



DATA IN ACTION SERIES

# Degree of Difference: What Do Learning Outcomes Say About Higher Education?

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# Table of Contents

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Executive Summary.....	3
Introduction.....	12
Literature Review.....	13
Methodology and Data Source.....	18
Results.....	22
Impact and Action.....	32
One Final Question.....	37
Bibliography.....	39
Campus Labs Data Science.....	41
About the Authors.....	42

## Executive Summary

At the time of this writing, The United States Census Bureau states the country's population is 328.6 million people. An interesting bit of trivia, perhaps, but all the more intriguing when one realizes that 44 million of those people (~13.4 percent) collectively owe \$1.5 trillion in student loan debt (Friedman, 2019). The authors ask that you indulge us as we write out that full value, zeroes-and-all, so as to truly showcase its magnitude:

**\$1,500,000,000,000.00**

Changes to state and federal funding, massive increases in tuition, and skepticism amongst elected officials have increasingly and unsustainably shifted the cost-burden of higher education on the individual student. With an increasingly small percentage of resources available to them, families have steadily signed up for the “higher education compact,” despite it increasingly becoming an imbalanced burden on their own finances. The question arises—why are so many Americans willing to take on such substantial debt?

While rising tuition costs have recently begun to moderate (Toppo, 2018), the fact remains that how a student chooses to invest their finances carries increasing significance for the fate of nearly all colleges and universities. Missing from these national conversations on cost, admissions and access, though, are concerns about what students will learn, or how they will change as human beings.

This study is an inquiry into student learning, using teaching and learning data to explore the outcomes campuses use to articulate this learning—both overall at an institution and at a program level. These outcomes are the intended “short-and-long-term changes at the individual level in terms of behaviors, knowledge, skills, or dispositions” (Mertens and Wilson, 2012) for each student.

Learning outcomes statements are, or should be, a fundamental aspect of a student's higher education experience—the transformative aspiration one opts into when choosing an institution to attend and program of study. Students enter college with the expectation they will know and do more when they leave than they could on their first day of enrollment—and learning outcomes should define that change.

To determine if there is a meaningful difference between learning at various institutions, this analysis focuses on learning outcome statements and the methods used to assess them to examine these primary research questions:

- 1** What learning themes emerge from institutional and program learning outcomes statements written at two- and four-year institutions?
- 2** What assessment methods are used for each theme?
- 3** How do learning outcomes fit into a learning taxonomy?
- 4** What assessment methods are used at each taxonomy level?

To answer the primary research questions, the Campus Labs Data Science\* team gathered 15,521 institutional (ILO) and department or program level (PLO) learning outcomes statements from 73 colleges and universities across the United States—all institutions included in this analysis use the Campus Labs platform for learning assessment management. Classification as a two-year or four-year institution (IPEDS ICLEVEL-Level of Institution) was determined using the Carnegie Classification data set for 2018.

The Campus Labs platform provides institutions with the technology to document and map learning outcomes statements at various organizational levels—campus, division, college or school, program or department, course, and course section.



This research established outcome statement themes through researcher defined grouped expert rules regular expressions classifier model. This methodology uses machine learning to analyze the text of each outcome statement. Machine learning models of classification work well when you have known tags to train with because the model scales and expert-based human coding works well when data is not naturally tagged. This analysis included

\*Learn more about the Campus Labs Data Science team on page 41.

a combination of machine learning with hand coding by generating a list of categories and terms to search for within the learning outcome statement text.

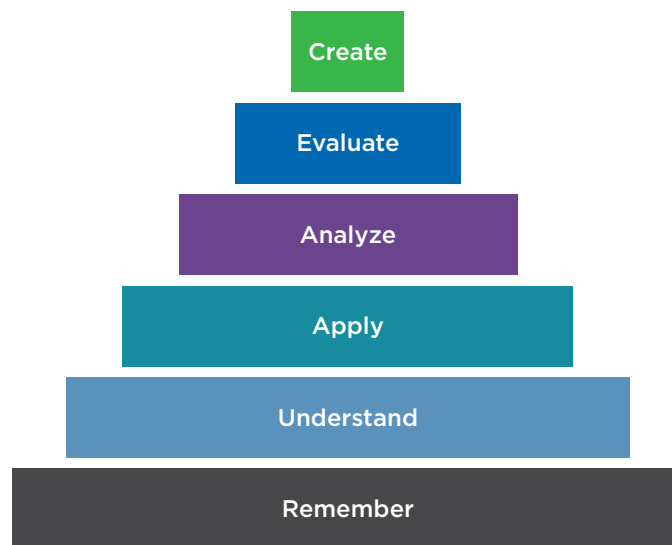
After applying inclusion criteria to the sample, 8,428 institution level or program level outcomes remained—and 87 percent (7,320) were tagged with a theme.

To ensure that outcome statements had equal influence on the results, those with more than one theme were weighted in proportion to the number of themes. For example, if an outcome represented two themes, it was counted as .50 for each theme.

Within the Campus

Labs platform, learning outcome statements are also classified into one or more taxonomy levels using qualitative text analysis. The learning taxonomy used in this study was Revised Bloom's Taxonomy which includes the classification options of remember, understand, apply, analyze, evaluate and create. The count for

### Revised Bloom's Taxonomy



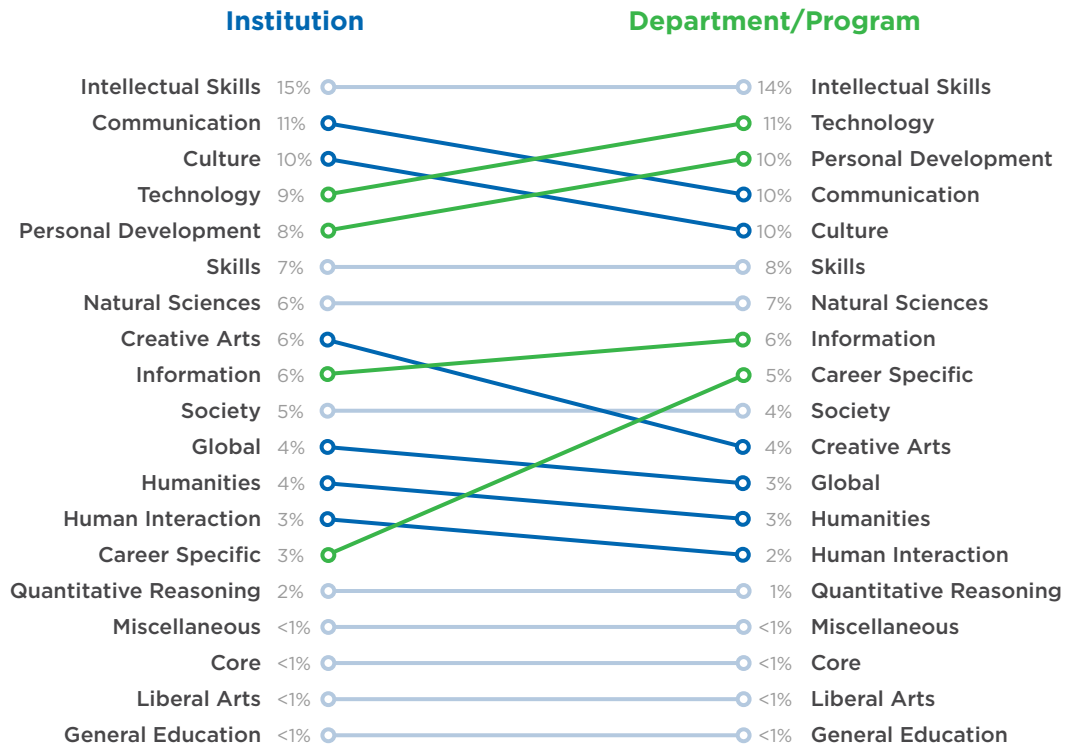
outcome statements classified at more than one Bloom's Taxonomy level were adjusted to ensure the total adjusted value equals one.

## Learning Outcome Themes

Three points initially stand out from viewing the results of this analysis of learning outcome themes:

1. There is agreement on the primary learning outcome theme in higher education
2. There may be misalignment between what programs do and what institutions expect
3. A campus' values may not be displayed in their outcomes as much as they think

Not surprisingly, **Intellectual Skills**—which encompasses critical thinking, problem solving and reasoning—was the most prevalent theme at both institutional and program levels. Most discussion, research, and media coverage about the purpose and value of higher education centers on intellectual skills, so it is good to confirm that campus intentions communicated through learning outcomes statements also reflect this priority. Critical thinking, for instance, is often held up as the monarch of higher education and these data support that notion.



Programs communicate a stronger concentration on **Technology, Personal Development, Skills, and Career Specific** outcomes than institutions, as a whole. Logically speaking, one would expect disciplines to have unique content and therefore a greater focus on discipline-specific skills and technology. But, a greater representation of **Personal Development** in program outcomes versus institutional outcomes seems antithetical, especially considering the growth of student affairs divisions on campus and their respective work toward student development.

## Themes and Institution Type (Two- and Four-Year)

As stated earlier, **Intellectual Skills** represent the highest percentage of institutional level outcomes for both two- and four-year institutions. The same was true for four-year program learning outcomes, whilst **Technology** was the highest percentage theme for two-year program level outcomes.

