Higher Education Quality Council of Ontario

An agency of the Government of Ontario

Evaluating Lynda.com Platform Usage: An Analysis of 2018–19 User Data

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Published by

The Higher Education Quality Council of Ontario

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Cite this publication in the following format:

Pichette, J., Brumwell, S. & McKeown, J. (2019). *Evaluating Lynda.com Platform Usage: An Analysis of 2018–19 User Data.* Toronto: Higher Education Quality Council of Ontario.

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Acknowledgments

We would like to acknowledge the institutions who supported this evaluation by participating as validators, namely St. Lawrence College, Ryerson University, Fanshawe College and Centennial College.

We would also like to thank the ethics boards at each Ontario institution for their careful review of our study, and the staff who volunteered as principal investigators and liaisons. Special thanks to the staff at the University of Toronto, Ryerson University and Sheridan College who provided support early in the ethics review process.

Finally, we would like to acknowledge the LinkedIn staff who assisted institutions throughout the data integration process.

Executive Summary

How and to what extent are students at Ontario's public colleges and universities utilizing a provincially funded blanket licence to Lynda.com? That's the question at the heart of this report, which summarizes an analysis of Lynda.com usage data collected during the 2018–19 school year.

Over the course of one academic year, nearly 80,000 students, faculty and staff accessed Lynda.com, a skills-focused online learning platform, via the provincial pilot licence. Approximately 80% of those users were students, representing 6.7% of eligible Ontario students, or about 10% of all college students and 5% of all university students currently enrolled in the province.

The Ontario government provided the blanket licence to all publicly funded universities and colleges to Lynda.com to improve the job readiness of Ontario students. The three-year pilot licence began in 2017 and expires in December 2020. Our analysis focuses on a snapshot, one academic year, of the pilot.

While less than a quarter of users completed a full course during the academic year we analyzed, a small group of users completed an average of 16 courses each. This group, which we nicknamed "power users," accounted for almost 24% of all course completions. Users were concentrated in business, engineering and technology-related disciplines and were primarily accessing content linked to professional skills — computer science and software skills, as well as technical skills specific to given professions or hobbies. Excel Essential Training was the most popular course.

While we can't say what is driving use or non-use of the platform, we note that disciplines with higher proportions of faculty usage also had higher proportions of student usage. Additionally, college students appear to be using the tool slightly more than university students.

Gaining more insight into these findings and other questions about how the platform is being used would require more and better data. Working with institutions as advisers and research partners, we were able to integrate information that added nuance and credibility to this study. Still, there are significant gaps in the data available for this study: We could not tell whether 30% of users were students, faculty or staff, and we did not know the disciplines of 50% of users in the sample.

Reflecting on the process of conducting this evaluation and the findings it produced, we highlight the following lessons for government:

From the data:

- Most potential beneficiaries of the blanket licence did not engage with the Lynda.com platform over the 2018–19 academic year, though a small group accessed the platform frequently during that time.

- Lynda.com is predominantly being used to supplement the postsecondary experience, developing professional skills such as computer science, software skills and other technical, discipline-specific skills. It is being used less so to develop the skills that students perceive themselves to be deficient in, such as business etiquette and transferable skills like leadership or teamwork.

From the evaluation process:

- Government should consider evaluation from the outset of any large investment decision, especially pilot projects, so that all necessary information is reliably collected.
- Institutional engagement and participation are essential to a productive evaluation of this kind.

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Introduction

As media headlines and employer surveys call attention to perceived skills gaps and mismatches, Ontario's postsecondary institutions are being asked to show evidence of job-ready graduates, with the skills needed to succeed in today's workplaces.

One attempt to improve the job-readiness of Ontario postsecondary graduates was the provision of a blanket licence for all publicly funded colleges and universities to Lynda.com (now LinkedIn Learning), a skills-focused online learning platform owned by LinkedIn Corporation. The three-year pilot licence, funded by the Ontario government, began in 2017 and expires in December 2020. Leading up to that expiration, the government will need to make an informed decision about whether to extend access to the platform.

With a mandate to assess and make recommendations concerning the quality of the postsecondary experience, HEQCO was tasked with evaluating how well this licence is serving students. In partnership with eCampusOntario, a government-funded agency that focuses on online learning, we designed a three-part evaluation to understand whether universal student access to Lynda.com can help address a perceived skills gap among postsecondary students in Ontario.

The first step in this multi-year evaluation was to seek input from students about their skills, including their interest in online skills development. At the time, there were several employer surveys and studies suggesting evidence of a skills gap (Institute for Competitiveness and Prosperity, 2017; Morneau Shepell, 2018; NACE, 2018), but we found the student perspective lacking. So, we sought to answer the question: From a student perspective, is there a perceived skills gap and what does it look like?[1]

The second component of the evaluation, and the focus of this report, is an analysis of Lynda.com usage data. The research questions guiding this aspect of the evaluation are: How and to what extent are students utilizing Lynda.com content? And how does that relate to faculty and staff usage?

The third and final aspect of our evaluation will draw on experimental evidence gathered by a research partner at the University of Toronto to understand how participation in specific Lynda.com courses (about business etiquette, for example) relates to student outcomes (e.g., their interview performance and success securing a co-op placement).

Taken together the three components of our evaluation will paint a picture of whether Lynda.com resources address perceived skills gaps among Ontario college and university students.

[1] The results can be found in *Minding the Gap? Ontario Postsecondary Students' Perceptions on the State of Their Skills* (Lenarcic Biss & Pichette, 2018).

What is Lynda.com? ***Source: LinkedIn, 2019***

Lynda.com is a leading online learning platform designed to teach software, creative and business skills. Members receive unlimited access to a vast library of high-quality, current and engaging video tutorials taught by teachers who are also working professionals.

The platform is built on three core pillars:

- *World-class content*: A library of 5,000+ digital courses taught by industry experts, covering a wide range of business, creative and technical topics, from leadership "soft skills" to design principles to programming. At least 25 courses are added each week. In addition to English language content, the platform offers 1,000 top courses in German, Spanish, Japanese and French.
- *Data-driven personalization*: The platform creates personalized recommendations, so learners can efficiently discover which courses are most relevant to their goals or job function.
- *Anytime, anywhere convenience*: Learning content is broken into bite-sized segments that can be viewed anytime, on any device, both online and offline. Additionally, educators can integrate content into existing courses and programs, through any learning management system.

The content available on the platform covers three main areas of expertise: business skills, IT training and creative skills training.

Study Design

This report summarizes a snapshot analysis of Lynda.com usage data collected during the 2018–19 school year. It seeks to answer the question: How and to what extent are students, faculty and staff utilizing Lynda.com content?

The methodology was designed by HEQCO in collaboration with eCampusOntario and reflects consultations with staff at several Ontario colleges and universities. The data, transferred from LinkedIn to HEQCO, was stripped of all personal information so that HEQCO could not identify individual users, and was validated against data transferred from four volunteer institutions. To ensure the project adhered to the federal Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans, HEQCO sought and received clearance from all 44 of Ontario's publicly funded college and university ethics boards.

More details on the study design are included in the Methodology section in the Appendix.

Limitations and Considerations

When reading the findings summarized in this report, it is important to be mindful of a few things:

1. Actual numbers may be higher than reported.
    - The data set does not indicate if Lynda.com courses are viewed by multiple users, meaning we cannot know how many people may have viewed a course as a group. For example, what appears in the data set as an individual's activity, in some instances, may have been a group of staff members in a professional development session, or a faculty member showing a video to hundreds of students as part of a lecture.
    - A small number of institutions provided users the option of removing their data from the study. These users were removed prior to LinkedIn transferring data to us.
    - We count a course as "completed" if the video ran from start to finish. Even though users may not have viewed an entire course, they could have consumed most of the content by reading the course transcript. We have no way of knowing if that's the case, so the actual number of "completed" courses may be higher than that reported. At the same time, we recognize that a video playing from start to finish does not confirm that the learner was watching the video or reading the content.
2. Some users may have had multiple affiliations at their institutions, which would not be reflected in the data. For example, a staff member who may be enrolled as a student would only appear as either staff or student.
3. We caution readers against drawing conclusions about the quality (or effectiveness) of the Lynda.com or LinkedIn Learning platform based on these findings. Though we do report on the skills associated with courses (that is, the skills that LinkedIn purports to develop through the material), without valid and reliable assessments accompanying the learning material, we cannot know whether a user has actually developed the skills associated with the content. Nor can we understand a user's intentions. We cannot know, for example, whether the content served to develop the skills a user set out to develop, or whether potential users were able to find the content they were looking for.
4. When Ontario secured the blanket licence, Lynda.com was in the process of being relaunched as LinkedIn Learning, "offering additional functionality and content" (LinkedIn, 2019). LinkedIn has assured the research team at HEQCO that no institution was upgraded from Lynda.com to LinkedIn Learning until the data collection for this study was completed. That is, all users had access to the same Lynda.com platform for the duration of the study period.

5. This is a snapshot of a broader pilot initiative. The pilot licence began in December 2017 and expires in December 2020. Our analysis examines one academic year during that timeframe. LinkedIn has reported more than 300,000 users of the pilot blanket licence to date (Petrone, 2019).

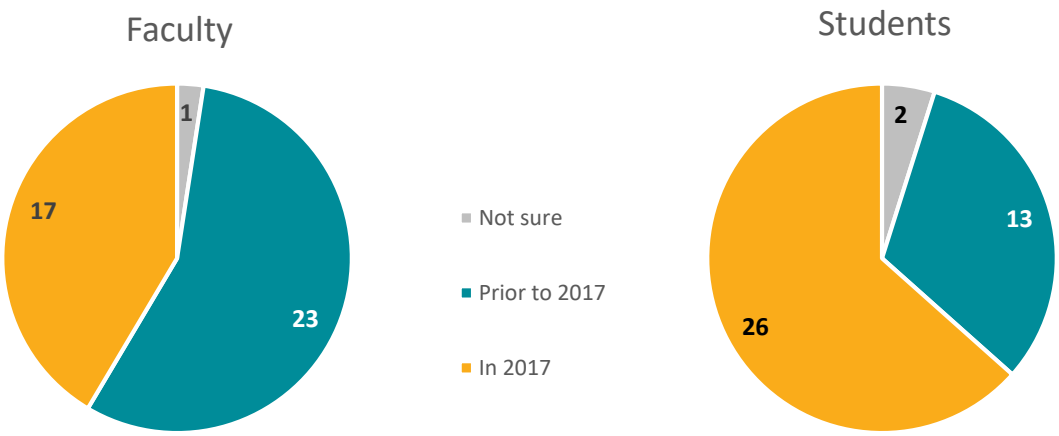
Context

To put the findings described in this report in context, we invited LinkedIn to submit a description of the Lynda.com platform, its quality assurance process and the skills taxonomy that we rely on for some of our analysis. The content they provided is found in information boxes throughout this report.

