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Connecting the Dots and Data for Student Success

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Introduction

The drive to improve the student experience is a common pursuit among higher education institutions around the world. Many factors, including supporting students, institutional reputation, financial health and government oversight, make this pursuit a top priority for them.

Key metrics have been developed to measure the rate of success. These metrics vary by country and system but include completion rates, retention, progression and student satisfaction. Globally, completion of a degree in the expected timeframe is just 39%, rising to 68% after three additional years.[1]

In the United States, degree completion is measured at 150% of the expected timeframe. Nearly half of all degree-seekers complete their degrees at the institutions where they start them. Institutions with low completion rates are more closely reviewed by accrediting associations, and their participation in federal student funding programs can be jeopardized as a result.

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[1] OECD (2022), "How many students complete tertiary education?", in Education at a Glance 2022: OECD Indicators, OECD Publishing, Paris.

The United Kingdom has the highest degree completion rates in the world[2]; achievement of further education students hovers at about 86% for all groups. Progression for first-year students is well above 90% nationally, which shifts the focus onto the quality of the student experience rather than the overall academic outcome.

The National Student Survey[4] is an important instrument the Office of Students uses to assess how institutions and specific courses meet their students' needs. The results are displayed in a ranking table, with leaders at the top. Those with lower scores on the table may be subject to "boots on the ground" inspections to determine if they adequately provide the quality demanded by the government.[5]

Quality assurance mechanisms and metrics are present in every developed higher education system and are often coupled with performance-based funding.[6] Rooted in the concept that a strong student experience drives successful outcomes, these mechanisms and metrics are used as evidence of a quality student experience but are limited in their ability to actually improve them quickly. They tell us what happened in the past (lagging indicators) and can identify deficits and opportunities to enhance the experience of future cohorts.

Student engagement data coupled with traditional data can become a powerful tool for institutional and student success.

[2] OECD (2022), "Cross cohort completion rates of full-time tertiary students, by level of education and gender (2020): Cross cohort only", in Education at a Glance 2022: OECD Indicators, OECD Publishing, Paris, in Education at a Glance 2022: OECD Indicators, OECD Publishing, Paris.

[3] Table Tool: Create your own tables

[4] National Student Survey

[5] Eight providers face 'boots-on-the ground' OfS investigations

[6] European Commission, Directorate-General for Education, Youth, Sport and Culture, Wollscheid, S., Stensaker, B., Jongbloed, B. (2015). Dropout and completion in higher education in Europe – Main report, Publications Office.

The Data Integration Imperative

As we look across the student experience, there are a myriad of potential points at which we might collect data. If resources are finite, where should we apply our efforts to create touchpoints or integrate disparate systems? The first challenge is locating data across systems and point solutions.

Transactional systems, such as the student information system (SIS), are built to collect, record and use data to move the student across the academic curriculum. These systems handle academic and financial transactions. However, much of the student experience exists outside of the academic curriculum. Numerous models of persistence highlight the need to integrate social factors into these transactional data to understand that students who may excel in the classroom may struggle outside of it. Conversely, looking at data only from the co-curricular transactions may reveal highly engaged students struggling with family, work, and academic issues.

