was evident before the pandemic but has taken on new urgency because of it. In particular, the disruption of millions of individuals' academic and professional plans acted as a floodlight, illuminating the need for skills-denominated learning records that facilitate more efficient pathways between learning and work.



The rise of interoperable learning records

Fortunately, the past year has seen significant progress in the tools and technology needed to address these very challenges. The ongoing digital transformation sweeping society has extended to higher education, spurred in part by the necessity of online-first work and learning in light of COVID. The result has been a new openness to digital learning records, badges, and other forms of credentialing that transcend the traditional transcript. Meanwhile, maturing technologies like [blockchain](#) have boosted the feasibility of developing records that are shareable, verifiable, and secure.

Groups like the [Open Skills Network](#), [Velocity Network](#), and [T3 Innovation Network](#) are playing a critical role in moving these efforts forward by convening key leaders, data providers, and technology innovators. Critically, membership in these coalitions spans multiple sectors, from higher education to government to private enterprise.

This kind of widespread buy-in is essential for developing records that are truly interoperable, retaining their value in both academia and the workplace.

Defining the LER



While the concept of a more comprehensive, interoperable record of learning goes by many names (see below note on terminology), one moniker that’s gained traction recently is the “Learning and Employment Record,” or LER. As of this writing, “LER” is the label adopted by the U.S. Chamber-backed T3 Innovation Network, creators of the [LER Hub](#). It’s also the name used by the

[American Workforce Policy Advisory Board \(AWPAB\)](#), a group of 23 members convened by the White House to share expertise and lead by example in the development of new strategies for education and workforce partnerships to close the skills gap. Members include leading representatives from higher ed. (President of WGU, President of AACC, etc.), government (U.S. Secretary of Commerce, Governor of Indiana, etc.), and private enterprise (President and CEO of Wal-Mart, Executive Chairman of IBM, etc.).

A note on terminology

In this chapter, we use the term “Learning and Employment Record” because, as explained above, it’s a name that has buy-in from major players across multiple sectors of the economy. But it’s important to note that other terms are commonly used as well. For example, the WPAB itself didn’t start using “LER” until June 2020, when they announced that they were transitioning away from the previously adopted title of Interoperable Learning Records (ILRs), which, as they noted in the press conference, was harder to pronounce. There’s also been much discussion about the idea of a Comprehensive Learner Record or CLR. Confusingly, the CLR is sometimes described as if it is one component of a more comprehensive LER (covering the education side while other components handle the employer side) while in other cases the CLR seems to be a species of LER, such that the two concepts are roughly interchangeable.

Takeaway: While the terminology is still fluid, at the heart of all these efforts is a vision for a new kind of record that provides learners, educators, and employers with greater transparency, portability, and skill-based interoperability.

So, what exactly is an LER? [The U.S. Chamber of Commerce Foundation](#) has produced a short video to help answer this very question:



While there is no single source of truth for what constitutes an LER, the AWPAB provides perhaps what is the closest thing to an “official” list, at least in the U.S. In their [most recent white paper on the topic](#), released in September 2020, they set out nine key characteristics for Learning and Employment Records:

From idea to reality

As we can see above, the LER is still more of an idea or concept than a particular product or technology. And yet, thanks to various pilot projects underway across the nation, the idea is becoming a reality.

For example, the most recent WPAB press conference featured three demos from board members, showing the prototypes they’d developed thus far.

1. [A cybersecurity LER pilot](#) led by IBM
2. [A healthcare-focused LER pilot](#) led by Salesforce
3. [A retail-focused LER pilot](#) led by WalMart, geared towards store associates

You can read more about the WPAB pilots on pages 10 – 15 of their recent white paper. T3’s LER Hub also includes [a section cataloguing 15 additional pilot projects](#) that are underway.

As these projects demonstrate, there are still technological and logistical barriers to mass adoption of LERs. But the pieces are in place and, with a growing number of players in the game, LERs look set to move from the purview of technologists and futurists into the common experience of everyday life and work.

What this means for real people, in real life

So, what do these developments mean for higher education? What does a world look like where LERs are the new normal (to borrow a now-common phrase)?

If adopted widely and implemented effectively, LERs have transformative potential for learners, employers, and educators alike.