For additional context, we conducted a survey of institutions, asking about any communications practices relating to Lynda.com and history of institutional access to the platform.

Based on responses from 41 institutions, we found that prior to gaining universal access to Lynda.com in 2017, about half of institutions reported having had access to the platform for their faculty and staff (Figure 1). About 30% of institutions reported having access to Lynda.com for their students prior to the availability of the blanket licence. Previous experience using Lynda.com did not appear to have significantly affected usage levels in the 2018–19 academic year.[2]

Figure 1: Ontario Institutions' Access to Lynda.com



n = 41

Most institutions reported using some form of broadly targeted communications to raise student awareness of the free licence such as social media posts, website notices and print materials (e.g., posters, brochures,

[2] To assess whether there was a difference in usage between institutions who acquired access to Lynda.com prior to 2017 versus those who acquired it under the 2017 licence, we compared the number of completions per user across three groups: (1) institutions who acquired access for students and faculty prior to 2017, (2) institutions who acquired access for faculty prior to 2017 and access for students in 2017, and (3) institutions who acquired access for both groups in 2017. We found that the point at which students and faculty acquired Lynda.com access does not appear to have affected the median number of courses completed per user (Kruskal-Wallis H test (α=0.05), $\chi 2(2) = 1.733$, $p = 0.4203$). We could not reliably compare the total number of users because of the variations in institution size and promotional strategies for Lynda.com.

etc.). Roughly 70% of institutions said they sent direct messages to at least some students, primarily by email or through a Learning Management System.

Our survey found that the potential uses of Lynda.com most commonly relayed to students through institutional communications were (in order):

1. To supplement classroom learning
2. To support professional/technical skills development
3. For interest and/or pleasure

In communications with faculty and staff, there was more variability in the potential uses that were relayed. This included, for example, to support professional development; to support instruction; for interest and/or pleasure; and for developing the knowledge and/or skills of students.

How does LinkedIn assure the quality of content on its platform? ***Source: LinkedIn, 2019***

The following steps are taken to assure quality:

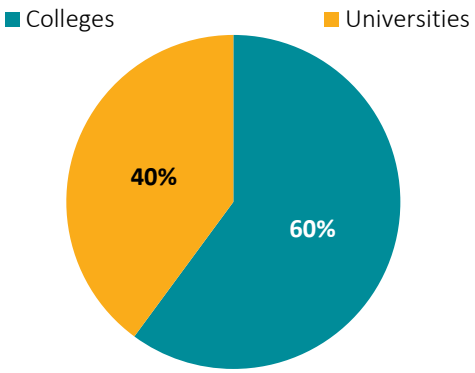
- Teams of content strategists craft plans for each subject in the Lynda.com/ LinkedIn Learning library.
- A rigorous author vetting process ensures domain knowledge is complimented by 5 C's:
    1. *Conviction*: The author's ability to passionately convey their expertise in the video medium.
    2. *Compassion*: The author's ability to take the viewers' perspective and recognize their needs as a learner.
    3. *Choreography*: The author's ability to make the complex simple, aided by our instructional designers.
    4. *Context*: The author's ability to provide necessary framing, to explain the "why" of something, not just the how.
    5. *Credibility*: The author's real-world expertise.
- A third-party testing organization ensures all courses meet specific guidelines. When a tester is selected to review LinkedIn/Lynda.com content, that tester goes through a detailed training program administered by the testing organization to ensure he/she has the necessary knowledge to effectively recognize and report issues. The courses are tested both for instructional quality and content quality. If problems are discovered, the editor and producer work together, if necessary, to address issues through additional editing, additional recordings from the author, or required fixes to any exercise files provided. Once all issues are resolved, the course is deemed ready for publication.

Findings

Users of the Blanket Licence

Over the course of the 2018–19 academic school year, nearly 80,000 students, faculty and staff logged in to Lynda.com and made use of Ontario's blanket licence. About 60% of these users came from the college sector (Figure 2) and 40% from the university sector.

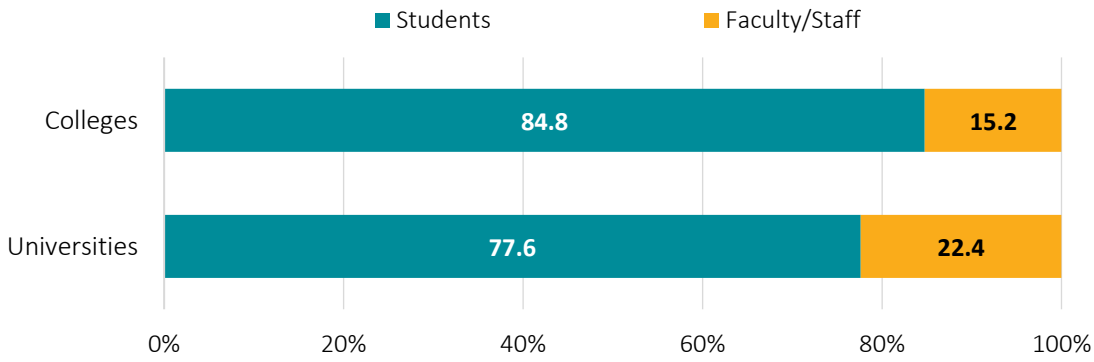
Figure 2: Distinct Lynda.com Users by Institution Type



Distinct users, n = 79,818. Excluding institutions that attained only minimal Lynda.com participation (n = 2).

Of those users whose affiliation is known, approximately 80% were students. The proportion of student users was slightly higher at colleges (85%) than at universities (78%) (Figure 3).

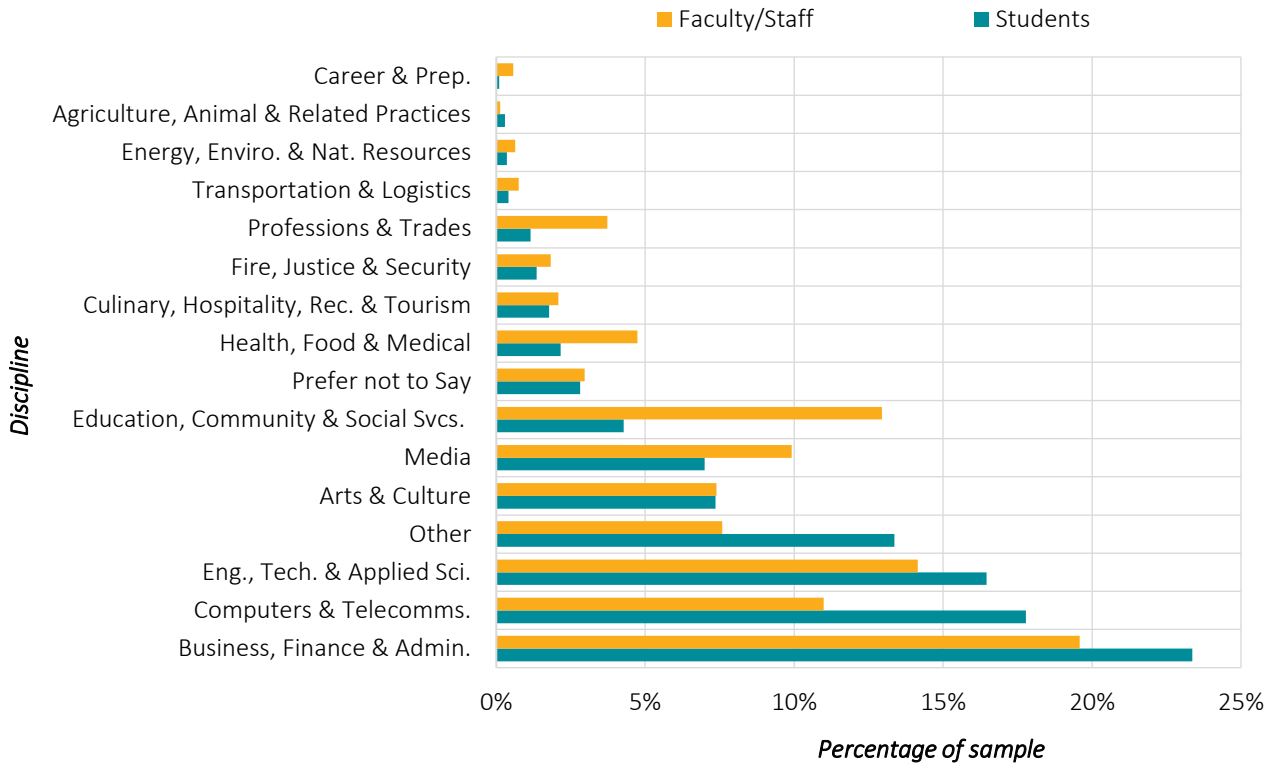
Figure 3: Distinct Users by Institution Type and Affiliation



College users, n = 29,951. University users, n = 25394. Excluding users from both institution types for whom no affiliation data was provided (n = 24,473). Excluding institutions that attained only minimal Lynda.com participation (n = 2).