Data from the student information system (SIS) often lags behind the student experience. An example of this is grading or test results. As these are entered into or transferred into the SIS, they capture the outcome of a course or exam. Data from the learning activity (course, module, co-curriculum) are often being captured outside the SIS in a learning management system (LMS) or a point solution used for the co-curriculum (student life, career services, research projects, internships or other experiential learning).
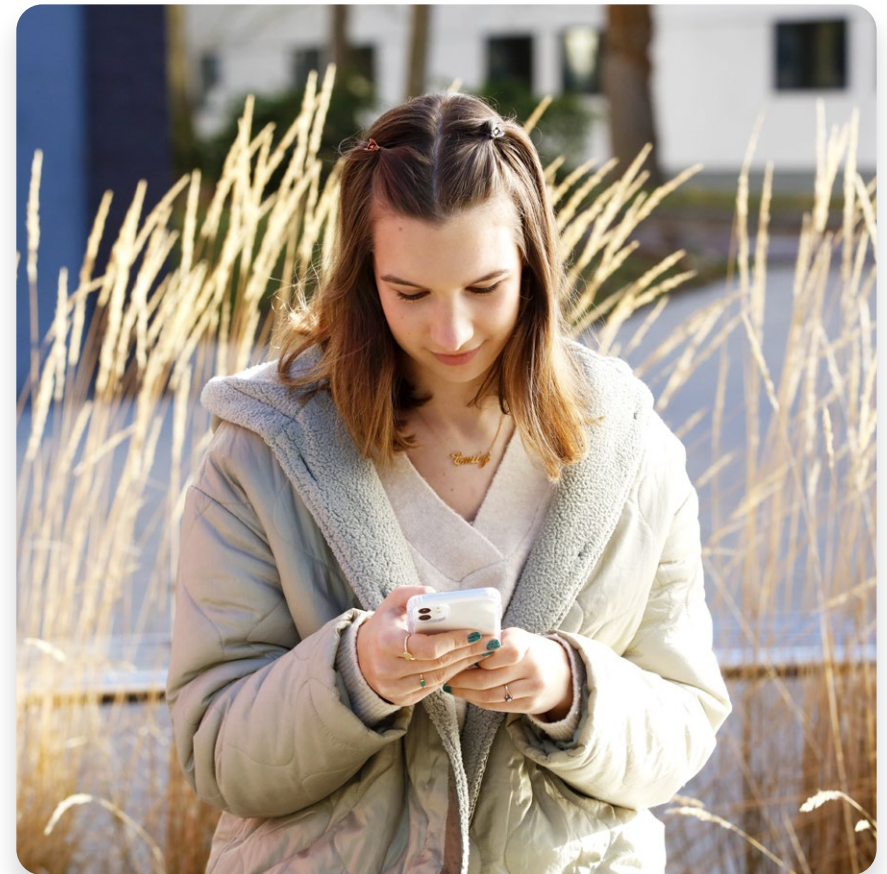
Students' interactions and engagements with support services can be identified as engagement data. Unfortunately, these engagement data are not captured in a standardized way and are poorly tracked. Even if designed from studies identifying areas where support could foster greater success, they are rarely linked to the data on the academic record. Although faculty may recommend that a student obtain tutoring on a subject (i.e., reading, math, writing) and the institution may have one or more centers to support that: Does the student go to a center and receive tutoring? If so, does the academic outcome improve?

Data silos prevent the institution from gaining a complete picture of the student's experience that can pinpoint its deficits. Legacy technologies such as data warehouses rely upon data transfer routines from multiple sources to join these data together. Limitations on the warehouse, data availability, and requirements to write reports to export these from one system and into the data warehouse often limit their integration.

Any data integration approach requires data governance and starts with developing or updating a data dictionary. What does each data field mean, where does the data come from, and how is it used in the student experience? Who has control over editing tables and their values? What data are protected or private, and how does system security allow this to be appropriately shielded or used? As data increase and intersect in a data cloud, these governance principles become essential and minimize or eliminate errors in data use and analysis.

Artificial intelligence (AI) advancements enable institutions to spend more time understanding students and proactively taking action instead of preparing static data and reports. The neural network approach used to analyze data, coupled with advances in processing speeds, allows institutions to predict any number of student outcomes in fractions of a second. While the likelihood to enroll at an institution as a prediction is not new, today's AI can estimate the likelihood of progressing or completing studies. The data can also be real-time, as opposed to a static dataset. As new data and variables come into the available data, the predictions become more accurate and relevant to the individual student.
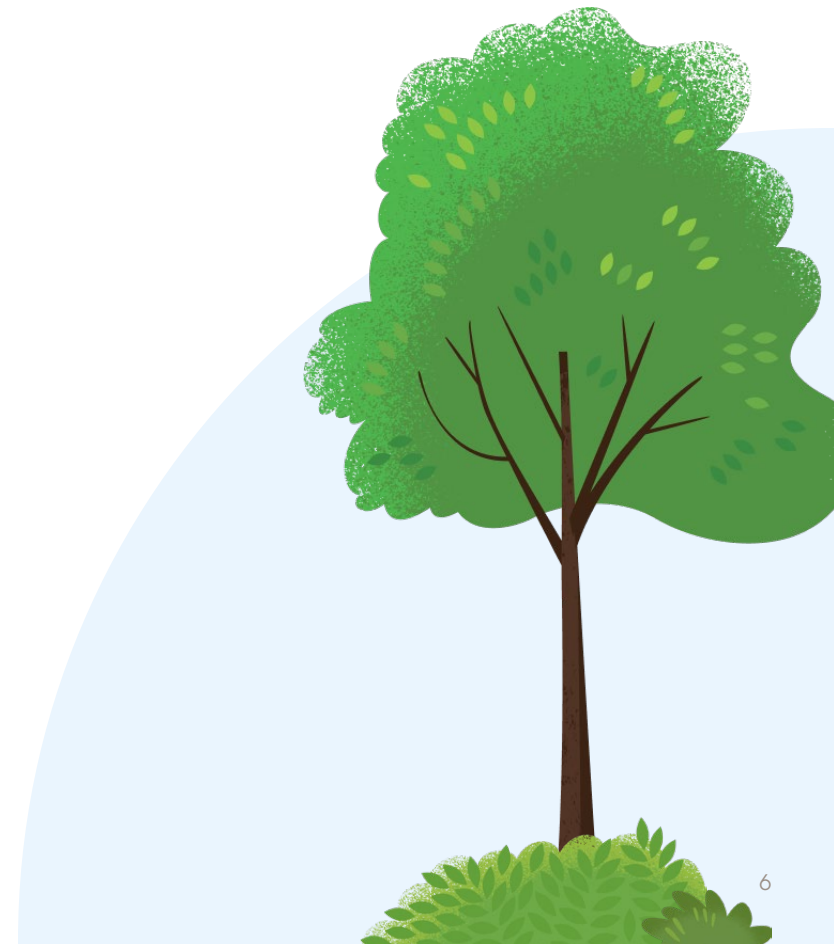
What Matters in Student Success