**Top Five Themes by Institution Type:  
Institutional Level Outcomes**

Two-year ILO	Four-year ILO
Intellectual Skills	Intellectual Skills
Technology	Communication
Communication	Culture
Culture	Personal Development
Skills	Technology

**Top Five Themes by Institution Type:  
Program Level Outcomes**

Two-year PLO	Four-year PLO
Technology	Intellectual Skills
Intellectual Skills	Personal Development
Culture	Communication
Personal Development	Technology
Skills	Culture

Two-year institutions have a more focused set of themes—**Technology, Communication,** and **Intellectual Skills**. Again, this seems in line with the mission of the institution. While general education courses are offered and sometimes required at two-year institutions, students may choose technical or professional programs that provide immediate job opportunities upon completion. Outcomes in these programs will include content such as technical literacy and fluency, computer science and emerging technologies—all terms used in the regular expression for **Technology**—and are likely the reason for its strong representation in two-year ILOs and PLOs.

Learning outcome statements can be a powerful resource to clarify and communicate the purpose of a college degree and the specifics of an individual program or course. This study is a first look at accessible data to determine how well learning outcomes are used—and results suggest some positive activity as well as some opportunities for improvement.

## Impact and Action: Employer Expectations

Employers could be considered ultimate consumers of our higher education system. They hire and depend on graduates to function and grow and have limited ways to determine who will be best for their companies—often, employers want evidence of what a candidate knows and is able to do. In other words, they want to know what learning was expected of the candidate in college and to what degree they obtained it.

Results from the 2019 *Job Outlook* survey conducted by the National Association of Colleges and Employers (NACE) indicate the following top 10 candidate attributes sought by employers:

- |                                   |                         |
|-----------------------------------|-------------------------|
| 1. Written communication          | 6. Strong work ethic    |
| 2. Problem-solving                | 7. Verbal communication |
| 3. Teamwork skills                | 8. Leadership           |
| 4. Initiative                     | 9. Detail-oriented      |
| 5. Analytical/quantitative skills | 10. Technical skills    |

Four of these attributes—initiative, work ethic, leadership, and detail-oriented—are considered candidate characteristics and are not, nor would they be expected to be, directly represented in learning outcome statements. In this study, the learning theme that comes closest to representing these characteristics is **Personal Development**. The other six attributes are represented in the learning outcome themes of **Communication** (written and verbal), **Intellectual Skills** (problem-solving), **Skills** (teamwork), **Quantitative Reasoning** (analytical/quantitative skills), and **Technology** (technical skills).

A quick glimpse at the distribution of learning themes across ILOs and PLOs at two- and four-year institutions suggests that a good way to narrow down the candidate pool to those who have the experience employers desire is to look for a community or technical college listed on their resume.



## Impact and Action: Quantitative Reasoning

There is no other way to say it—campuses need to up their game in **Quantitative Reasoning**. Employers have consistently listed analytical and quantitative skills as a desirable attribute, yet according to these data, the **Quantitative Learning** theme shows up in only two percent of outcome statements and is most often measured by **Exams**.

There is no other way to say it—campuses need to up their game in **Quantitative Reasoning**.

## Impact and Action: Career Specific Outcomes

As logic would dictate, the **Career Specific** theme was far more prevalent in program learning outcomes than in institutional learning outcomes. Schools and disciplines with specific accreditation bodies, such as Business and Nursing, are given a set of learning outcomes. Whether these are always well-conceived outcomes is a discussion for another paper. But, they do accomplish what outcomes are intended to accomplish—they provide direction, communicate expectations, and support consistency across programs.

### Career Specific Program Learning Outcomes

FOUR-YEAR INSTITUTIONS

4%

TWO-YEAR INSTITUTIONS

8%

According to the Bureau of Labor Statistics (2017), it is possible, even likely, that college graduates will change jobs up to 12 times in their lifetime, and this is true for all disciplines. Engineers can become college presidents, speech-language pathologists can become hospital administrators, and English majors can become CEOs. The discipline-specific skills and knowledge learned may be more indicative of fit and potential than institutional outcomes or the brand on a diploma. Prospective students and their families

may be wise to look at the learning expectations of specific programs and disciplines and bypass institutional outcomes altogether.

This message is important for college programs to hear, as well. It is not hard to find reports sounding the alarm of declining enrollment in the humanities, and one possible factor could be a reluctance to embrace the concept of student learning outcomes. This is not true of all humanities departments, just as it is not exclusive to the humanities. So, the authors say to all departments—if program learning expectations and opportunities are not clearly defined and easily accessible, students may bypass your programs altogether.

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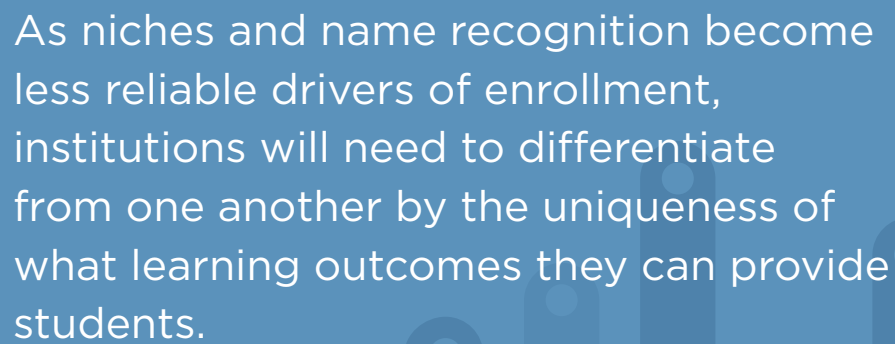
### Impact and Action: Campus Reflection

While this study opens a lot of doors for further analysis, the most obvious being the actual achievement of learning, there is one final question to ask about these data—what do learning outcome statements say about educators and higher education?

Campuses may need to do a non-judgmental, yet honest, self-assessment to determine if some themes are not represented because of a lack of resources or comfort with the content. One cannot teach what they don't know. Is it possible

meaningful learning outcomes are avoided because of a lack of experience with or knowledge of topics in technology or global issues? Perhaps, or perhaps not. That is for each institution to decide.

Finally, human beings avoid conflict and discomfort—and one of the most uncomfortable situations, for college educators in particular, is not being the expert. Writing meaningful learning outcomes is not a writing skill. It requires design thinking and pedagogical knowledge that is not often directly addressed in a typical professor's education and career development. We have a natural predilection to dismiss what we don't know or understand. Crafting learning expectations is hard—but because writing them *seems* simple, some may struggle with the process.



As niches and name recognition become less reliable drivers of enrollment, institutions will need to differentiate from one another by the uniqueness of what learning outcomes they can provide students.

With increased public scrutiny brought upon higher education as a result of scandal, cost, and general disagreement about purpose, it is all the more imperative for institutions as a collective to have processes in place that demonstrate what learning happens on campus, and to what end. As niches and name recognition become less reliable drivers of enrollment, institutions will need to differentiate from one another by the uniqueness of what learning outcomes they can provide students. On this matter, our study's findings suggest that most campuses indeed have a long road ahead of them.

## Introduction

It's hard to avoid the controversies, scandals, and stories surrounding who is admitted to college and how they arrive there—parents break laws to get their adult children into specific institutions, and the pressure to be accepted into the “right” school exacerbates anxieties that are currently at an all-time high for teenagers and young adults. Life for these students after the admission process is no less complicated—since they can use technologies created by wealthy, famous college drop outs to read articles suggesting the degrees they earn do not prepare them with skills employers seek.



Adding to the conversation around the worth of higher education, is cost. The lingering influence of the global financial meltdown of 2008 has had an inevitable impact on nearly every facet of how institutions of higher education are run. Most notable among these impacts is the shift in funding from educational appropriations to tuition dollars—in 2017, tuition eclipsed appropriations as the primary revenue source in most states (Ellis, 2018).

While rising tuition costs have recently begun to moderate (Toppo, 2018), the fact remains that how a student chooses to invest their finances carries increasing significance for the fate of nearly all colleges and universities. Missing from these conversations, though, are concerns about what students will learn, or how they will change as human beings.

So, what is accomplished with all this worry, time, effort, and money? Are some institutions special because the learning expectations are unique, or do students just end up buying the brand on a diploma? It is possible that families with means are competing for prestige rather than differentiated learning—and a truly savvy consumer would be wise to choose the best economic route because the results will likely be the same, regardless of their path.

## Literature Review

At the time of this writing, The United States Census Bureau states the country's population is 328.6 million people. An interesting bit of trivia, perhaps, but all the more intriguing when one realizes that 44 million of those people (~13.4 percent) collectively owe \$1.5 trillion in student loan debt (Friedman, 2019). The authors ask that you indulge us as we write out that full value, zeroes-and-all, so as to truly showcase its magnitude:

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It's a staggering figure, which inevitably leads to the question—why are so many Americans willing to take on such substantial debt? Former University of Texas President Larry Faulkner's (n.d.) exploration of the "social compact" between the American public and the institution of higher education provides some historical context. Beginning with the Morrill Act of 1862, enhanced by scientific developments in World War II, and culminating in the Servicemen's Readjustment Act of 1944, better known as the G.I. Bill, Faulkner establishes a historical trajectory that increasingly entwined higher education with prosperity as American citizens "became the well-educated, pragmatic, innovative workforce that powered America to global leadership in so many spheres during their working years." This compact was thought to be of mutual benefit—citizens invested resources in higher education, which then provided a return via increased opportunities for social mobility.