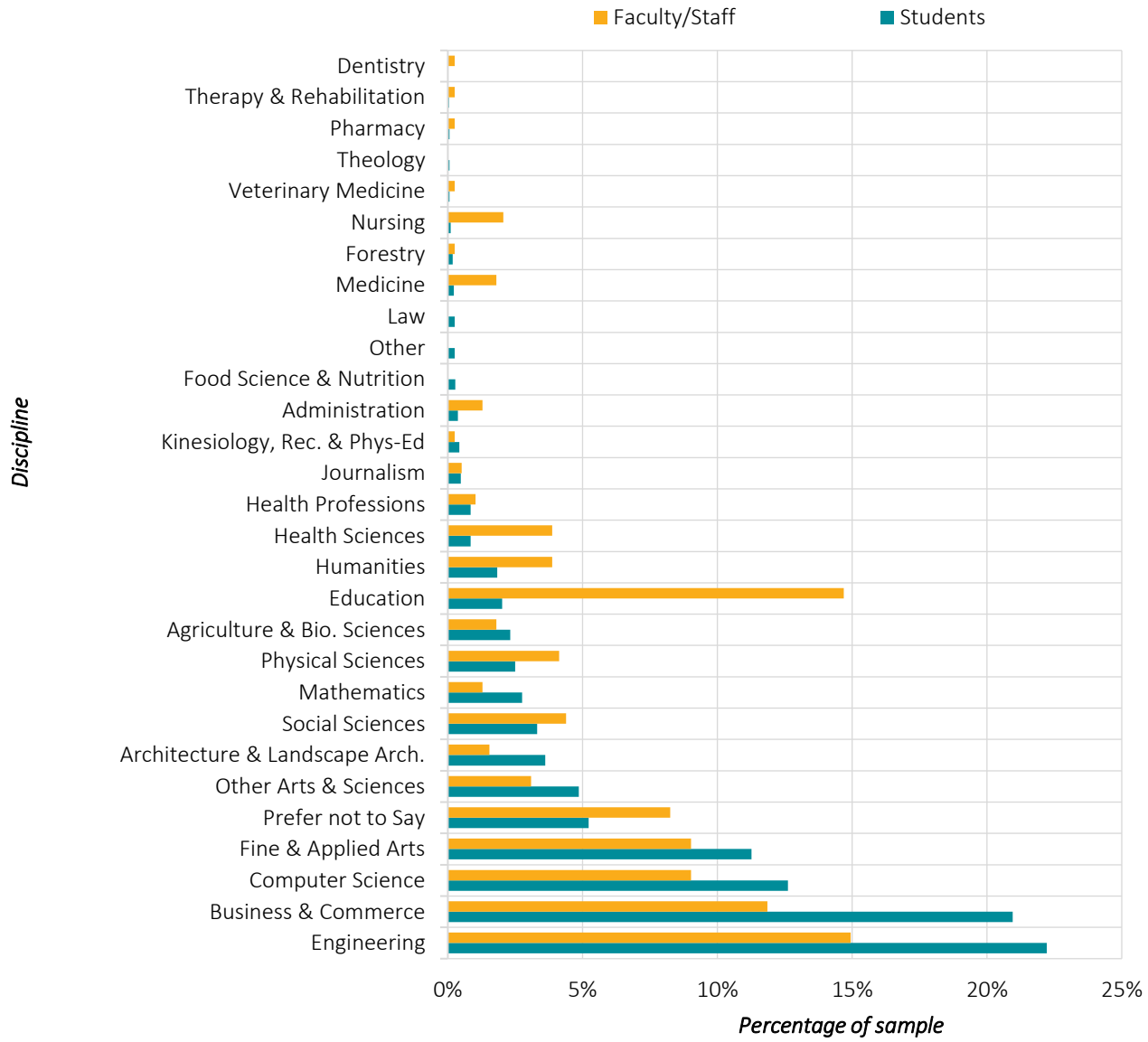
Student users were concentrated in business, engineering and technology-related fields, as depicted in Figures 4 (college) and 5 (university). Generally speaking, disciplines with higher proportions of faculty usage appear to have correspondingly high proportions of student usage. The education disciplines for both university and college users are notable exceptions to this trend, insofar as the proportions of faculty/staff users in these fields are much larger than the proportions of student users from the same disciplines.

Figure 4: Lynda.com College Student and Faculty/Staff Users by Discipline



Excluding institutions that did not integrate the area of work/study attribute (n = 4). Excluding users for whom area of work/study data is missing, even though their institutions integrated the attribute (n = 20,720). Excluding users whose affiliation data identified them as staff (n = 2,430).

Figure 5: Lynda.com University Student and Faculty/Staff Users by Discipline



Excluding institutions that attained only minimal Lynda.com participation (n = 2). Excluding institutions that did not integrate the area of work/study attribute (n = 3). Excluding users for whom area of work/study data is missing, even though their institutions integrated the attribute (n = 7,089). Excluding users whose affiliation data identified them as staff (n = 4,456).

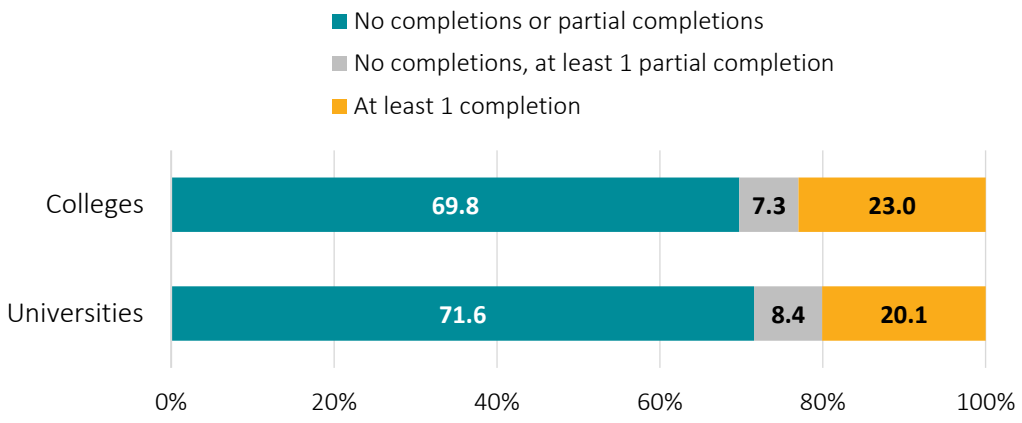
Course Completions

Videos, Courses and Learning Paths ***Source: LinkedIn, 2019***

Lynda.com videos are short, focused tutorials that are typically between two and 10 minutes long. Courses are compilations of videos, related to a particular topic and presented in a suggested order for viewing. Roughly 25% of Lynda.com courses can be completed in less than an hour and ~80% of courses can be completed in less than three hours. Learning paths are bundles of courses, which either relate to a similar topic or align with a particular career goal (e.g., Improve your drawing skills, Become a cloud developer), and typically require several hours to complete.

As is shown in Figure 6, less than a quarter of users completed a full course. The typical user started a couple of courses but did not complete them.[3]

Figure 6: Distinct Users by Institution Type and Level of Engagement with Lynda.com

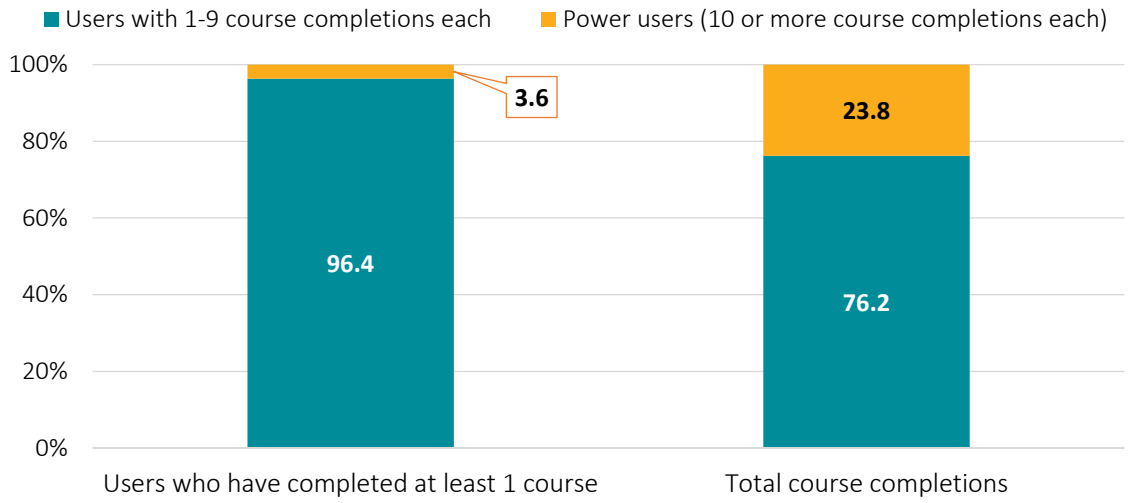


Partial completion = User completed 50%–99% of a course but did not complete it entirely.
Distinct users, n = 79,818. Includes students, faculty/staff and users for whom affiliation data is missing or indeterminate. Excluding institutions that attained only minimal Lynda.com participation (n = 2).

[3] College users (n = 47,986): The median number of courses started was two, and the median number of courses completed was one. University users (n = 31,832): The median number of courses started was two, and the median number of courses completed was one. Outliers (n = 15) were excluded from these calculations.

A small group of users, whom we nicknamed "power users," stood out as having completed many more courses than the rest of the sample.[4] While these users made up just under 4% of the users who completed a course (Figure 7), they accounted for almost 24% of all course completions — completing an average of 16 courses each.

Figure 7: Distinct Users Who Completed at Least One Course



*Power users (10 or more completions each), n = 634. Users with 1–9 course completions each, n = 16,765. Power users are users whose total number of courses completed exceeds the upper fence of the distribution, e.g., n(Courses completed) > Q3 + (3 * IQR). Excluding institutions that attained only minimal Lynda.com participation (n = 2). Excluding users who did not complete any courses (n = 62,579). Excluding outliers (n = 15).*

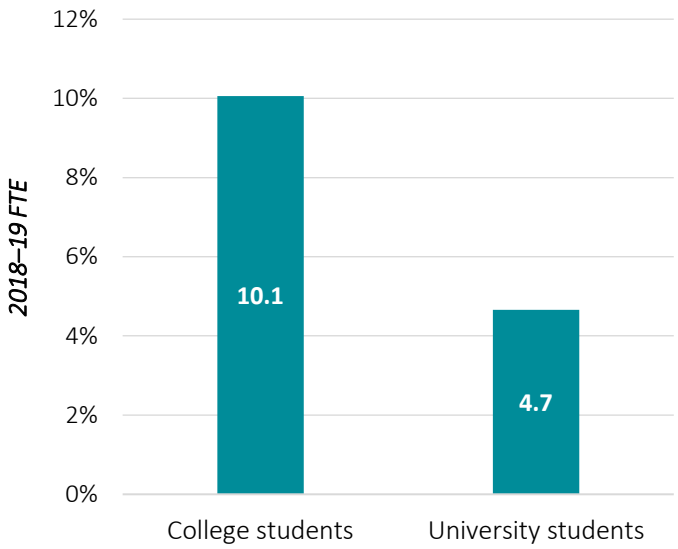
More power users are associated with colleges than universities and the majority are students (see Figure 16 in the Appendix). We also observed that student power users were, similar to all student users (see Figures 12 and 13), concentrated in business and commerce, computer science and engineering — i.e., "power disciplines."

[4] "Power users" are users whose total number of courses started or completed exceeded the upper fence of the distribution, e.g., n(Courses completed) > Q3 + (3 * IQR). Specifically, these users have each completed 10 courses or more.

