



Improving student experience by integrating student data—and voice

A data-enabled, listening-driven approach to addressing current challenges in higher education and supporting students into the future

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The current challenges and opportunities in higher education

Decreasing enrollment in higher education continues to challenge leaders as the impact of the pandemic reverberates across all types of institutions in the United States. The onset and continuation of the pandemic seems to have only accelerated the existing [downward trend in enrollment that began in 2011](#). [The National Student Clearinghouse reported nearly 1 million fewer students enrolling in higher education since March 2020](#), which represents a decline of approximately 5% over four semesters. In addition, research from Gallup and the Lumina Foundation [published in April 2022](#) found that 33% of bachelor's degree-seeking students have considered withdrawing in the past six months.

The challenge of declining enrollment, along with the coming [demographic cliff of 2025-2037](#), is not news to higher education leaders; and much work has been done across the field to improve student retention and success through programs, engagement strategies, and the use of technology. Best practices in student engagement, expanded experiential learning opportunities, creative financial incentives, and reimaged curricula are all important parts of the playbook for minimizing student attrition and maximizing success. However, as any CIO or Student Success



leader will attest, these systems and strategies can be labor-intensive for the staff who plan and coordinate interventions and support.

Identifying which students are most likely to benefit from specific interventions and when requires a more integrated and data-enabled approach today because of the scale on which universities operate. That's particularly true with the expansion of hybrid and remote learning. To personalize support at scale to hundreds, thousands, or tens of thousands of students, a more robust solution is needed.

While it's important to connect and analyze existing data within your institution's system, there is an opportunity to look further. One of the most obvious, yet still largely untapped is the voice of students. In a world where governments and corporations are elevating the voice of constituents and customers, higher education has the opportunity to better listen to the voice of students. In addition to monitoring existing student activity and performance, colleges can integrate and elevate the role of the student voice. We call this capability: **Student Listening**. This capability asks, "How might we foster an ongoing, two-

way conversation with students, making sure students are genuinely heard—and in keeping with our institutional value of continuous learning, how might we collect that data and make sure we're acting to make things better for our students?"

Delivering on a robust, data-enabled solution that incorporates Student Listening is both exciting and daunting. Yet modernizing, integrating, and transforming institutional infrastructure is an inevitable next step to evolving student experience. It can also augment the human power of staff and faculty to do what they do best: develop strategies that promote student learning and experience.

The four essentials of effective Student Listening

An effective Student Listening solution is composed of integrated systems and platforms that help leaders:

01 Sense

Sense and detect the relevant factors in the learning environment.

02 Perceive

Perceive and understand indicators that might signal trouble.

03 Decide

Decide what actions can and should be taken.

04 Act

Act on those decisions through university staff, faculty, and available resources.

Keep reading for a deeper dive into each of these areas, with research and examples to give you a better understanding of how to use student data and voice to improve student experience.

01

Sense

National data show that in 2019, only 66% of students returned for their second year at the institution at which they began. Integrated systems and platforms can be used to detect signals of trouble, especially those linked to retention. Such platforms can gather data in the form of:

- Academic indicators like high school GPAs, college admissions test scores, college GPAs, attendance, and learning management system (LMS) activity
- Financial indicators like tuition payment status and campus employment
- Institutional engagement indicators like sensors enabled by the Internet of Things (IoT) that are connected to housing/library access
- Student-provided data like micro-surveys that gauge a student's sense of belonging and campus/classroom experience—a form of Student Listening

In addition to collecting and integrating this data, such platforms can harness this data in predictive models to quickly identify at-risk students, which we discuss more in the next section (Perceive). They can capture and display data across the useful lifecycle to answer foundational questions about student experience.

Cloud technology for student experience



Send automated grade alerts with Amazon SNS



Seek student feedback with AWS Chatbot



Visualize financial health with Amazon QuickSight



Foundational questions about student experience include questions about academics. Are students missing classes? Are they participating in online classroom discussions? Instead of waiting for midterms or end-of-semester grades to identify at-risk students using traditional platforms, integrated platforms can track attendance, participation, and performance in near real-time to enable early interventions. Notification services can automatically send nudges when grades have changed. Chatbots can also seek feedback from students about any concerns they may have and how they're feeling about their classes, or even their living situation. Sensing these signals promptly and continuously can allow institutions to undertake proactive measures that support students in getting back on track.

These foundational questions about student experience also involve finances. Are students struggling financially? For nearly one in five students, [cost of higher education](#) is the number one societal concern, ranking even higher than climate change and healthcare costs. Consider a technology that can capture the voice of students' concerns about their financial health. Add to that the ability to track on-time

payments and automatically answer common financial questions and now you have the power to keep both staff and students more informed—and at ease. You’ve also reduced student wait-times and alleviated the load on administration. Integrated systems and platforms also allow institutions to visualize this data through staff- and student-facing dashboards. Insights can even be [used](#) to proactively offer financial assistance if necessary.