Faulkner argues that the very success of this compact has become its undoing, as changes to state and federal funding, massive increases in tuition, and skepticism amongst elected officials have increasingly and unsustainably shifted the cost-burden of higher education on the individual student. One can easily see how the historical residue of this compact persists in 2019. We live in the society created by its wake, with familial histories still shaped by those who were—or were not—able to live the compact themselves. The compact, and our collective willingness to participate in it, are formed by these socio-economic realities.

A 2016 *Washington Post* opinion piece by economist and former Vassar College President Catherine Bond Hill plainly lays out these socio-economic realities, "Between

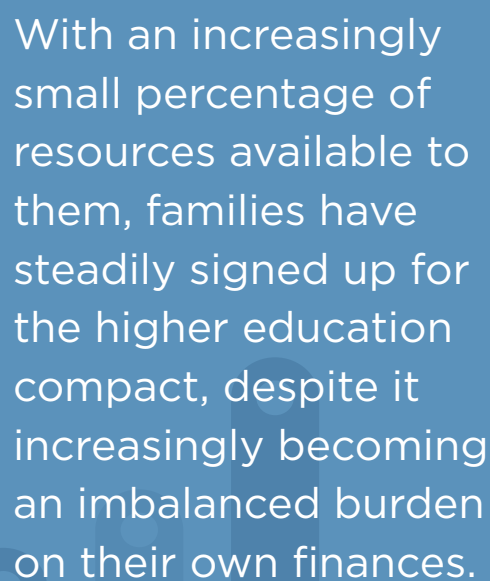
1975 and 2014, the average income of U.S. households in the top 5 percent of the income distribution increased by 82 percent, while the average income of those households in the middle 20 percent increased by only 15 percent.”

Meanwhile, “During this same 40-year period, the average price (tuition, room and board) at a four-year, private, nonprofit college or university has gone from \$16,213 to \$43,921, an increase of 171

percent. At public, four-year institutions, the increase has been from \$7,833 to \$19,548, or an increase of 150 percent.” With an increasingly small percentage of resources available to them, families have steadily signed up for the higher education compact, despite it increasingly becoming an imbalanced burden on their own finances. The question arises—is this financial burden worthwhile?

A slew of recent commentaries have taken sides on this debate. In a 2018 piece published in *The Washington Post*, Steven Pearlstein reviews critiques of higher education while arguing to broaden our notion of value to include: “sports and other non-classroom experiences that often reveal interests and hidden talents and help to shape character and ambition,” as well as “the importance of exposing young people to new ideas and values and life possibilities” and recognizing the “role for higher education in equalizing opportunity, creating a shared set of cultural values or having more informed voters.”

In a 2018 *Forbes* piece focused more on the fiscal notion of value, Derek Newton states: “Colleges and universities are still the best, most direct path to a good career that pays well.” This claim is firmly backed up by findings such as those from a 2014 Pew Research Center study, which reported that “on virtually every measure of economic well-being



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and career attainment—from personal earnings to job satisfaction to the share employed full time—young college graduates are outperforming their peers with less education. And when today’s young adults are compared with previous generations, the disparity in economic outcomes between college graduates and those with a high school diploma or less formal schooling has never been greater in the modern era.” With this in mind, the financial anxieties of families and their willingness to invest in higher education tuition becomes an increasingly pragmatic decision.

Using data to show evidence of learning outcome achievement is precisely the practice needed to provide both parents and students with transparency.

The logical consideration for institutions, then, is to present their value to students as being uniquely desirable. For some campuses, non-academic factors make this differentiation straightforward—they may have athletic, political, geographic, or other traits on which they can capitalize. Such was the case of Green Mountain College, a campus known for its emphasis on environmental literacy and green sustainability. Green Mountain College was the focus of a 2019 *Chronicle of Higher Education* article aptly titled “Your Niche is Not Enough,” wherein author Scott Carlson reviewed the institution’s path to closure and succinctly stated: “niche does not trump the fundamentals of sound business practices.” One of which is to “Show parents and students what they’ll get for that hefty tuition.” Using data to show evidence of learning outcome achievement is precisely the practice needed to provide both parents and students with transparency.

This study set niche factors aside and instead functioned as an inquiry into student learning, using what could be discovered from teaching and learning data in order to explore the outcomes campuses use to articulate the learning—both overall at an institution and at a program level. These outcomes are the intended “short-and-long-term changes at the individual level in terms of behaviors, knowledge, skills, or dispositions” (Mertens and Wilson, 2012) for each student—in essence, they state the



transformative aspiration one opts into when choosing an institution to attend and program of study. A college degree signifies that its holder has successfully satisfied these outcomes, that change has occurred, and the student is not the same person they were when their education began.

To classify these outcome statements, this study used Anderson and Krathwohl's revision of Bloom's Taxonomy, focused on their taxonomies of cognition. In a 2002 overview, Krathwohl summarized each of the six levels of classification—**remember, understand, apply, analyze, evaluate, create**—detailing that these levels are "...a hierarchy in the sense that the six major

categories of the Cognitive Process dimension are believed to differ in their complexity, with remember being less complex than understand, which is less complex than apply, and so on."

To be fair, not all students poised to enroll in higher education may even know that the concept of learning outcomes exists. Anecdotally, having both served as university professors, we—the study's authors—often had first-year students enrolled in our courses who were unaware that the institution they attended had these specific intentions. Making the outcomes transparent to these students empowered them to better understand the commitment they were making with their time and finances.

This phenomena of confusion among students about what it is they actually opt into is common—consider how often one hears from a student who is unclear on why they need to satisfy a general education requirement with coursework from a discipline unrelated to their major. Now consider how rarely that lament is met with patience and an explanation of the role liberal education plays in their institution's outcomes for graduates. The Association of American Colleges & Universities (AAC&U)—a standard bearer of liberal, undergraduate education founded more than 100 years ago—provides links to publications aimed at establishing the connection between classroom experiences and institutional outcomes. Providing students with these types

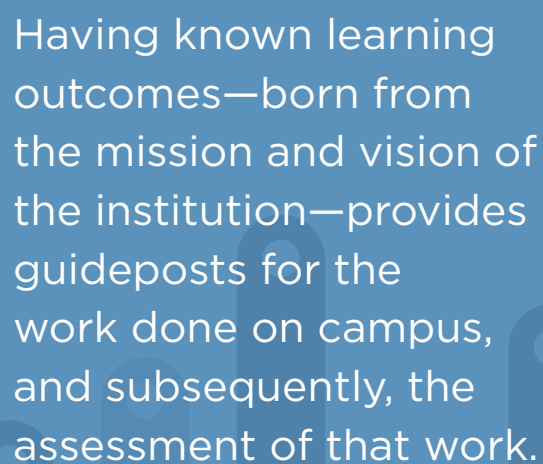


of resources and spaces to discuss them gives greater agency and a far more satisfying answer to the common question: “Why do I have to take this class?”

Sadly, sometimes a meaningful answer to “Why do I have to take this class?” isn’t possible because campus faculty and staff also lack knowledge of the existence and purpose

of learning outcomes—and it’s tough to teach what isn’t known. In the comic-science-fiction series *The Hitchhiker’s Guide to the Galaxy*, author Douglas Adams employs a plot device known as the S.E.P, described by one character as “...something we can’t see, or don’t see, or our brain doesn’t let us see, because we think that it’s somebody else’s problem. That’s what S.E.P. means. Somebody Else’s Problem. The brain just edits it out, it’s like a blind spot.”

A campus that can internalize the process of assessment and embed it into the daily business of faculty and staff will be far better at avoiding the “Somebody Else’s Problem” mindset that develops at a campus that removes faculty and staff from the process. Having known learning outcomes—born from the mission and vision of the institution—provides guideposts for the work done on campus, and subsequently, the assessment of that work.



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## Methodology and Data Source

Learning outcomes statements are, or should be, a fundamental aspect of a student's higher education experience. They communicate the expectations of a course or program and explain the purpose of a learning experience (i.e. course assignment or general education requirement). Students enter college with the expectation they will know and do more when they leave than they could on their first day of enrollment—learning outcomes should define that change.

To determine if there is a meaningful difference between learning at various institutions, this analysis focuses on learning outcome statements and the methods used to assess them to examine these primary research questions:

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After applying inclusion criteria to the sample, 8,428 institution level or program level outcomes remained—and 87 percent (7,320) were tagged with a theme.

