

Chapter 5

Brought, Sought, and Taught: Toward a System of Skill- Driven Applications

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ABSTRACT

Skillification is a powerful concept that can drive better outcomes for students, employers, and institutions of higher education (IHEs). Successful use, however, requires IHEs to adopt a systems thinking mindset more than developing a singular taxonomy or exquisite model. Creating a system of skill-driven applications assumes that universities have rich input language that can be translated to skills without extraordinary investment or effort and can do that translation many times over using different algorithms created by different providers as their application needs warrants. Two tests conducted at Northeastern University offer guidance on how to approach this new design: by affirming the feasibility of using syllabi as input for automated skill extraction and identifying data evaluation activity that drives better decisions about third-party partnerships and skill-driven application use.

INTRODUCTION

Continuously building connections between academic curricula and the skills employers need is an imperative for institutions of higher education (IHEs). An overwhelming percentage of workers consider continuous skills development as either important or essential to future career success (Rainie, 2018), and many believe high demand skills correlate to higher paying jobs (Clayton & Torpoe-Sabey, 2021). For those areas of IHEs that primarily serve working adults and historically underrepresented and underserved populations, this imperative is especially urgent. Providing learners with appropriate opportunities to develop and apply skills is not just a trend, it is fundamental to creating a more inclusive prosperity.

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As IHEs strive to accomplish this mission, a good starting point is to explicitly associate learning content and activities with the skill(s) they address, a process we will follow Lightcast (2021) and refer to as “**skillification**.” Once identified, the skills from a curriculum can be used as a connector to other things that have been similarly tagged (Lee, 2005; Sodhi & Son, 2010; Zhang & Zhang, 2012). In one such example, Western Governors University and Central New Mexico Community College defined skills taught in courses which were then mapped to skills identified by the National Institute of Cybersecurity as meaningful for cybersecurity professionals. As students completed courses, the associated skills they had gained were stored in a Learning Credential Network blockchain created by IBM and used in career counseling as they explored their job potential (America Workforce Policy Advisory Board Digital Infrastructure Working Group, 2020).

What is most intriguing about applications like the one from IBM is that skills appear to be a unit of information that can be extracted from a number of experiences and can power a broad range of solutions. In addition to helping students find jobs relevant to their education, matching skills between jobs and courses can help IHEs keep curriculum current with market needs or guide course recommendations relevant to a student’s job goals. Clear articulation of which skills are taught at which points in a course can be used to dissect courses into smaller units that can be stacked differently for different learner populations as context warrants. Identifying skills can facilitate a model for thinking about how to value real-world experience in lieu of classroom learning, which is useful in awarding prior learning credit. It also offers an easy way to connect the curriculum of one IHE to another to support credit transfer in a more streamlined and consistent manner.

Despite the great potential, however, it is not yet clear that there is widespread use of skill identification for the sorts of applications we have just imagined. Defining and mapping skills in a curriculum can be daunting for an IHE. The level of intentionality that identifying the relationships between skills and coursework calls for is far greater and significantly more time consuming than typical curriculum development approaches (Joyner, 2016; Wang, 2015). Skill identification by faculty is often painstaking and, even worse, occasionally inconsistent (Britton, et al., 2008). Once mapping has occurred, documentation of that work generally lives in disconnected spreadsheets which can be cumbersome to access. Limited access makes it difficult for faculty and students to use skills information on a regular basis. It also makes it less likely that information will be updated regularly, a problem which can be especially damaging in disciplines where knowledge and needed skills are constantly evolving (D’Orio, 2019).

Solutions which seek to mitigate mapping and usage concerns through algorithmic identification of skills and easy access from a database constitute an improvement but are often bespoke projects driven by computer science researchers (Almaleh et al., 2019; Tavakoli et al., 2020). The models which define how lexical terms are elevated to skill status tend to be narrowly focused due to their exploratory nature and are built as discrete standalone solutions that will require ongoing investment from a university to maintain. Increasingly, universities can avoid expensive investment in limited, resource-hungry technology projects by leveraging a burgeoning ecosystem of third-party options. The explosion of online job boards has created rich datasets with skills information driven by actual employer demand. Companies, like Lightcast, have developed systems that parse this information into a skills taxonomy and have built tools to help users sift through connections between courses and jobs. Some organizations offering to store an individual’s lifetime of learning, such as iDatify, standardize the inputs they receive into “smart resumes,” effectively creating a skills taxonomy. Nonprofit consortia like Open Skills Network or the T3 Innovation Network promote a set of standardized “skill descriptors,” itself a comprehensive taxonomy, for use by all network members. In addition, increasing reliance on human resource management soft-

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