Users Relative to Enrolment

Looking at these usage numbers relative to provincial enrolments, 6.7% of eligible Ontario students have made use of the blanket licence. That's about 10% of eligible college students and 5% of eligible university students. About 1.5% of eligible Ontario students completed at least one course (see Figure 17 in the Appendix).

Figure 8: Lynda.com Student Users by Institution Type, as a Percentage of 2018–19 Full-time Enrolment



Excluding institutions that attained only minimal Lynda.com participation (n = 2) and/or did not integrate the affiliation attribute (n = 3). Excluding users for whom affiliation data is missing or indeterminate (n = 19,844).

Included colleges, n = 22. 2018–19 FTE headcounts for included colleges, n = 252,503.

Included universities, n = 17. 2018–19 FTE headcounts for included universities, n = 423,045.

2018–19 FTE headcount data provided by the Ministry of Training, Colleges and Universities.

What is the Skills Taxonomy? ***Source: LinkedIn, 2019***

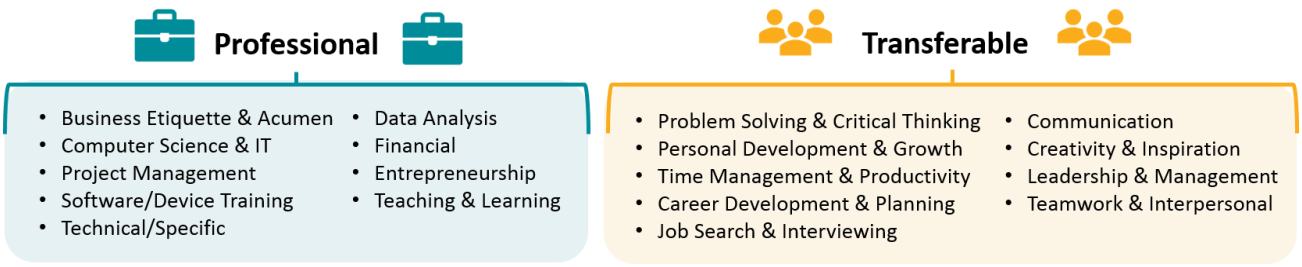
The Lynda.com, now LinkedIn Learning, taxonomy is skill-oriented and learning-oriented. At its most-specific level, it mirrors discrete job skills, hard and soft. The taxonomy is deliberately designed by our content experts and taxonomy team to incorporate all the skills covered in our library, and our content is deliberately tagged with our taxonomy topics. Each course is hand tagged, based on the idea that the content teaches the skills represented by the tags — i.e., delivers on the core learning promise, "Take this course to add or improve on this skill." In fact, we map our taxonomy tags to LinkedIn profile skills, and members have the option to add the skills taught in a course to their profile upon course completion.

User Interactions with the Platform

We examined user interactions by looking at the total number of course starts by users in the sample, as opposed to a headcount of users themselves. This approach permits a more nuanced analysis of user interactions, as in some cases a single user started more than one course in more than one skill category.

We relied on a taxonomy provided by LinkedIn to examine the skills associated with each course in the sample. We then grouped these skills into categories for analysis that aligned with our earlier student perceptions research (see Figure 9).[5] Our subsequent analysis revealed that most user interactions were linked to professional skills (see Figures 10 and 11). In particular, users were viewing content linked to software training skills (through courses like Microsoft Word Essential Training or Learning Salesforce), technical skills specific to a discipline or profession (through courses like Game Design Foundations; Human Resources: Running Company Onboarding; Revit Architecture: Advanced Modeling), and computer science or information technology skills (e.g., Learning Java; Cybersecurity for IT Professionals). The distribution was similar across college and university samples (see Figures 18 and 19 in the Appendix).

Figure 9: Skill Categories



[5] As a first step in this multi-year evaluation, we sought to understand student perceptions of the state of their skills and their appetite for online skills development. We surveyed 6,360 Ontario postsecondary students and conducted three in-person focus groups during the spring and fall of 2018. (Lenarcic Biss & Pichette, 2018)

Table 1 lists the most popular courses among users and highlights the skill categories associated with them. Excel Essential Training was the most popular course for all affiliations.

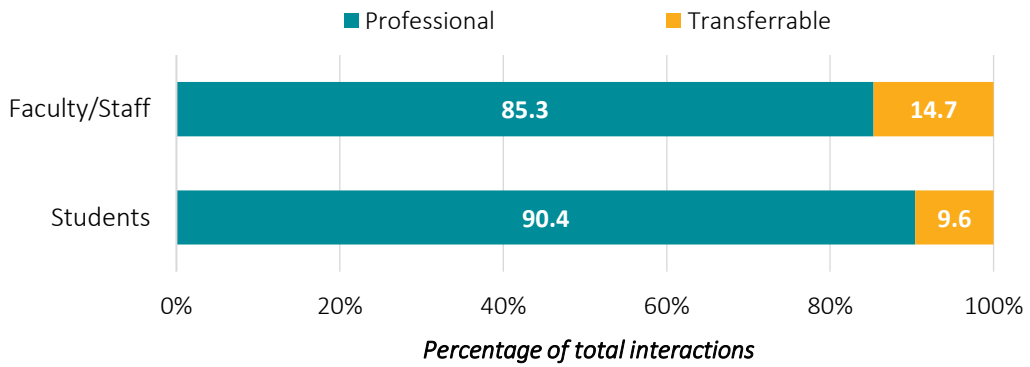
Table 1: Top 10 Most Popular Courses:

	For Students	For Faculty & Staff
1	Excel Essential Training	Excel Essential Training
2	Learning Python	Learning Python
3	HTML Essential Training	Outlook Essential Training
4	Programming Foundations: Fundamentals	Premiere Pro Cc Essential Training: The Basics
5	AutoCAD Essential Training	Access Essential Training
6	JavaScript Essential Training	Microsoft Teams Essential Training
7	Illustrator CC Essential Training	Project Management Foundations
8	Photoshop CC Essential Training: The Basics	Time Management Fundamentals
9	Learning Java	Word Essential Training
10	SQL Essential Training	WordPress Essential Training

Software/Device Training Computer Science & IT Project/Time Management

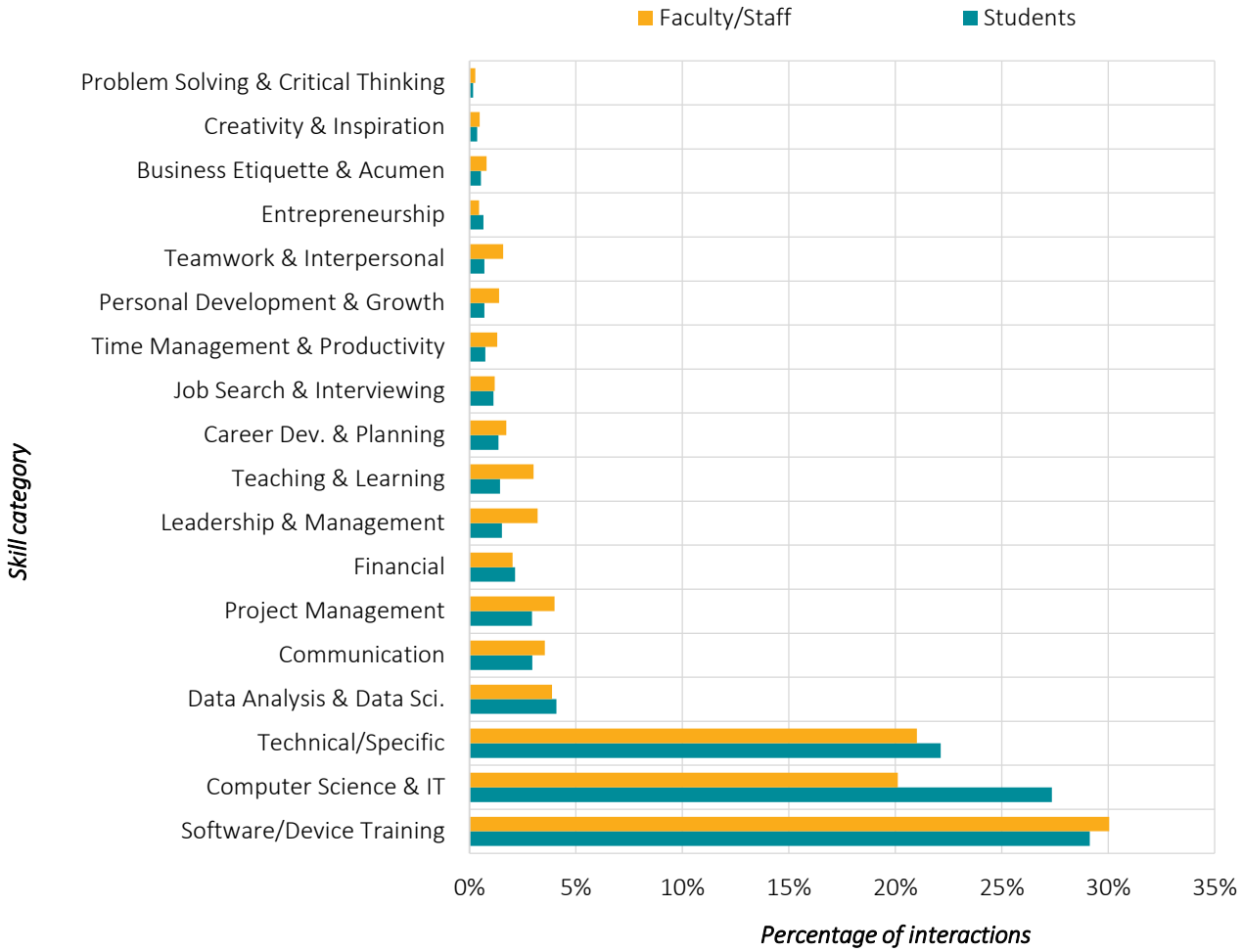
Based on a scan of available courses and context provided by LinkedIn, we note that the content on the Lynda.com platform skews toward professional skills. As noted in the limitations, we cannot know whether more users might have intended to develop transferable skills on Lynda.com and were not able to find the content they needed.

Figure 10: Total User Interactions by Skill Type and Affiliation



Total faculty/staff interactions, n = 51,007. Total student interactions, n = 208,774. Faculty/staff, n = 10,248. Students, n = 45,097. Excluding institutions that attained only minimal Lynda.com participation (n = 2). Excluding users for whom no affiliation data was provided (n = 24,473).