- **Learners** are enabled to document and share the skills and competencies they learn (whether through traditional, non-traditional, or employer-based training), even prior to degree attainment. This in turn gives them greater flexibility in transitioning into and out of education and work over their lifetime. Crucially, it also enables greater clarity on how their education connects to work opportunities, and how additional education or training can help them upskill or reskill to advance in their career.
- **Employers** get more precise insight into the relevant skills and abilities of job applicants and current employees alike. In turn, they are able to better match applicants and recent graduates with the right openings and needs within their business, and are able to more effectively pair current employees with additional training opportunities from a range of education providers.



- **Educators** are able to better serve their learners and employer partners by providing more transparent learning records that surface the work-relevant skills learned in each course or program. Institutions with skills-denominated academic offerings will also be equipped to recognize and award credit for skill-based learning completed at other institutions, including non-traditional or work-based training programs. LERs can even help institutions provide more personalized guidance to incoming students, as institutions match each learner’s skill gaps with the courses that best fit their needs and enable them to achieve their academic and professional goals.



As learners come to experience and expect the benefits of LERs, it will become increasingly important for institutions to offer them. And while the prospect of building a full-fledged LER may seem daunting, there are attainable steps every institution can take to start moving towards the kind of skill-based interoperability that is at the heart of what makes LERs so powerful. We turn our attention now, to the topic of how.

Defining Interoperability

In case you’re not familiar with the term, “interoperability” is basically a fancy way of saying, “plays well with others.” In the context of LERs, it refers to a record’s ability to share information (both sending and receiving) with other entities, beyond the institution that issued the record. It’s that property of a learning record which allows it to be equally digestible to an institution’s [LMS](#) and an employer’s [ATS](#).

Achieving interoperability through skills

As we’ve seen, skills are hardly the only ingredient in an LER, but they are an essential one. In particular, they play an important role in enabling the interoperability that is so central to the vision for LERs. This flows naturally from their ability to function as a common language shared by job seekers,

employers, and now, educators. As LERs facilitate conversations between employers and learners, skills supply the vocabulary that enables them to communicate.

We see an example of how skills factor into LER efforts in the [T3 Innovation Network’s one-pager](#), which outlines three key pillars to their vision. The third is to, “Empower individuals with a validated record of their skills and competencies in a way that all employers can understand.”

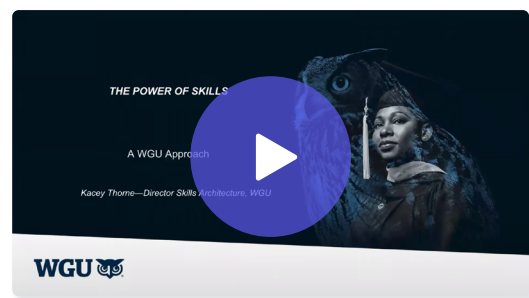
Along similar lines, [the September 2020 white paper](#) from the AWPAB includes an entire sub-section on page 6 titled, “A shared language of skills,” which affirms, “skills have emerged as a common vocabulary and an important currency that add value to learning achievements, work experience, and other credentials issued to an LER.”

[And the previous white paper](#) from September 2019 (back when “ILR” was still the acronym of choice) observed succinctly, “For ILRs, skills are the atomic unit of credentialing” (pg. 20).

“ For colleges and universities, this means that beginning to articulate course content and learning outcomes in terms of work-relevant skills (“[skillifying](#)”) is a key step towards interoperability. ”

Not only because it lays the foundation for participation in future LER initiatives and projects, but also because it provides immediate advantages that help to closely align your academic programs with both the supply side (learners looking for work) and the demand side (employers looking for people) of the labor market.

Kacey Thorne, director of skills architecture at Western Governors University, recently provided an overview of how this process works at WGU. [Jump to 6:40](#) in the presentation to hear Thorne describe how skill-mapping is enhancing effectiveness



The Power of Skills at WGU

in areas like program development and career advising, or [skip to 9:50](#) to see how skill mapping plays an integral role in WGU's overall LER ecosystem.

How Emsi can help

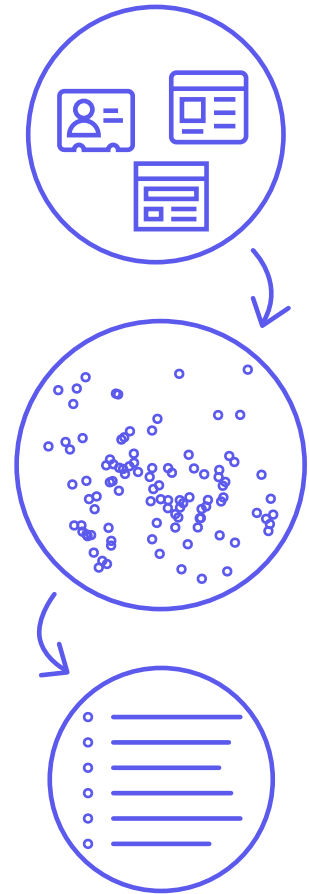
As a partner in many of the associations and initiatives mentioned earlier (OSN, T3, Velocity, and others), Emsi is a major supporter and data provider backing the development and progress of LERs. Our mission has always been connecting people, education, and work – and LERs are an important, tangible way to make that vision a reality.