Below are the groupings used along with the regular expression search terms.

```

## $other__Core
## [1] “(\\bcore)”
##
## $other__Liberal_Arts
## [1] “(liberal arts)”
##
## $other__General_Education
## [1] “(general education)”
##
## $Intellectual_Skills
## [1] “(appreciate)|(intellect)|(criti)|(rea-
son)|(problem.*solving)|(solution)|(-
solve)|(inform)|(\\bethic)|###
## $Communication
## [1] “(communic)|(literacy)|(\\
bora)|(\\bwrit)|(listen)|(presen)|(\\
bread[^y]?\\b)|(\\bview)|(perspec-
tive)|###
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## $Personal_Development
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learn)|(\\bethi)|(independ)|(\\
bself\\b)|(growth)|(community)|(\\
bhealth)|###
## $Natural_Sciences
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diverse)|(physical)|(natural)|###

```

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##
## $Society
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##
## $Information
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##
## $Human_Interaction
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##
## $Humanities
## [1] “(appreciat)|(human)|(individuals)|(groups)|(emerging)|(history)|(historical)|(\bart\b)|(political)|(##
## $Miscellaneous
## [1] “(multidisciplinary)|(events)|(contemporary events)|(region)|(geography)|(-scholar)|(career ready)|(

```

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Campuses also have the option to record the method of measurement used to assess learning from a set of options including:

Survey questionnaire	Comprehensive exam	Focus group
Essay	Advisory feedback	Independent study
Exam	Article review	Candidacy exam
Final exam	Multimedia	Oral presentation
Individual project	Interview participation	Standardized test
Report	Clinical evaluation	Poster session
Demonstration	Practical exam	Briefing
Capstone project	Field report	Professional exam
Quiz	Simulation	Class participation/ discussion
Performance	Journal	Writing assignment
Test	Internship work	Recital
Reflection	Quick assessment	Group project/work
Group work	Thesis	Meeting records
Case studies	National assessment	Learning contract
Laboratory work	Checklist	Advisory board survey
Class participation	Certification exam	
Document analysis	Exhibition	
Portfolio	Clinical work	

Learning outcome statements and assessment method data were analyzed to determine the distribution of methods within each theme. Outcomes measured with more than one assessment methods were weighted to ensure representative distribution. The same process was repeated to determine the distribution of assessment methods within each taxonomy level.

While this research design allows for a unique view of learning outcomes, it does have potential limitations. The sample of campuses and organizations is limited to those collected through the Campus Labs platform. Also, because outcomes are documented as free text, the quality of outcomes statements is dependent on the assessment knowledge and skill of the author of the statement. To account for text that would not be considered a measurable learning outcomes statement, any statement with more than 200 words or more than six verbs was excluded from this analysis.

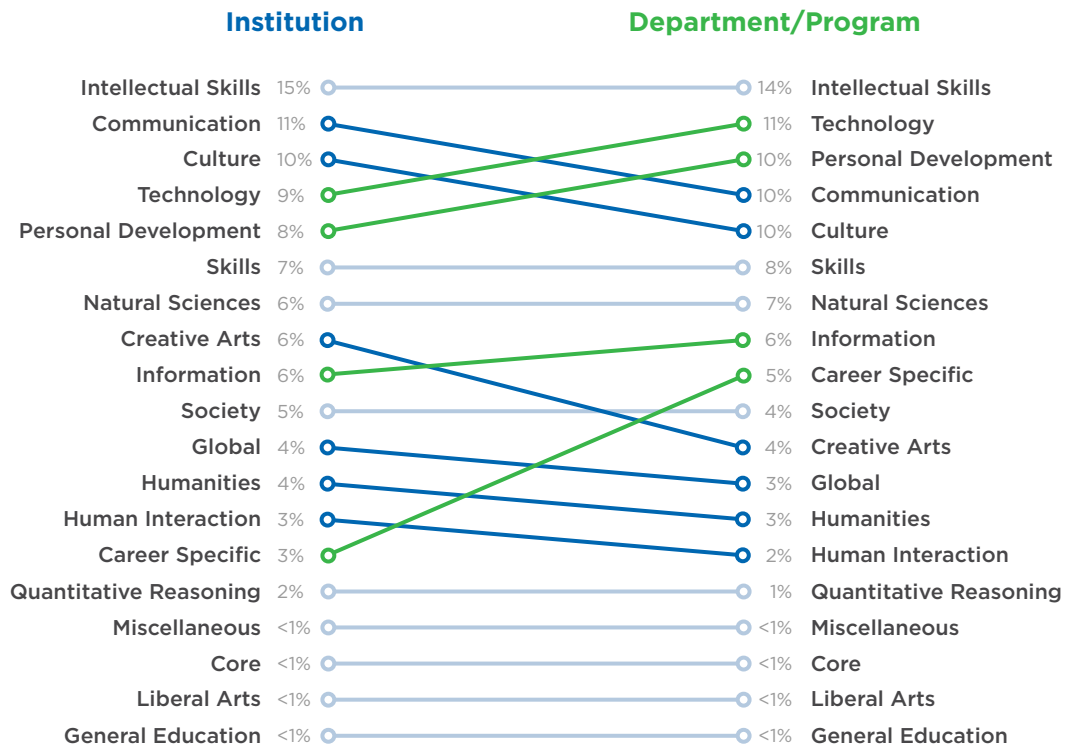
# Results

## Learning Outcome Themes

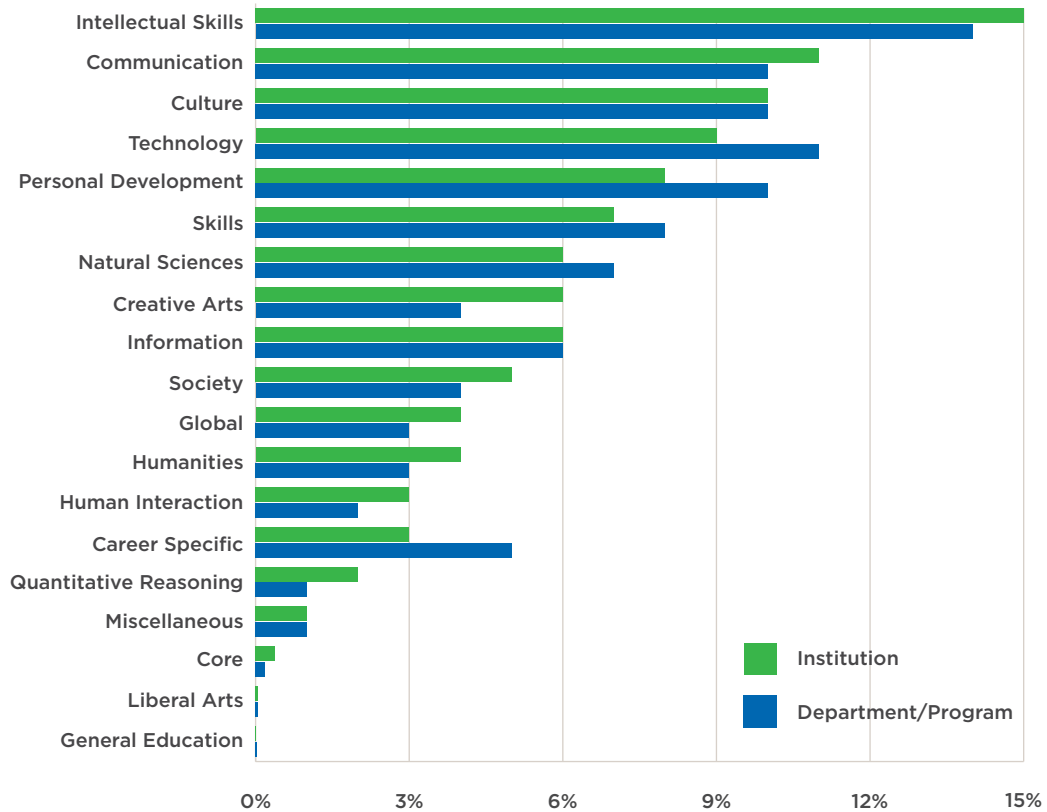
Three points initially stand out from viewing the results of this analysis of learning outcome themes:

1. There is agreement on the primary learning outcome theme in higher education
2. There may be misalignment between what programs do and what institutions expect
3. A campus' values may not be displayed in their outcomes as much as they think

Not surprisingly, **Intellectual Skills**—which encompasses critical thinking, problem solving and reasoning—was the most prevalent theme at both institutional and program levels. Most discussion, research, and media coverage about the purpose and value of higher education centers on intellectual skills, so it is good to confirm that campus intentions communicated through learning outcomes statements also reflect this priority. Critical thinking, for instance, is often held up as the monarch of higher education and these data support that notion.



Following **Intellectual Skills**, the relative ranking of learning themes differed between institutions and programs. The percentage distribution below offers a direct ILO and PLO comparison of percentages for each theme.



Programs communicate a stronger concentration on **Technology**, **Personal Development**, **Skills**, and **Career Specific** outcomes than institutions, as a whole. Logically speaking, one would expect disciplines to have unique content and therefore a greater focus on discipline-specific skills and technology. But, a greater representation of **Personal Development** in program outcomes versus institutional outcomes seems antithetical, especially considering the growth of student affairs divisions on campus and their respective work toward student development.

Professional programs in fields such as engineering, health care, and education typically have obligations to disciplinary accrediting bodies and are beholden to document, track and measure program learning outcomes set by accreditors. This may account for the relatively high placement of the **Career Specific** theme for PLOs compared to ILOs.

The misalignment of PLO and ILO themes may also lead to disjointed or inequitable experiences for students. In typical learning outcome assessment practice, program outcomes are mapped to institutional outcomes, which implies that students will achieve the intended institutional learning outcomes through experiences in various programs. If, however, programs do not have the same priorities as the institution—or do not intentionally consider institutional outcomes in their curriculum design—students may not have the opportunity to achieve them. Some might say this renders ILOs obsolete.

This study is not intended to be solipsistic—we do believe learning can occur without it having been measured—but uncommunicated learning intentions will eventually be ignored, forgotten, or lost. For example, **Creative Arts** (six percent), **Humanities** (four percent), and **Quantitative Reasoning** (two percent) are in a precarious place according to this theme analysis. All three themes are in the bottom half of the institutional learning outcomes theme distribution and are represented even less at the program level. Most people who believe in the value of higher education would cite these themes in their reasoning, but they are not well represented in what campuses say students will learn.