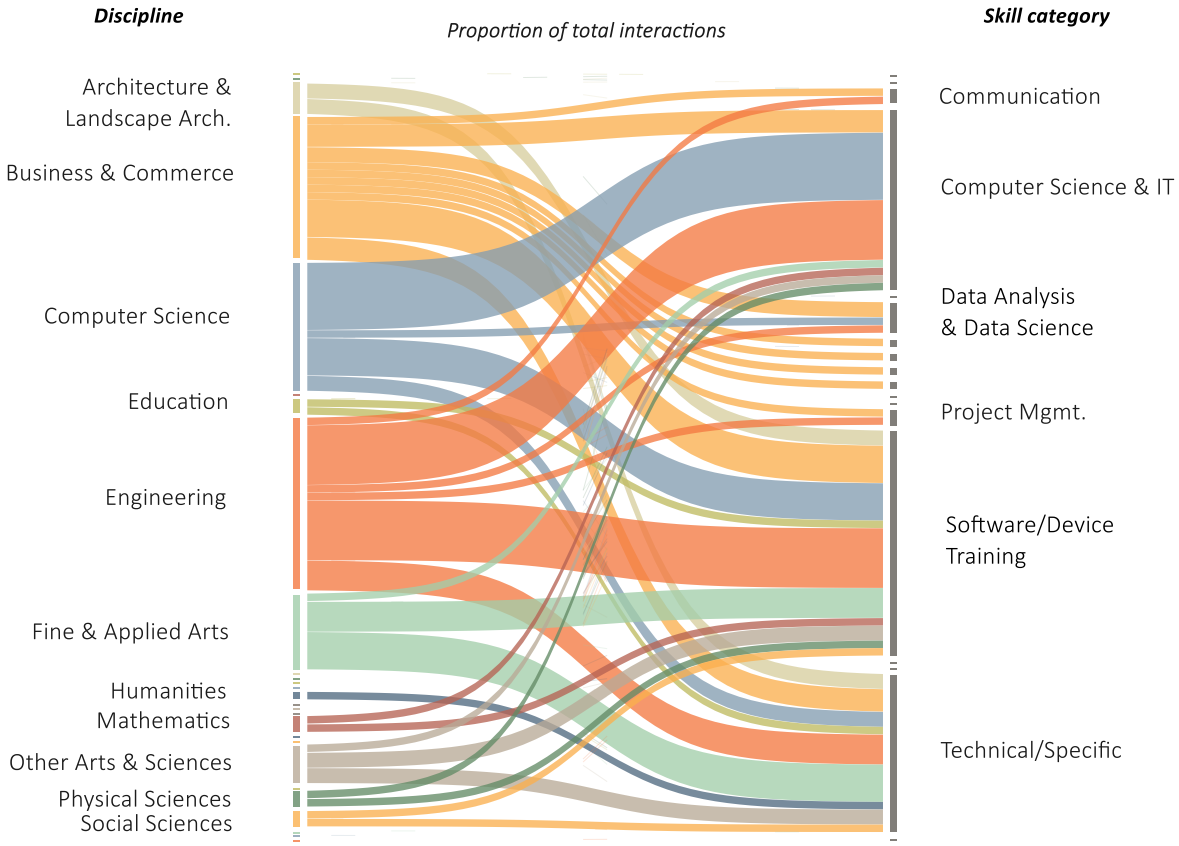
Figure 11: Total User Interactions by Skill Category and Affiliation



Total faculty/staff interactions, n = 51,007. Faculty/staff users, n = 10,248. Total student interactions, n = 208,774. Student users, n = 45,097. Excluding institutions that attained only minimal Lynda.com participation (n = 2). Excluding institutions that did not integrate the affiliation attribute (n = 3). Excluding total interactions by users whose affiliation data is missing (n(interactions) = 86,135; n(users) = 19,844).

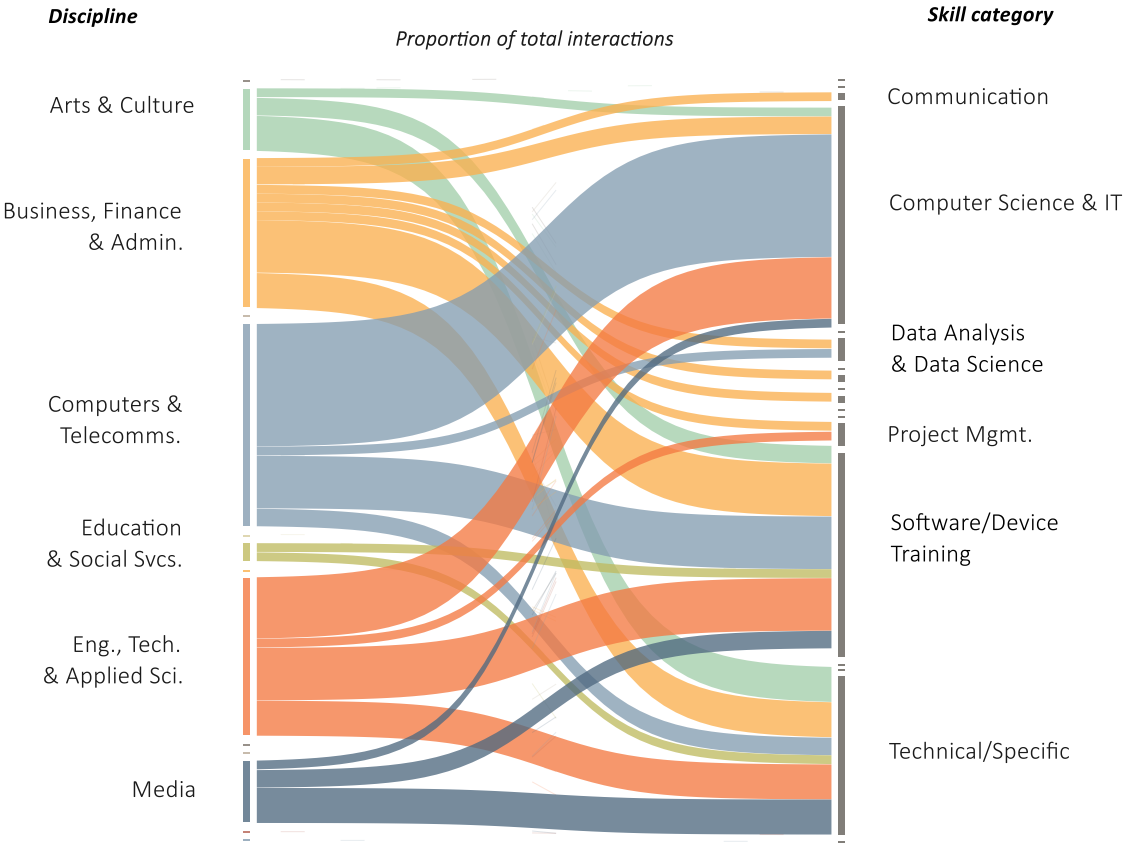
Figures 12 and 13 display total student user interactions by discipline and course skill category. The length of the coloured bars on the left and right axes reflect the proportion of total interactions. For simplicity, only the highest-proportion disciplines and skill categories are labeled in the figures (i.e., the skill categories accessed the least appear as dashes and are not labeled). Corresponding figures for university and college faculty/staff are located in the Appendix (Figures 20 and 21).

Figure 12: Proportion of Total University Student Interactions by User's Discipline and Course Skill Category



University student interactions, n = 52,317. Excludes institutions that attained only minimal Lynda.com participation (n = 2). Excludes institutions that did not integrate the discipline attribute (n = 3). Excludes users whose discipline attribute was missing or indeterminate.

Figure 13: Proportion of Total College Student Interactions by User's Area of Study and Course Skill Category



College student interactions, n = 97,605. Excludes institutions that did not integrate the discipline attribute (n = 4). Excludes users whose discipline attribute was missing or indeterminate.

Institutional participation

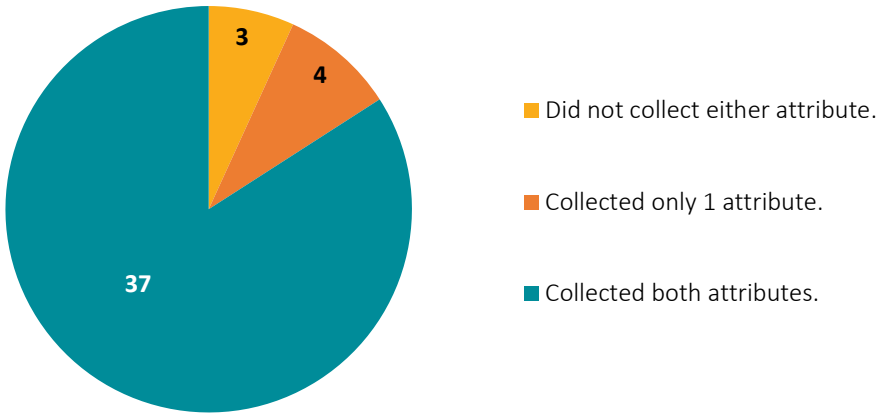
Arriving at many of the findings described above required the participation of staff at Ontario colleges and universities in a process of collecting information about user affiliation (i.e., whether the user is a student, faculty or staff) and discipline (i.e., the user's program area of study/work).

Once ethics clearance was obtained, most institutions participated in this evaluation by collecting one or both of these attributes. That said, three institutions declined to integrate both attributes, several others declined to integrate one of the two attributes and most others were significantly delayed in integrating them in part due to delays with the ethics clearance process (Figure 14). As a result of non-participation, partial participation and delayed participation, there are significant gaps in the data, as depicted in Figure 15:

- We do not know the affiliation of 30% of users in the sample
- We do not know the program area of work or study of 50% of users in the sample
- We do not know the affiliation or the area of work/study for 27% of users in the sample

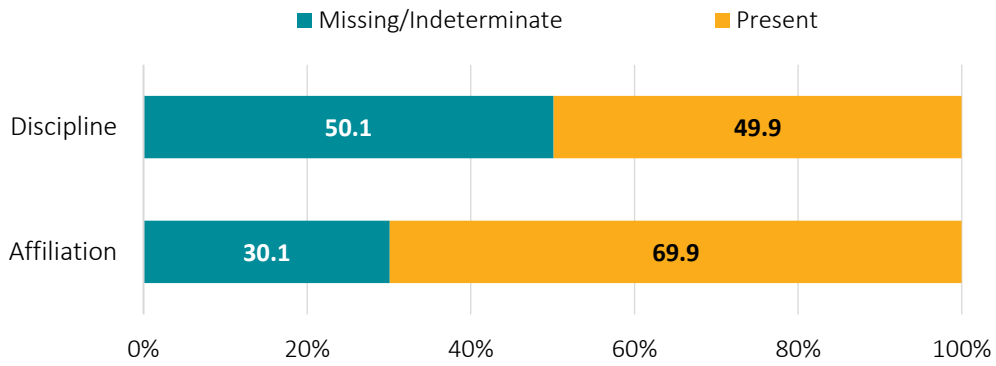
We note that the following figures do not include users that selected "Prefer not to say" when asked to identify their affiliation or discipline.