The third edition of the [Saleforce Connected Student Report](#) (2022) revealed that student belonging, connection, wellbeing as well as holistic support are critical variables in their overall experience.

As we look for data to identify areas where we need both transactional (lagging) and engagement (leading) indicators, the college departure model[7] by Vincent Tinto is is often-cited for examining student success. This model incorporates five categories of elements for institutions to consider as they develop their student success strategies, and provides a way to pinpoint where the data may exist or to identify gaps in data collection and analysis.

Further research on U.S. community college students tests this model and relates Tinto's concepts of academic and social integration as a "sense of belonging".

The table below describes the elements of Tinto's framework, briefly describing what those elements mean and how they also appear in the [Saleforce Connected Student Report](#). The table also identifies areas where critical data are linked to these elements.

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[7] Tinto, V. (1993, 2012). Leaving College: Rethinking the Causes and Cures of Student Attrition. University of Chicago Press.

[8] Karp, M. M., Hughes, K. L., and O'Gara, L.(2008). An Exploration of Tinto's Integration Framework for Community College Students. CCRC Working Paper No. 12. Community College Research Center, Teachers College, Columbia University.

Table 1. Framework of Lagging and Leading Indicators Using Tinto's Model

Tinto's Framework Elements	Description	Related Saleforce Connected Student Report Elements	Lagging Indicator Data (Analysis)	Leading Indicator Data (Action)
Academic Integration: Preparation	Ability to access and achieve secondary or pre-transfer college courses	Acceptance of student given life circumstances and options; academic focus of the institution	Secondary/pre-transfer college grades Test scores Non-cognitive variables from interviews, essays, etc.	Engagement with recruitment and admissions processes, events, personnel; interaction with faculty, staff
Academic Integration: Achievement	The academic markers after enrollment	Academic support; sense of belonging; wellbeing support; experiential learning opportunities	Grades/marks; percent of courses completed; academic standing	LMS log-ins, grades on assignments and tests, engagement with assignments; support engagement, experiential learning engagement, academic advisor engagement, many others
Social Integration	Ability to find peers, make friends, become part of a social network	Sense of belonging and connection, diversity of community	Joining student clubs and organizations	Engagement in clubs, organizations; attending co-curricular learning events; survey check-ins on loneliness and networking
Financial Support	Ability to initially and continually fund costs of education	Varies by country; total cost of studies; availability of grants and scholarships	Aid applications, awarded aid, outstanding debt after departure	Aid gaps after awards, financing chosen, unpaid balances within a term
Goal Clarity	The extent to which the student has a clear picture of why they are pursuing higher education	Sense of connection; experiential learning; lifelong learning	Declared major/course; changes of major/course; transfer out to another course	Engagement with career services, surveys, alumni; faculty mentorship; research topics
Support of Family and Friends	Whether the student's closest relationships support or conflict with initial and continued pursuit of higher education	Wellbeing support; location; family/friend history of attending same institution	First-generation status; alumni records	Largely uncollected: surveys of student perceptions of support and/or stress

Tinto's framework is a great tool to reflect on your institution's systems and the data they contain:

· To what extent can you collect, analyze and act upon the data above?