## Themes and Institution Type

As stated earlier, **Intellectual Skills** represent the highest percentage of institutional level outcomes for both two- and four-year institutions. The same was true for four-year program learning outcomes, whilst **Technology** was the highest percentage theme for two-year program level outcomes.

**Top Five Themes by Institution Type:  
Institutional Level Outcomes**

Two-year ILO	Four-year ILO
Intellectual Skills	Intellectual Skills
Technology	Communication
Communication	Culture
Culture	Personal Development
Skills	Technology

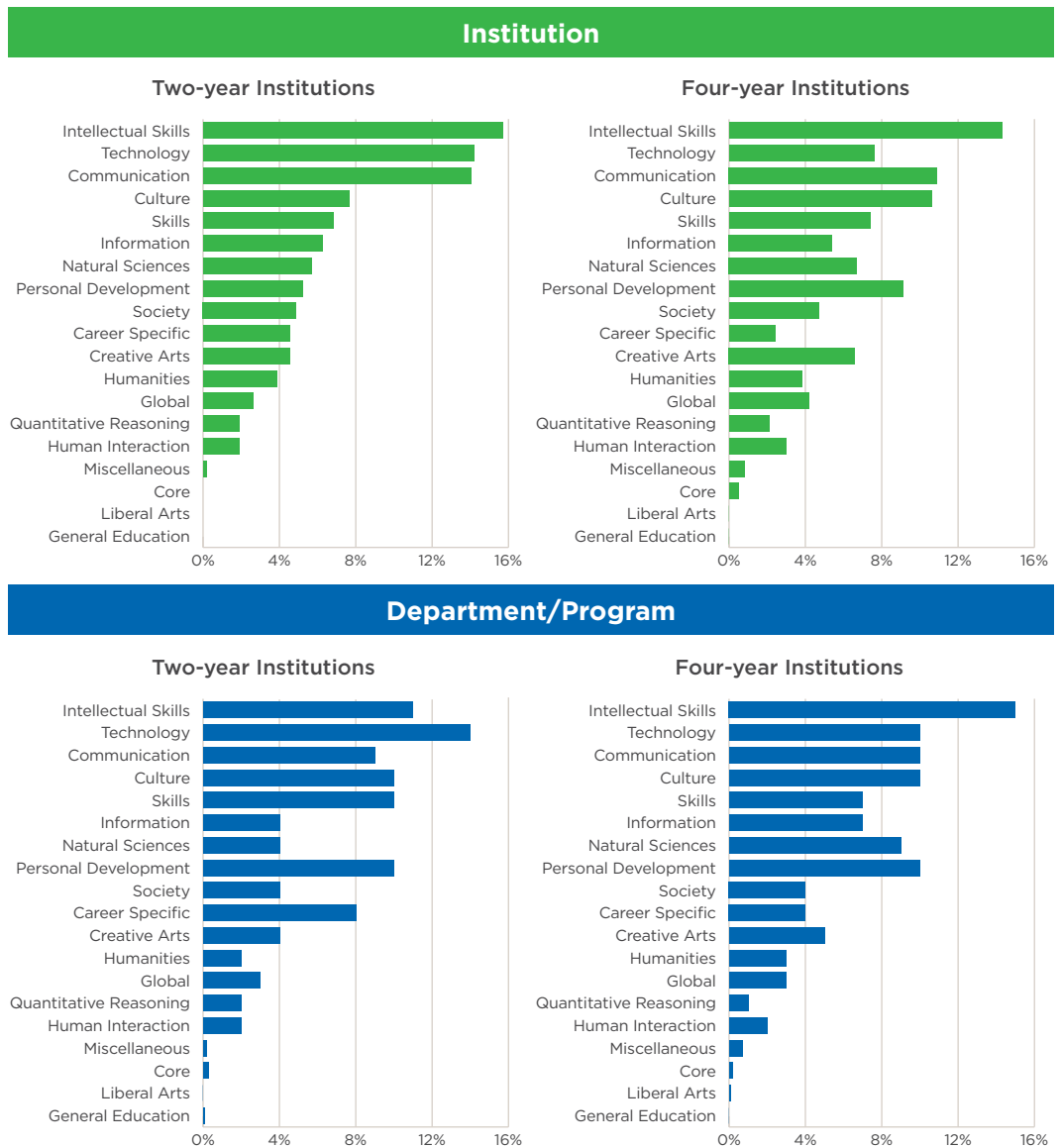
**Top Five Themes by Institution Type:  
Program Level Outcomes**

Two-year PLO	Four-year PLO
Technology	Intellectual Skills
Intellectual Skills	Personal Development
Culture	Communication
Personal Development	Technology
Skills	Culture



Given the number of students who begin at two-year institutions and ultimately transfer to four-year colleges or universities, it is good to see **Intellectual Skills** as the top theme for ILOs at both types of institutions. A consistent learning experience and transferability of credits would suggest a more cohesive learning experience for students.

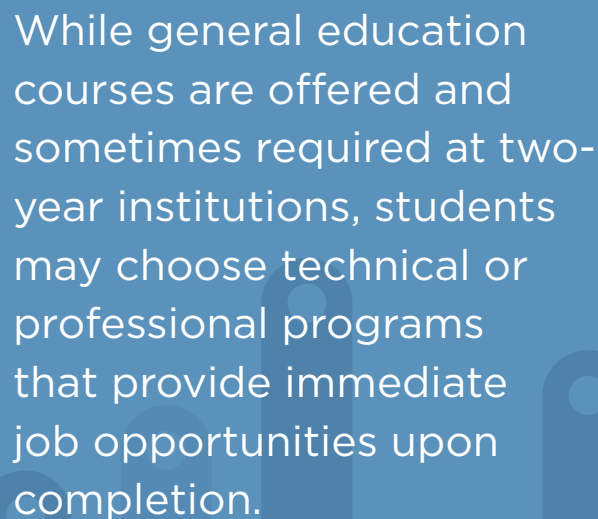
A quick glimpse at a faceted bar plot showing the percentages of outcomes attributed to each of the themes within institutional and organizational levels suggests a broader distribution for both ILOs and PLOs at four-year institutions and a more focused set of themes at two-year institutions.



The broad distribution of learning outcomes at four-year institutions is in line with the typical liberal arts focus or strong general education component at these colleges or universities. It makes sense to communicate a diverse learning experience with multiple opportunities across a range of themes.

Two-year institutions have a more focused set of themes—**Technology**, **Communication**, and **Intellectual Skills**. Again,

this seems in line with the mission of the institution. While general education courses are offered and sometimes required at two-year institutions, students may choose technical or professional programs that provide immediate job opportunities upon completion. Outcomes in these programs will include content such as technical literacy and fluency, computer science and emerging technologies—all terms used in the regular expression for **Technology**—and are likely the reason for its strong representation in two-year ILOs and PLOs.



While general education courses are offered and sometimes required at two-year institutions, students may choose technical or professional programs that provide immediate job opportunities upon completion.

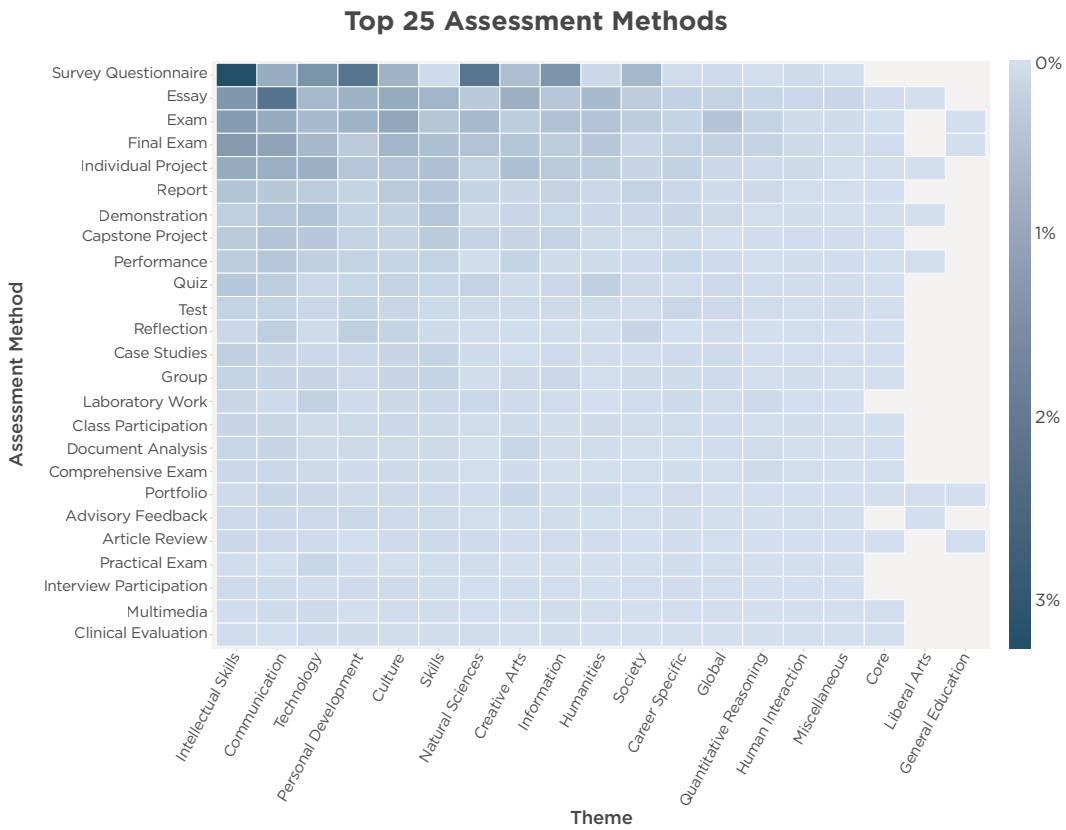
## Themes and Learning Measurement

The most meaningful and accurate way to determine if learning has occurred is authentic assessment, which uses evidence of students demonstrating a skill and/or applying knowledge in a situation that most represents how that skill or knowledge will be used in life and professional situations. Authentic assessment takes time, thought, patience, and faith that students engage in the learning process as willingly and earnestly as faculty engage in the design and execution of the assessment. Authentic assessment is difficult and, therefore, often not used.

Another way to define the ways learning can be measured is through direct and indirect methods. Direct assessment refers to measurement of learning using student work or

observing evidence of students' knowledge or skills. Indirect assessment is a measure of student perception of learning. Both methods can have value, particularly when conducted together. Dance technique, for instance, is best measured by observing a student dance—a direct method. Asking a student to describe their accuracy when dancing is an indirect measure. In combination, an instructor can provide feedback based on the direct observation of the student's skill and craft or pinpoint that feedback based on a student's perceptions of their own skill. For example, feedback to a student who is technically adept but not aware of their skill is very different from feedback given to a student who has all the confidence in the world and poor technique. This, then, is the premise—good assessment gives teachers the opportunity to provide consequential feedback to the learner based on observed and collected information, or, data.

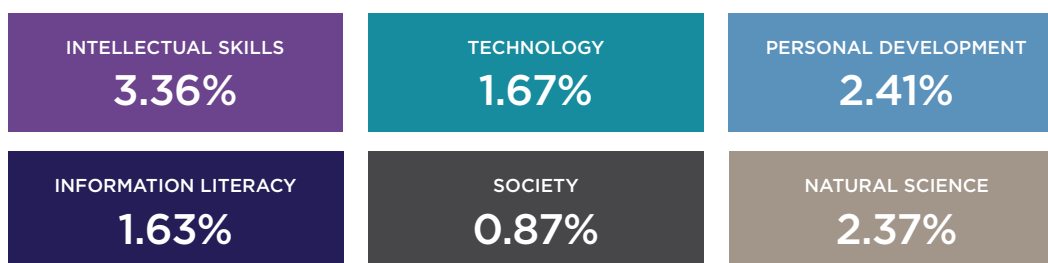
Because good assessment can be so formative, this research sought to determine if there are patterns in the methods or measures used in the assessment of learning. To do so, we obtained 8,030 learning outcome statements from the initial query that were tagged with a theme and contained a corresponding assessment method or methods. The distribution of results is displayed in the heatmap below:



Forty-three percent of all outcomes in the sample are represented in the top eight themes, which use only five assessment methods—**Survey Questionnaire**, **Essay**, **Exam**, **Final Exam**, and **Individual Project**.

The most common form of assessment, used in 16 percent of the sample, was an indirect method—**Survey Questionnaire**. This method was the most commonly used method reported for **Intellectual Skills**, **Technology**, **Personal Development**, **Information Literacy**, **Society**, and **Natural Science**.

### Percent of All Outcomes Measured Using Survey Questionnaire and Corresponding Themes



Indirect assessments can be useful, however, they are not always the best method. For instance, using surveys to gather information about a student’s own personal development may be useful, but using surveys to determine if students can provide ideas to solve societal problems, code, or explain Krebs Cycle may not.

**Essays** were used as the measurement for 12 percent of outcomes and were the most commonly used methods for outcomes with the themes of **Communication**, **Skills** (research and project-based), **Creative Arts**, **Humanities**, **Career Specific**, and **Human Interaction**. Reaping the value of essays as an assessment method is dependent on the content and data provided. For example, an essay to determine written communication skills is a direct and authentic measure, but if the only data provided is a grade, there isn’t much value. A “B” indicates the student can write in an acceptable manner but doesn’t provide the type of detail necessary for providing targeted feedback.

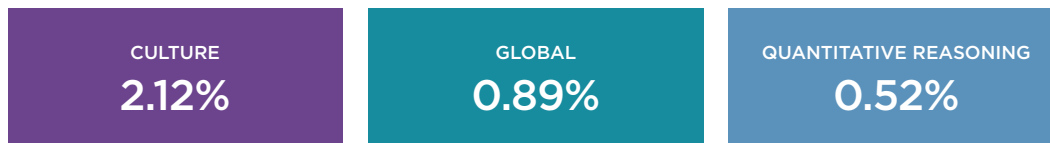