Figure 14: Level of Institutional Participation in HEQCO's Lynda.com Evaluation



Publicly funded Ontario colleges and universities, n = 44.

Figure 15: Percentage of Distinct Users by Presence of Attribute Data



Excluding institutions that attained only minimal Lynda.com participation (n = 2). Distinct Lynda.com users, n = 79,818. Distinct users for whom neither attribute was provided, n = 21,573 (27%).

Discussion

The findings described above illustrate that, over the course of the 2018–19 academic year, many (80,000) students, faculty and staff made use of Ontario's blanket Lynda.com licence. This group includes users from both colleges and universities, representing a range of disciplines. Among this group of users, a small subset seems to be deriving particular value from the platform. The group we've labeled "power users" accounts for almost 24% of all course completions.

Still, the users of Ontario's blanket licence represent only a small fraction of the sector — less than 7% of eligible Ontario students took advantage of free access to the platform over one academic year. While we can't say what is driving use or non-use of the platform, we do note that college students are using the tool slightly more than university students, that users appear to be concentrated in "power disciplines" (business and commerce, computer science, and engineering), and that disciplines with higher proportions of faculty/staff usage generally saw higher proportions of student usage.

To gain more insight into how the platform is being used, we looked at user interactions, or the total number of course starts, in connection to the skills associated with Lynda.com courses. We found users most often started courses linked with computer science and software skills as well as other technical skills specific to their discipline. It's interesting to consider these findings in relation to those from our perceptions research completed in the first phase of this evaluation. Our survey and focus groups engaged a total of 6,373 Ontario college and university students and revealed a misalignment between the skills students expect to need in the workplace and the skills they perceive as being developed during their postsecondary experience. Overall, the students surveyed were most confident that through their studies they were developing strength in skills specific to their discipline and computer-related skills (e.g., software, data analysis and IT); they were least confident that their studies were developing business etiquette skills that would position them to write effective emails or to network, or transferable skills like leadership (Lenarcic Biss & Pichette, 2018).

We note that the skills students said they felt most confident about also happen to be two areas for which Lynda.com was used the most. Indeed, it seems the blanket licence is being used more to complement skills being developed through postsecondary. As noted above, this could reflect the content available on the platform rather than the intentions of users. It could also reflect institutional messaging; our institutional survey found that Lynda.com has been marketed to students to supplement classroom learning, support professional/technical skills development and for personal interest.

Gaining more insight into these findings and other questions about how the platform is being used would require more and better data. HEQCO was engaged as an evaluator once the blanket licence to Lynda.com had been purchased and initiated. This meant that the evaluation was not thoroughly considered until after the Lynda.com portals and default data collection parameters were in place at each institution. Working with institutions as advisers and research partners, we were able to obtain additional information that added nuance and credibility to the study. Still, this additional data suffered quality issues resulting from non-, partial and delayed institutional participation.

Reflecting on the above, we believe the following lessons are worth highlighting for decision-makers as they consider renewing this licence or making other similar investments:

From the Data

1. Most potential beneficiaries of the blanket licence did not engage with the platform over the course of an academic year, though a small group accessed the platform frequently.
    - Less than 7% of eligible Ontario students took advantage of free access to the platform during the 2018–19 academic year.
    - Power users accounted for almost 24% of all course completions. It would be instructive to learn more about who these users are and what is driving their use of the platform. Knowing that these users are concentrated in power disciplines, it would also be useful to know whether there are best practices that can be learned from those disciplines to encourage usage.
2. Lynda.com is predominantly being used to develop technical, discipline-specific skills.
    - The data suggests students are using the blanket licence more so to develop professional skills such as computer science, software skills and other technical, discipline-specific skills. It is used less so to develop skills such as business etiquette and transferable skills like leadership or teamwork.
    - This raises the question: Is the tool being used to supplement skills already being developed throughout postsecondary, or to bridge a skills gap? And does that affect the utility of this investment?

From the Evaluation Process

3. Government should consider evaluation from the outset of any large investment decision, especially pilot projects, so that all necessary information is reliably collected.

- Due to data collection issues including non-participation, partial participation and delayed participation, we were unable to determine the size of student, faculty and staff user groups, or program area groups.
- More and better information could be reliably collected with a clear plan for evaluation established prior to contracting a provider and rolling out access to a platform.

4. Institutional engagement and participation are essential to a productive evaluation of this kind.
    - We engaged college and university staff early on as advisers in the study design, adding nuance and credibility to the approach.
    - We invited institutions to act as validators, supplying us with de-identified usage data files available through their institutions' Lynda.com portals, and providing extra confidence in the quality of the data provided by LinkedIn.
    - We recommend future evaluations continue this approach, drawing on the experience and expertise of the postsecondary community.

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Appendix

Methodology

This research involved the collection, transfer and secondary analysis of Lynda.com usage data, owned by LinkedIn, for the 2018–19 school year. The research design was informed by consultations with representatives at Ontario's postsecondary institutions as well as eCampusOntario.

Consultations and Ethics Clearance

Consultations with institutions added two important aspects to our study design:

First, institutional representatives were clear that our evaluation should be more nuanced than a report of the total number of users and the names of Lynda.com courses viewed; we heard that the report should distinguish between student and faculty/staff users, and explore whether users affiliated with particular programs were engaging with the material in different ways. In order to add that level of nuance, we had to work with institutions to integrate information about users, specifically whether an individual user was a student, faculty or staff, and their program area of work or study.

The second piece of advice we received during our early consultations was to seek institutional ethics board clearance from all Ontario institutions. Although we would not be recruiting any participants for this study, and users had already agreed to a privacy policy allowing LinkedIn to transfer their usage data to us, we appreciated that institutional ethics clearance would ensure the project adhered to the federal "Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans" and would facilitate a smoother data integration process. We sought and received clearance from all 44 Ontario college and university ethics boards.

Data Collection

Participants in this research project were individuals (i.e., students, faculty and staff) at Ontario postsecondary institutions who set up an account on Lynda.com through their institution's licence. Postsecondary institutions and LinkedIn had their own methods for recruiting users to set up and use their free account access on Lynda.com.

To ensure the data set that LinkedIn transferred to HEQCO was complete for the purposes of this evaluation, HEQCO requested that institutions who did not yet have two attributes integrated within their Lynda.com interface enable the collection of the missing attribute(s): affiliation (i.e., whether the user is a student, faculty or staff) and program area of study/work.

Institutions could integrate this information either by sharing the missing attributes via the filters that are passed automatically through their single sign-on connected software system,[6] or set up a one-time question for users to self-report their affiliation and/or program of work/study from a drop-down list. Institutions using drop-down questions could develop their menu or use one of the lists provided by HEQCO below.

Universities *(from COU Graduate Student Survey and CUDO)*		**Colleges** *(from OCAS)*	
• Agriculture & Bio. Sciences • Architecture & Landscape Arch. • Business & Commerce • Computer Science • Dentistry • Education • Engineering • Fine & Applied Arts • Food Science & Nutrition • Forestry • Health Professions • Humanities • Journalism • Kinesiology/Recreation/ Phys-ed	• Law • Mathematics • Medicine • Nursing • Optometry • Other Arts & Sciences • Pharmacy • Physical Sciences • Social Sciences • Theology • Therapy & Rehabilitation • Veterinary Medicine • **Prefer not to say**	• Agriculture, Animal & Related Practices • Arts & Culture • Business, Finance & Administration • Career & Preparation e.g. pre-Arts/ Business/Health • Computers & Telecommunications • Culinary, Hospitality, Recreation & Tourism • Education, Community & Social Services • Energy, Environmental & Natural Resources	• Engineering & Technology • Fire, Justice & Security • Health, Food & Medical • Media • Other • Professions & Trades • Transportation & Logistics • **Prefer not to say**

Source: Council of Ontario Universities (2018); Ontario College Application Service (n.d.)

Before integrating this information, we sought and received clearance from all 44 Ontario college and university ethics boards.

[6] This automatic integration with Lynda.com user data was leveraged by authentication with the institution's active directory.

Data transfer

The data that LinkedIn provided to HEQCO was sent via Secure File Transfer Protocol (SFTP). SFTP establishes a private, encrypted, secure network between two authorized computers. Data is only accessible for download on the network for a specified time and it is protected by an encrypted ID and password that must be authenticated.

The data was stripped of any personal information including names, emails, student ID numbers and IP addresses so that HEQCO would not be able to identify any individual identities, link them to the data or include them in the dissemination of the results. LinkedIn assigned each user within the data with a unique identifier that included their institution type (college or university) and institution name (represented by pre-determined letters of the alphabet) and a randomly generated, three-to-five-character numeric code, which together anonymized the user. Data collected by LinkedIn and provided to HEQCO was validated with a sample collected by HEQCO from self-nominated institutions.

Validation

Data transferred to HEQCO from LinkedIn was validated against data transferred from four volunteer institutions. The validation exercise was designed to identify any discrepancies in the usage data files available to institutions through the Lynda.com portal and the usage data file provided to HEQCO by LinkedIn. The institutional data files were also used to verify the completeness of the data set provided by LinkedIn. To ensure that the data validation exercise was meaningful, the participating institutions were kept confidential prior to this publication.

Communications Survey

An institutional survey was conducted beginning in January of 2019 to understand the effect that institutional-level marketing efforts and history with the platform may have had on usage. The short online survey was sent out to designated Lynda.com coordinators and administrators at each of Ontario's 44 publicly funded postsecondary institutions with a request that the survey be redirected to an appropriate staff member responsible for marketing efforts, if applicable. The survey was open for six weeks, with several reminder emails sent out to encourage completion. Representatives from 41 of 44 institutions responded.

Data Analysis

STATA 16 was used to clean, transform and analyze the data. The validation exercise, which was conducted before undertaking the final data analysis described in this report, was conducted individually for each validating institution, by comparing the usage data provided by the validating institution to the data for that institution's users in the master file from LinkedIn.[7]

The final data analysis was conducted using the individual usage data provided by LinkedIn for the 2018–19 academic year. Two institutions indicated in the communications survey that they had not yet rolled out Lynda.com on campus and had virtually no usage data beyond what we assume were a few test accounts for the majority of the study period. We excluded the users from these institutions from our analysis due to the lack of activity.