To that end, we've developed an [open skills library](#) that captures the evolving lexicon of skill terms (including certifications, hard skills, and soft skills) used by today's employers in job postings, and by working professionals in online profiles. In developing this library, we prioritized several key characteristics that make it optimal for inclusion and use in LERs:

- **Machine-readable data** – Skills and their associated metadata are available in JSON format via our [free, open skills API](#). And each skill in the Emsi library has a unique, machine-readable skill ID. This is critical to interoperability, since it means that Emsi skills can be incorporated into a wide variety of other platforms and tools that may be included in an institution's LER tech stack. It also facilitates powerful integrations with platforms like [Badgr](#), a leading provider of digital badges and micro-credentials. Through this integration, [institutions can easily embed credentials with Emsi skills](#), equipping learners with a transparent, shareable record of the skills associated with their learning achievement.

- **Real-world foundation, expert curation** – To create and maintain our skills library, we’ve gathered over 30,000 skills from hundreds of millions of online job postings, professional profiles, and resumes. We also meticulously clean and fact-check each skill before adding it to the library. Updates are made every two weeks to ensure the library continues to capture the ongoing conversation between employers and learners about the skills they have or need.
- **Connected to the labor market** – The skill library is not just a list of terms. Each skill is connected to relevant labor market insight, including the top job titles and companies posting for that skill, the job postings trend line over the last twelve months, and even specific, live job postings requesting that skill. Some of this data is available on [public skill pages](#) that also include an open-sourced definition from Wikipedia, along with related skills that frequently appear in similar job postings and profiles. All of this context helps learners and educators see and share the market-relevance of each skill.



Hope on the horizon

In the midst of a challenging year, accelerated progress towards more comprehensive, interoperable learning and employment records is a silver lining. It demonstrates the capacity of educators, employers, and policy makers to adapt and innovate for the good of individual learners, and the broader economy.

While there are still technical and operational barriers to be overcome, there is a growing consensus that real change is on the horizon. As the LER movement grows, we have reason to look forward to a more efficient, equitable learning-and-hiring ecosystem for all.



CONCLUDING THOUGHTS

The Language of Skills: A New Tool for an Unchanging Mission

Higher education has long played a vital role as a gateway to opportunity, helping learners discover and develop new skills, new knowledge, and new pathways for life and work. As the economy evolves and new technology emerges, the tools and tactics of this work must adapt with the times. But the fundamental mission remains unchanged.

That's why we believe a skill-based approach to higher education is so important. At a time when learners of all ages and backgrounds are looking for efficient upskilling and reskilling pathways (and employers are increasingly focused on skills in hiring decisions) higher education must adapt to describe learning achievements in these same terms. Adopting this language of skills gives colleges and universities a more powerful, precise way to connect people, education, and work. As a result, institutions of all types and sizes can better align programs with employer needs and help learners get the education they need to achieve their goals.

About Emsi

Emsi provides colleges and universities with labor market data that helps create better outcomes for students, businesses, and communities. Hundreds of institutions use Emsi to align programs with regional needs, drive enrollment, connect students with in-demand careers, track their alumni's employment outcomes, and demonstrate their institution's economic impact on their region. Visit economicmodeling.com/higher-education to learn more or [connect with us](#).



SKILLS REQUIRED

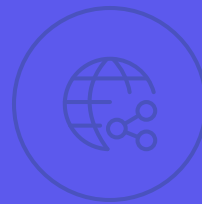
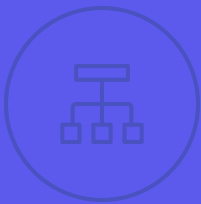
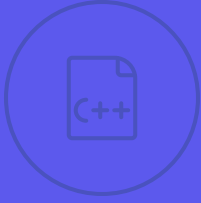
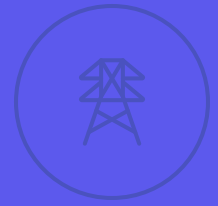
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