On the other hand, consider an assignment to describe an interaction with a person from a different culture that is evaluated using AAC&U’s Intercultural Knowledge and Competence VALUE rubric. It isn’t an authentic measure—unless humans start communicating via essay—but it can provide evidence of the student’s interpretation and analysis skills and, using the rubric, provides opportunity for specific and targeted feedback.

## Percent of All Outcomes Measured Using Essays and Corresponding Themes



**Exams** and **Final Exams**, when combined, were used to measure outcomes 18 percent of the time, and were the most commonly used methods for outcomes with the themes of **Culture**, **Global**, and **Quantitative Reasoning**. Like **Essays**, exams are only as good as their design and intention. Completing a trigonometric problem in a Trigonometry exam is a direct measure of an executable skill; and determining and executing the appropriate function to an oceanographic scenario is measurement of higher-level skills. Both can be successfully completed with an exam.

## Percent of All Outcomes Measured Using Exams or Final Exams and Corresponding Themes



This analysis of the methods used for each of the learning themes suggests there is some logical assessment work happening across our campuses—and simultaneously, the opportunity to improve.

## Learning Outcome Taxonomy

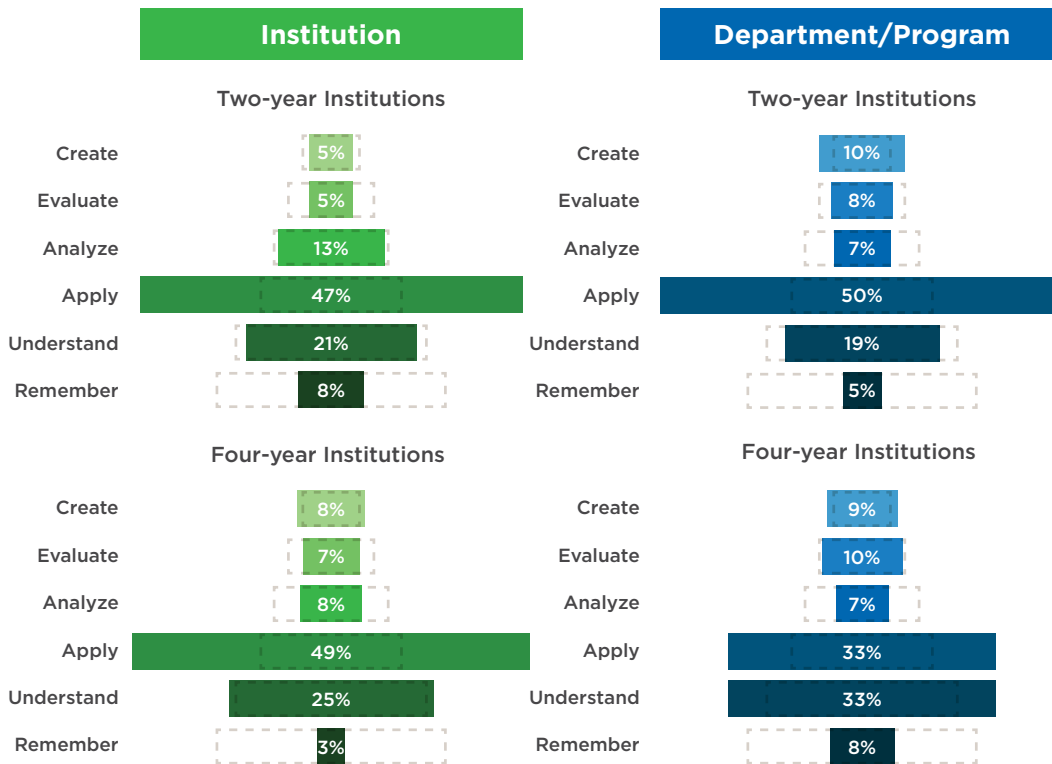
As is true with assessment methods, there is no distinct right or wrong when applying Bloom's Taxonomy to a learning outcome statement. Authors crafting outcomes may reference a taxonomy to ensure they use words, particularly verbs, that accurately convey their intentions and level of learning. Conversely, a taxonomy can be applied to an existing set of outcomes to determine what levels of learning are suggested and evaluate if they match the original intentions. The latter methodology was used in this analysis.

Eighty-two percent (6,874) of the learning outcomes statements were classified in one or more levels of Bloom's Taxonomy. Sixty-five percent (4,452) were classified at one level, the remaining outcomes statements were classified at two or more levels.



There is little to no difference between the taxonomy of ILOs and PLOs at either type of institution. Perhaps the most concerning interpretation of these results at four-year institutions is a clear majority of published learning expectations require no more than recall, explanation, or carrying out a defined procedure. **Application** is a reasonable expectation for two-year technical and professional associate degrees and certificates. The taxonomy distribution is also representative of the level of learning expected in liberal education or general education courses in the first two years of college.

### Weighted Distribution of Outcomes for ILOs and PLOs and Two- and Four-year Institutions



## Taxonomy and Learning Measurement

There are positive trends in results that show the distribution of assessment methods within the taxonomy level. Similar to the analysis of assessment methods for learning outcome statement themes, the top five methods of assessment are used to measure almost half of the learning outcomes—**Essay**, **Survey Questionnaire**, **Exam**, **Final Exam**, and **Individual Project**.

**Essays** were the most common form of assessment, used in 12 percent of the sample. They were the primary assessment method for outcomes tagged with the **Evaluate** level and the second most common method for **Remember**, **Apply**, and **Create**.

While outcomes at the **Create** level represent a relatively small percentage of outcomes (5-10 percent), the data shows the use of appropriately complex assessment methods. The same could be said for the use of survey questionnaires, which are the most common method for outcomes at the **Remember** and **Understand** levels.

### Top 10 Assessment Methods to Measure “Create” Theme

1. Individual Project
2. Essay
3. Final Exam
4. Exam
5. Capstone Project
6. Performance
7. Demonstration
8. Report
9. Group Work
10. Portfolio

## Impact and Action

Learning outcome statements can be a powerful resource to clarify and communicate the purpose of a college degree and the specifics of an individual program or course. This study is a first look at accessible data to determine how well learning outcomes are used—and results suggest some positive activity as well as some opportunities for improvement.

This research endeavor was already underway when, on March 12, 2019, the U.S. Justice Department accused 50 people in six states of taking part in what has since become simply referred to as the “college admissions scandal.” The scandal centered on “a nationwide bribery and fraud scheme to help students gain admission to elite colleges and universities” (Medina, Benner and Taylor, 2019). Because the scandal involves celebrities and the wealthy—people commonly considered to be comfortable or privileged—a certain trend in think pieces has since arisen wherein authors speculate as to why these individuals would risk disgrace, or worse, to secure admission to elite schools for their children. The central question of these think pieces tends to be this—how truly unique and valuable is the experience of attending an elite college or university?



Naturally the answer to this question varies based upon the individual. But, reporting from NPR’s Anya Kamenetz suggests that attending an elite institution has no real benefit over, say a regional state college, on career engagement or on measures of well-being such as sense of purpose, financial security, physical health, close relationships or community pride (Kamenetz, 2014). In terms of economics, Kamenetz later reported that “highly selective colleges do seem to confer an income premium over nonselective colleges. But an individual’s choice of major, such as engineering, is a far more powerful



factor in her eventual earnings than her choice of college” (Nadworny and Kamenetz, 2019). What one chooses to study while enrolled in college—elite institution or not—is more likely to play the determining part in one’s potential earnings after graduation.

## Employer Expectations

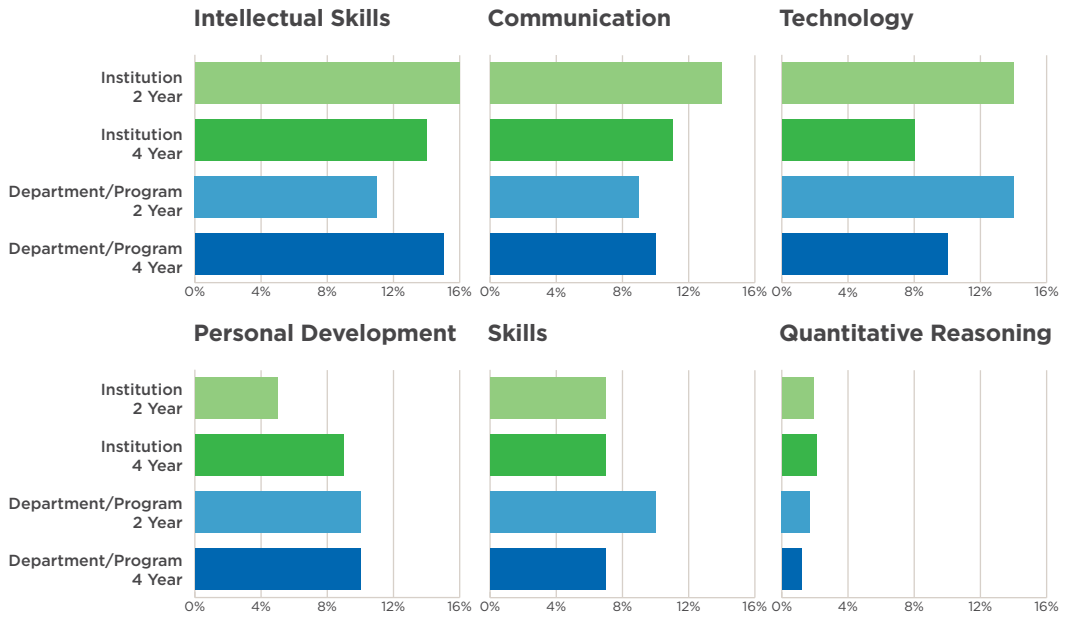