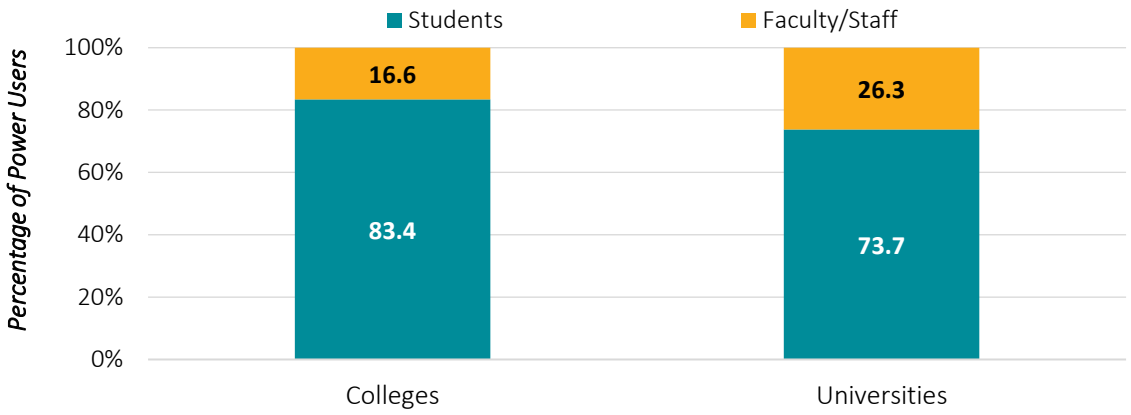
We used descriptive statistics to examine overall trends in data and summarize usage in terms of participant characteristics (e.g., institution type, user affiliation and area of work/study). Our analysis of the data in terms of skill categories was facilitated by a document provided to us by LinkedIn that listed the skills associated with each English-language course in its library. We cross-referenced the list to our data set and used the LinkedIn skills to categorize the data according to the skills categories laid out in the student perceptions survey.

Given the inconsistencies in the collection and quality of the attribute data by the participating institutions, in addition to the lack of sampling controls, we have refrained from exploring the statistical significance of the results.

[7] Our approach to the validation exercise was shaped by the fact that LinkedIn and the validating institutions had different methods of assigning the anonymous unique identifiers to users. Though the validators followed our instructions for assigning the unique identifiers, we cannot be sure that LinkedIn used the same procedure. If LinkedIn assigned the unique identifiers in a truly random way — and not by sorting users alphabetically and then assigning each one a unique, sequential number from one onward — we could not assign secondary unique identifiers to users in the master data that could be used to link the master and validation files at the user, or 1:1, level. Our solution was to limit the analysis to users who had completed at least one course between September 1, 2018 and June 1, 2019. Further, since a 1:1 link of the master and validation files was not possible, we conducted the validation by comparing total counts for the period (e.g., number of distinct users, number of course completions, etc.) across the master and validation files. We also conducted several statistical tests to examine and compare the distributions of distinct users by course completion counts in the validation and master data sets. These tests were conducted at the institution level. We used Brown-Forsythe's robust test of equality of variance (Modified Levene's test) to determine whether the distributions had the same variability. If the Brown-Forsythe robust test confirmed that the distributions had the same variability, we used the Kruskal-Wallis H test (equality of populations rank test) to examine whether the validation and master distributions of course completion counts were significantly different.

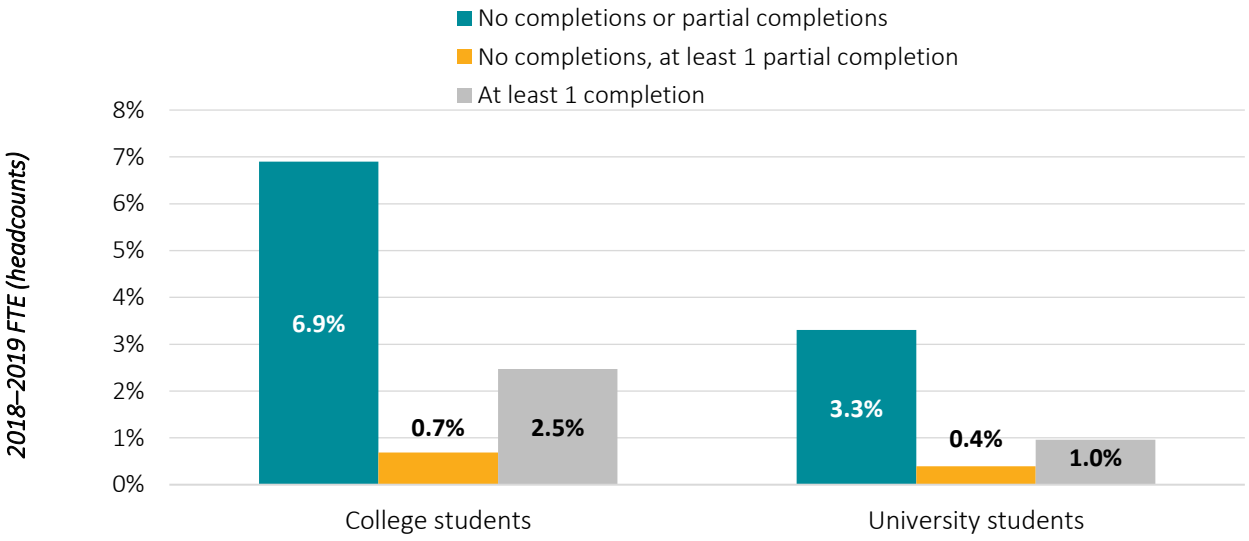
Additional Figures

Figure 16: Power Users by Affiliation and Institution Type



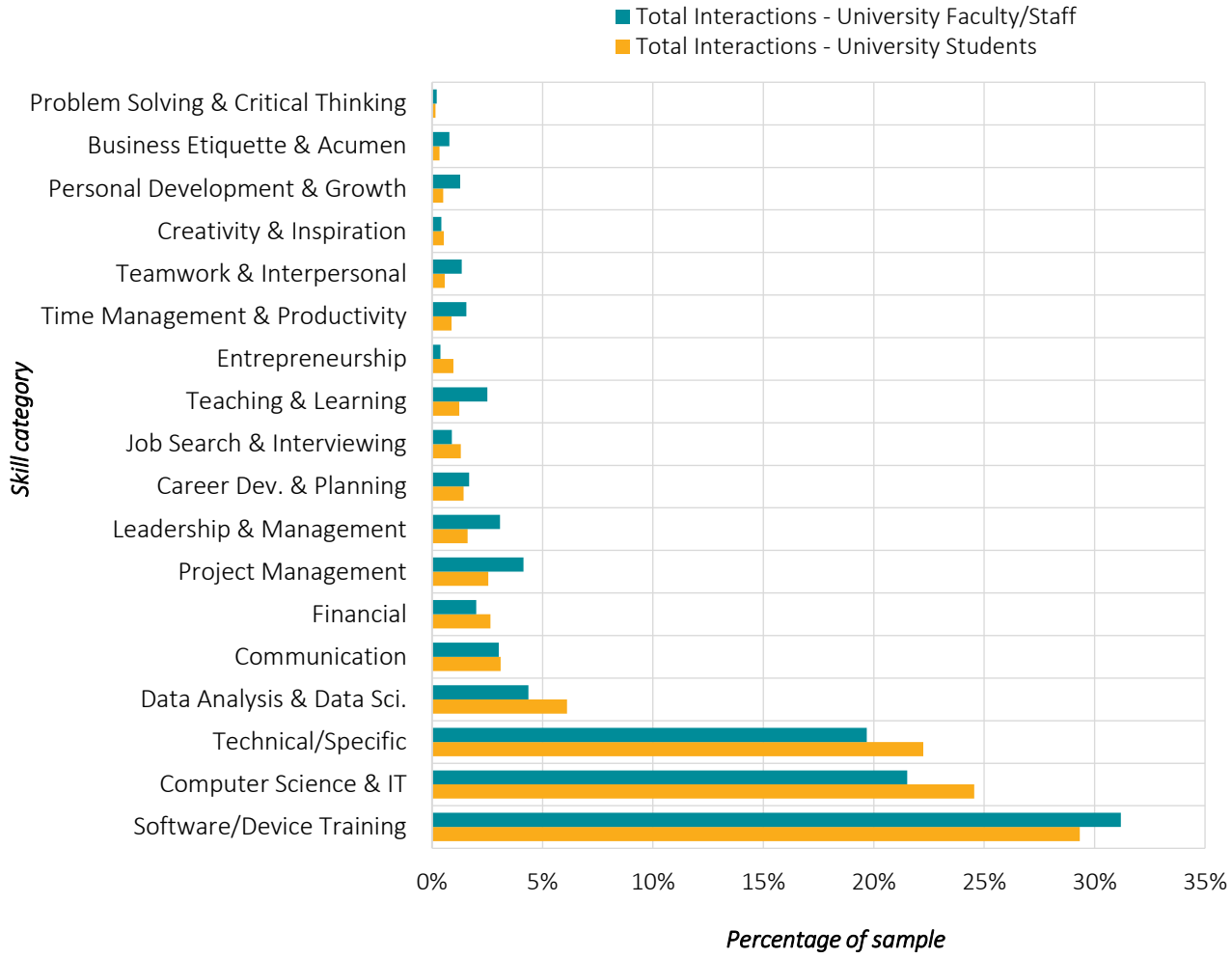
University power users, n = 217. College power users, n =320. Excluding institutions that attained only minimal Lynda.com participation (n = 2). Excluding power users for whom affiliation data was missing (n = 97).