· Where are the gaps in data collection?

· Is analysis only within the siloed data, or has it been combined to provide greater nuance and understanding of influences and cross-tab interactions?

· Is real-time data collection occurring within individual departments, or can these data be seen holistically across the institution to reflect how the student engages across those departments and experiences?

Holistic Student Success

Several practices must come together to support the sense of belonging, wellbeing, and academic and personal success of students:

1. The ability to reach and engage with trusted advisors and supporters, as well as academic, personal and professional support systems

2. Tools that empower student agency

3. Tools that allow staff to have meaningful interactions and interventions with students, avoiding and minimizing the need to search for information or process routine transactions

4. A 360-degree view of student engagement across all departments, experiences and programs

24/7 Trusted Support

A student does not seek assistance in a linear fashion. While there may be some apparent resources (see the bursar/cashier to pay your bill), it is common for students to seek assistance from individuals the student trusts. Indeed, the student may turn to a faculty member, athletic coach, staff member or academic advisor for advice or help. Using a single case management and communications system allows any of these trusted resources to see where and when the student is seeking assistance or advice. Whether the student seeks counseling services related to studies abroad or their mental health, data governance is required. This ensures that any information shared does not violate the student's privacy while still allowing for important information to be shared among her trusted advisors.

Student Agency

When a faculty member or advisor suggests that a student seek tutoring or attend a learning lab, little is known about the next step and even less about whether that step positively impacts the student's success. A care plan can be manually or automatically assigned so that the student receives specific guidance on the next step. Other support teams in the plan (i.e., a tutor or learning lab facilitator) can be notified as well. This connects the need to a specific action that can be traced to completion. Once done, that data point is now available for reference in understanding the efficacy of the support. Career services teams can use care plans to drive greater employability through informational interviews, internships, research projects, etc. Care plans enrich the datasets that inform how and when support fosters student success and stronger outcomes.

Empowered Staff

Students of all ages expect to have information in the palm of their hands. Student portals that were developed in the 2000s provided some transactional and record data to students. As routine transactions became automated, institutional administrators and faculty learned how to streamline processes. Process owners had greater insight into the resolution speed of transactions and, thus, could "unstick" transactions when needed. Student satisfaction increased, and faculty and staff could spend time with students who needed a more personal approach.

Comprehensive View

When and where does the student engage with an institution's academic, social, financial and support experiences? As these elements are mapped and joined together, it may be necessary to add touchpoints. These touchpoints can be as simple as a quick "How did we do?" on a service interaction or a "How are you doing this week?" to check in on student wellbeing. The institution can ensure that things are on track and see if any support, services or experiences can help restore engagement. Student success teams can devise scenarios and predetermine the best resources and interventions, allowing outreach to be automated and speeding up response times.

Conclusion

The drive to improve student success is inextricably linked to technology. The most recent [Salesforce Connected Student Report](#) reveals that students today consider technology part of their experience and have a more positive view of that experience when their institution uses technology to support them. Students expect personalization every step of the way. Faculty and staff share this same expectation.

Achieving student success requires focus on three key areas:

1. Listening. How well does our institution understand the needs of our students? Can I see their engagement levels across the student experience?

2. Engagement. What tools do I have to provide information to students in the ways and mechanisms that our students need and prefer? Does our technology meet them where they are? Can we leverage digital channels to answer questions intelligently, suggest resources and guide students through streamlined processes?

3. Action. Does the data that we have allow our institution to boost retention with personalized paths to completion? Can I track all of our programs, services, experiences and communications in a way that preserves student privacy while allowing for proactive, personalized interventions at scale?

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About the Author

Tom Green began his academic career as an instructor of music performance in Chicago. He soon became an administrator and was the chief enrollment officer at seven universities in the United States for more than 22 years. He then developed and led professional development for enrollment managers and provided and led consulting services worldwide as the Associate Executive Director at AACRAO. He joined Salesforce in 2022 as an industry advisor and the Director of Strategic Enrollment Management. Dr Green is the author of several journal articles and book chapters, a workshop leader on enrollment management, technology integration and student financing, and a frequent conference speaker. He holds baccalaureate (University of Iowa) and master's (American Conservatory of Music) degrees in music performance and a Ph.D. in Higher Education Leadership, Management and Policy (Seton Hall University). He and his wife, Angie, live in Northern Virginia.