Employers could be considered ultimate consumers of our higher education system. They hire and depend on graduates to function and grow and have limited ways to determine who will be best for their companies. Traditionally, grade point average (GPA) has been a standard measure for ability or to predict success. GPA is still a standard requirement for graduate schools, but fewer employers consider it a useful measure. More often, employers want evidence of what a candidate knows and is able to do. In other words, they want to know what learning was expected of the candidate in college and to what degree they obtained it.

Results from the 2019 *Job Outlook* survey conducted by the National Association of Colleges and Employers (NACE) indicate the following top 10 candidate attributes sought by employers:

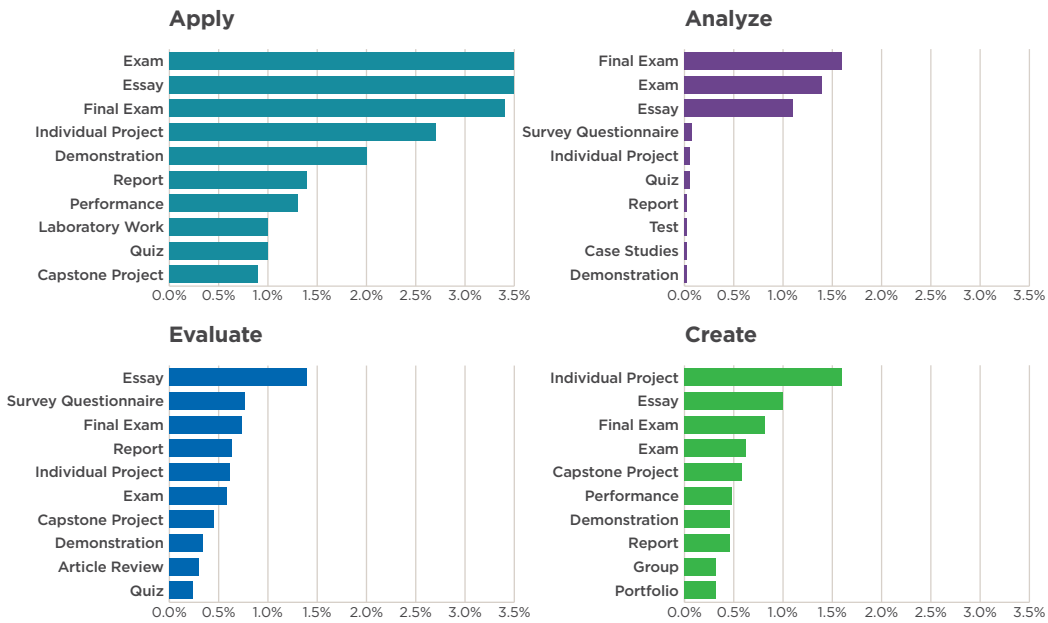
- |                                   |                         |
|-----------------------------------|-------------------------|
| 1. Written communication          | 6. Strong work ethic    |
| 2. Problem-solving                | 7. Verbal communication |
| 3. Teamwork skills                | 8. Leadership           |
| 4. Initiative                     | 9. Detail-oriented      |
| 5. Analytical/quantitative skills | 10. Technical skills    |

Four of these attributes—initiative, work ethic, leadership, and detail-oriented—are considered candidate characteristics and are not, nor would they be expected to be, directly represented in learning outcome statements. In this study, the learning theme that comes closest to representing these characteristics is **Personal Development**. The other six attributes are represented in the learning outcome themes of **Communication** (written and verbal), **Intellectual Skills** (problem-solving), **Skills** (teamwork), **Quantitative Reasoning** (analytical/quantitative skills), and **Technology** (technical skills).

A quick glimpse at the distribution of learning themes across ILOs and PLOs at two- and four-year institutions suggests that a good way to narrow down the candidate pool to those who have the experience employers desire is to look for a community or technical college listed on their resume.



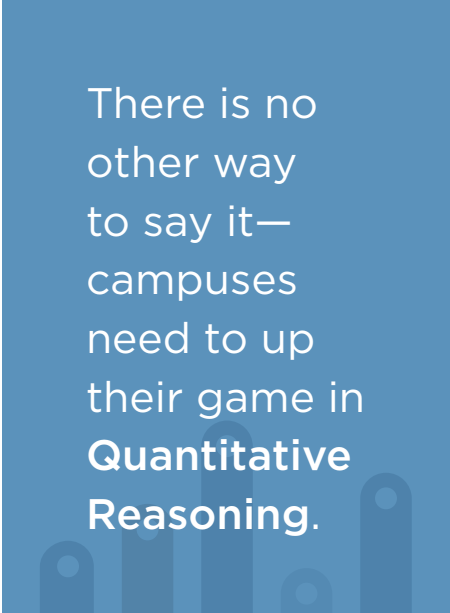
Additionally, employers should ask about—and candidates should offer explanations of—the ways in which their learning was assessed. The top levels of Bloom’s learning taxonomy suggest more complex levels of learning, and the data in this analysis show campuses are using more direct and, in some cases, more authentic methods of measurement. If a candidate can clearly and distinctly explain these experiences, they are likely a good pick.



## Quantitative Reasoning

There is no other way to say it—campuses need to up their game in **Quantitative Reasoning**. Employers have consistently listed analytical and quantitative skills as a desirable attribute, yet according to these data, the **Quantitative Learning** theme shows up in only two percent of outcome statements and is most often measured by **Exams**.

Just as writing courses are taught by the composition department, quantitative reasoning is often considered the purview of the math department. This may account for its low representation in percentage of learning outcome statements, but it is not an excuse. Quantitative reasoning is a discipline like any other and cannot be mastered in a single course. Campuses and programs should collaborate and work to ensure this theme can be experienced by students throughout the curriculum.



There is no other way to say it—campuses need to up their game in **Quantitative Reasoning**.

Educators should also reflect on the ways students currently practice quantitative reasoning, and how those practices could be updated. Higher education is steeped in habit and tradition, and a math exam is as traditional as it gets. For better or worse, traditional quantitative skills may no longer be necessary. Memorizing a statistical formula is worthwhile, but not imperative to conduct statistical analysis given software that can complete the calculation in milliseconds. Complex assessments that give students access to modern tools, technology *and* the fundamentals behind them are the best way to go.

## Career Specific Outcomes

As was noted in the introduction to this section, a student's chosen major may have a greater influence on economic success than the institution they choose (Nadworny and Kamenetz, 2019). As logic would dictate, the **Career Specific** theme was far more prevalent in program learning outcomes than in institutional learning outcomes. Schools and disciplines with specific accreditation bodies, such as Business and Nursing, are given a set of learning outcomes. Whether these are always well-conceived outcomes

is a discussion for another paper. But, they do accomplish what outcomes are intended to accomplish—they provide direction, communicate expectations, and support consistency across programs.

### Career Specific Program Learning Outcomes

FOUR-YEAR INSTITUTIONS

4%

TWO-YEAR INSTITUTIONS

8%

According to the Bureau of Labor Statistics (2017), it is possible, even likely, that college graduates will change jobs up to 12 times in their lifetime, and this is true for all disciplines. Engineers can become college presidents, speech-language pathologists can become hospital administrators, and English majors can become CEOs. The discipline-specific skills and knowledge learned may be more indicative of fit and potential than institutional outcomes or the brand on a diploma. Prospective students and their families may be wise to look at the learning expectations of specific programs and disciplines and bypass institutional outcomes altogether.

This message is important for college programs to hear as well. It is not hard to find reports sounding the alarm of declining enrollment in the humanities (Reed, 2018), and one possible factor could be a reluctance to embrace the concept of student learning outcomes. This is not true of all humanities departments, just as it is not exclusive to the humanities. So, the authors say to all departments—if program learning expectations and opportunities are not clearly defined and easily accessible, students may bypass your programs altogether.

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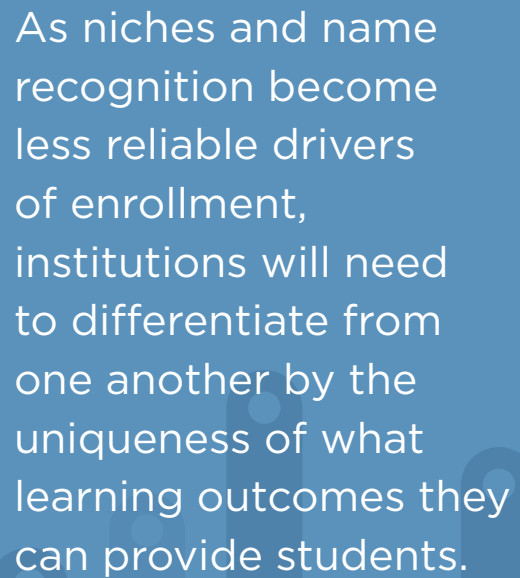
## One Final Question

While this study opens a lot of doors for further analysis, the most obvious being the actual *achievement* of learning, there is one final question to ask about these data—what do learning outcome statements say about educators and higher education?