Figure 17: Distinct Student Users by Institution Type and Level of Engagement, as a Percentage of 2018–19 Full-time Enrollment



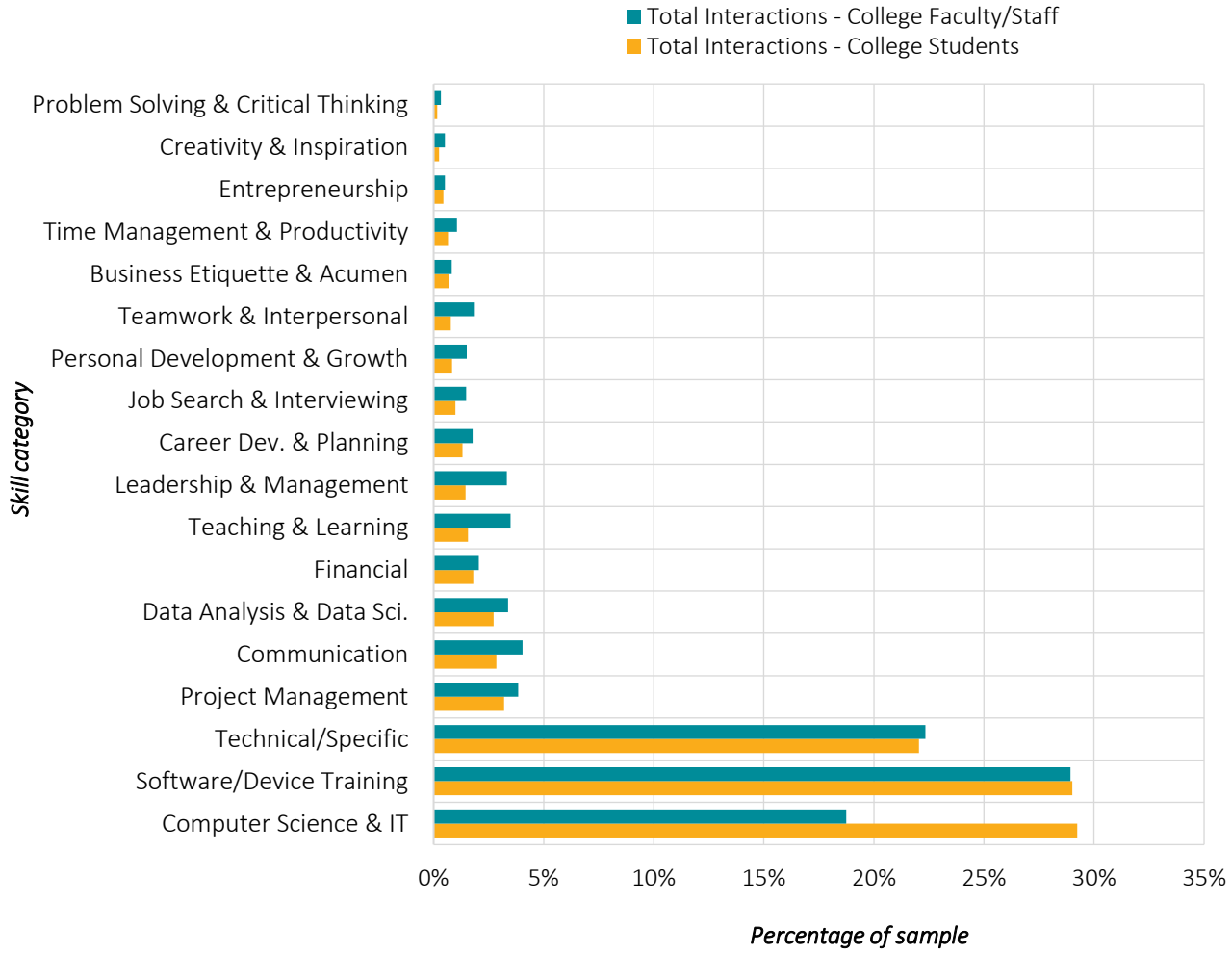
University students, n = 19,708. College students, n = 25,389. Excluding institutions that attained only minimal Lynda.com participation (n = 2). Excluding institutions that did not integrate the affiliation attribute (n = 3). Excluding users for whom affiliation data is missing or indeterminate (n = 19,844). 2018–19 FTE headcount data provided by the Ministry of Training, Colleges and Universities, Postsecondary Finance and Information Management Branch. University 2018–19 FTE headcount data was preliminary/unaudited at the time of writing. College 2018–19 FTE headcount data was confirmed/final.

Figure 18: University User Interactions by Skill Category and Affiliation



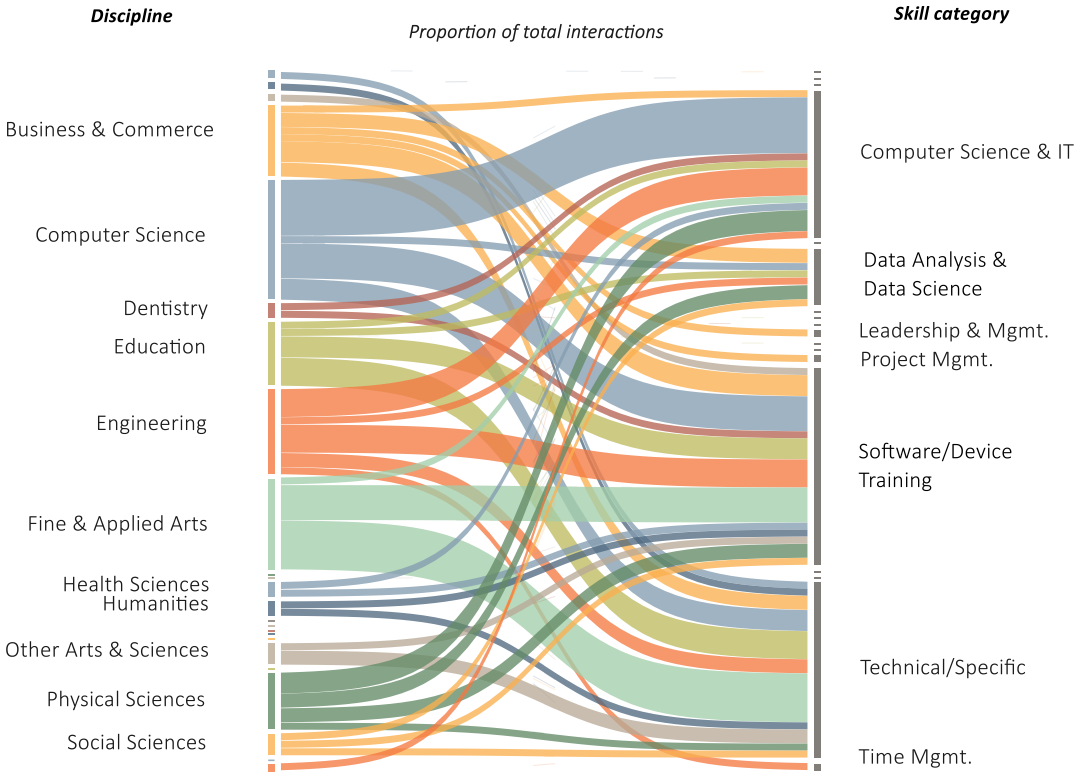
University faculty/staff interactions, n = 25,414. University student interactions, n = 83,956. Excluding institutions that attained only minimal Lynda.com participation (n = 2). Excluding institutions that did not integrate the affiliation attribute (n = 1). Excluding interactions by university users whose affiliation data is missing (n = 19,186).

Figure 19: College User Interactions by Skill Category and Affiliation



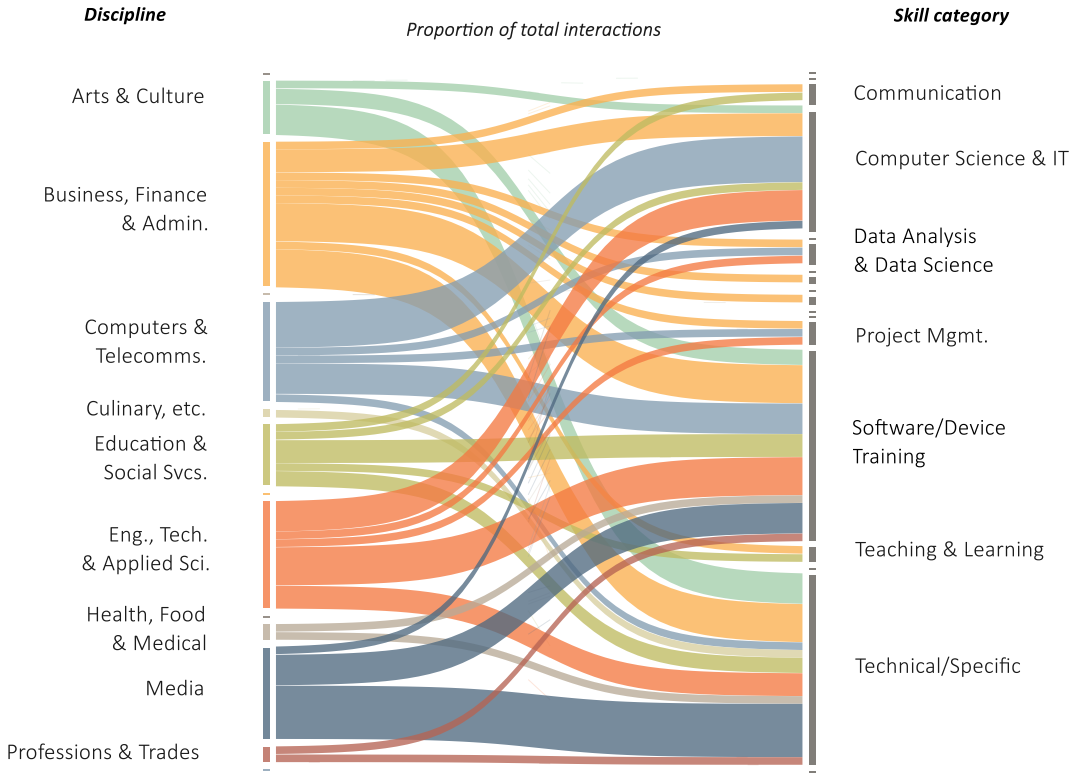
College faculty/staff interactions, n = 25,593. College student interactions, n = 124,818. Excluding institutions that did not integrate the affiliation attribute (n = 2). Excluding total interactions by college users whose affiliation data is missing (n = 66,949).

Figure 20: Proportion of Total University Faculty/Staff Interactions by Users' Discipline and Course Skill Category



University faculty/staff interactions, n = 1,933. Excludes institutions that attained only minimal Lynda.com participation (n = 2). Excludes institutions that did not integrate the discipline attribute (n = 3). Excludes users whose discipline attribute was missing or indeterminate.

Figure 21: Proportion of Total College Faculty/Staff Interactions by Users' Discipline and Course Skill Category



College faculty/staff interactions, n = 10,808. Excludes institutions that did not integrate the discipline attribute (n = 4). Excludes users whose discipline attribute was missing or indeterminate.

Higher Education Quality Council of Ontario

An agency of the Government of Ontario