There are some incredibly valuable learning themes that are just simply not well represented. We laid out a possible explanation for quantitative reasoning and humanities, but what about creative arts or human interaction? It cannot be accurate to say higher education and society don't value these themes. It may be accurate to say they aren't funded properly, though. After all, creative arts and opportunities for authentic human collaboration can require dedicated spaces, special materials, and time. Perhaps, if these themes had better representation in the expected learning at institutions, it would highlight the value of these experiences and draw the attention they need.

Campuses may also need to do a non-judgmental, yet honest, self-assessment to determine if some themes are not represented because of a lack of resources or comfort with the content. One cannot teach what they don't know. Is it possible meaningful learning outcomes are avoided because of a lack of experience with or knowledge of topics in technology or global issues? Perhaps, or perhaps not. That is for each institution to decide.

Finally, human beings avoid conflict and discomfort—and one of the most uncomfortable situations, for college educators in particular, is not being the expert. Writing learning outcomes is not a writing skill. It requires design thinking and pedagogical knowledge that is not often directly addressed in a typical professor's education and career development. We have a natural predilection to dismiss what we don't know or understand. Crafting learning expectations is hard—but because writing them *seems* simple, some may struggle with the process.



As niches and name recognition become less reliable drivers of enrollment, institutions will need to differentiate from one another by the uniqueness of what learning outcomes they can provide students.



With increased public scrutiny brought upon higher education as a result of scandal, cost, and general disagreement about purpose, it is all the more imperative for institutions as a collective to have processes in place that demonstrate what learning happens on campus, and to what end. As niches and name recognition become less reliable drivers of enrollment, institutions will need to differentiate from one another by the uniqueness of what learning outcomes they can provide students. On this matter, our study's findings suggest that most campuses indeed have a long road ahead of them.

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## Campus Labs Data Science

The Campus Labs Data Science Team has the privilege and a shared responsibility to empower institutions to make impactful changes through the strategic use of data—we accomplish this by understanding the interconnected interactions of students, families, faculty, and staff within a learning community. This complex network of people, places, and events generates rich stores of data that can be harnessed and modelled to understand and act in ways that bring success. As such, we are committed to protecting the quality of data, best in class data modeling, and presentation of continually improving results.

The quality of analysis is first contingent upon the quality of data. We are advocates of careful, responsible collection of relevant variables that are used to enrich the lives of all our stakeholders. We partner with campuses to improve the accuracy and completeness of their data. Diligence in improving data quality provides our modeling techniques with greater signal while reducing noise.

The Data Science Team are life-long learners and use current analysis methods to provide an actionable representation of the complexity of campus life. These techniques can be used to understand not only traditional, quantitative data, but also the rich, complementary qualitative data—providing a realistic summarization of data that are presented back to our stakeholders in actionable ways.

These summary models are continually updated to reflect new information that is collected. The results may show up in many different forms, all of which empower stakeholders to make informed decisions. This analysis results in new graphics, widgets, variables, reports, and other features—but, the true impact our team has is in the way data, analysis, and results equip students, families, and faculty to make decisions that equal success.

### **Tyler Rinker, PhD**

Lead Data Scientist

Campus Labs

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**Assistant Vice President, Campus Adoption**

Shannon LaCount joined Campus Labs in 2013, where she consults with campuses to successfully design and execute learning assessment, student success, institutional effectiveness, and accreditation initiatives. Prior to her current position, she was an Assistant Professor and Director of Student Learning Assessment at the University of Minnesota Duluth. She is a Teagle Assessment Scholar through the Wabash Center of Inquiry and a licensed Speech-language Pathologist with a Master's Degree from the State University of New York at Buffalo. She holds a Doctorate of Education in Teaching and Learning from the University of Minnesota.



**Matt Jackson, EdD**  
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Matt Jackson joined the Campus Labs team after a decade serving as an Assistant Professor in the Academic Writing and Learning Center for the University of Minnesota Duluth (UMD). An emerging scholar, Matt completed his Doctorate of Education in Teaching and Learning at UMD, researching the intersections of educational policy, technology, and student development. His MA and BA were both completed at SUNY Fredonia in the field of English, with minors in Sociology and American Studies. Matt's academic and professional experiences provide a unique expertise in understanding how data and language are used to navigate complex phenomena in higher education.



## About Us

Founded in 2001, Campus Labs partners with more than 1,400 colleges and universities to break down institutional silos and make valuable connections with their data. Campus Labs provides technology that allows institutions to build strong foundations for unified information, gain valuable insights and make better, actionable decisions.

Whether the goal is accreditation reporting, predicting retention, or innovative ways to engage students, Campus Labs empowers institutions to collect and analyze cross-campus data. To learn more, visit [www.campuslabs.com](http://www.campuslabs.com).

## Media Inquiries

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