Lastly: Do students feel like they belong? Belonging—with peers, in the classroom, or on campus—is a key component of student success and retention. Fostering a sense of belonging has proven successful at [many](#) institutions, in some instances, [increasing first-year retention rate by 10%](#). Capturing student sentiment on a regular basis can be achieved by automating chat sessions that engage students with [brief measures of belonging](#) that can be immediately compared to baseline levels assessed during orientation. Academic or co-curricular advisors can use this data to check in with students and administer [interventions](#) that improve belonging.

When it comes to sensing data to improve student experience, variety matters. Sensing everything from student perception to student behavior makes it easier to identify a wider range of at-risk students because these data points may not be correlated. [For example](#), while academic performance indicators and sense-of-belonging indicators both predict retention, they are uncorrelated and not predictors of each other. Additionally, today’s students expect their voices to be heard. They [seek customized, instant communication](#) that is responsive to their needs and concerns. They expect faster and more personalized feedback from everyone and everything. Integrated platforms can help here by detecting the unique combination of factors that predict student retention, communicating directly with at-risk students, and customizing plans to help them.

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02

Perceive

Correctly and continuously interpreting indicators of student experience is critical, especially when conditions shift as quickly as they have shifted during the pandemic. And with greater access to sensors and their data, the opportunity to quickly and correctly use this information to perceive students' performance, financial health, and overall engagement is greater than ever. But access to more information isn't enough to seize this opportunity. University staff and faculty are, in many cases, already overwhelmed with the volume of information they receive. What they really need is insight from this information, delivered at the point of need.

Genuinely understanding student preferences and behavior from disparate data has historically been extremely difficult. Consider the challenge of identifying students at risk of isolation, for instance. Student engagement staff may approach this challenge by monitoring student access to residence halls and dining facilities over holiday periods to identify individuals who routinely remain on campus instead of departing to visit family or friends. While helpful, this data set is only one among many that could indicate isolation risk, reactive in nature, and potentially misleading on its own. For example, faculty may not have the view that student engagement staff have of students' comings and goings across residence halls and dining facilities, but they do have

CASE STUDY

Seattle University worked with Slalom and AWS to move its data warehouse to the AWS Cloud, helping staff accelerate reporting turnarounds from days to hours.

SERVICES USED

Amazon Redshift

Microsoft Power BI

[View case study](#)

a view of attendance, in-class participation, and graded events, which student engagement staff may not be able to see without requesting specific access or authority. But were these data sets combined, they may better indicate students at risk of isolation.

To be fair, many universities examine challenges like this with similar combinations of data—perhaps with even more data sets. But in many cases, this analysis is performed manually on an ad hoc basis and is time-consuming to produce. Staff and faculty are often left to aggregate the data across disparate systems or manually queue other resources to collect missing data—a process that can leave them feeling overworked. Moreover, insights arrive too late to help students today and can be irrelevant as the environment shifts, behaviors change, or new data sources emerge. Late insights may cause a student’s concern regarding academic performance to go unnoticed until testing, even though indicators could have been perceived in their performance on prior assignments.

While the effort remains challenging, modern data and analytics technology systems can more easily capture student voice at scale and over time across the student lifecycle. These systems can simplify the task of receiving, storing, processing, analyzing, and visualizing data.

- Cloud-based data warehouse services (e.g., [Amazon Redshift](#), [Snowflake](#)) can integrate data into central repositories of information across universities.
- Unified data analytics platforms can process ad hoc, batch, and streaming data together in a single analytics engine—effectively reducing processing time from days to minutes.





- Predictive analytics via low- or no-code machine learning algorithms from services such as [Amazon SageMaker Canvas](#) can predict student challenges by learning from previous outcomes.
- And visualization and reporting tools (e.g., [Tableau](#), [Microsoft Power BI](#), [Amazon QuickSight](#)) can provide comprehensive (and comprehensible) insight about student performance and wellness.

While these technological solutions are no panacea, they represent a tremendous step forward for university staff and faculty who must deploy limited resources to perceive students' challenges and devise interventions that improve student success outcomes.

03

Decide

One of the powerful benefits of aggregating data across the student lifecycle from multiple sources is the bottom-up generation of data that can reveal patterns over time. One way to frame this aggregated data is a student journey map—a single, end-to-end visual portrayal of a student’s experience over the course of their education. While the ideal vision is to have data spanning the entire journey from applicants to alumni, it is the core in-school period that is most ripe for action. Aggregating data for this period reveals key “moments that matter” to student success or distress. These include well-known moments like a student’s transition to college during “freshman fall,” or their scramble to complete graduation requirements during “senior spring.”

But when it comes to deciding where to act, administrators need to know which specific students need support. For example, if 10% of a college’s sophomore class is showing signs of distress academically or financially and there are 4,000 sophomores, that means 400 students are struggling. It’s essential to know who those students are in real-time, which requires integrated and easy-to-process data. An integration platform can not only help with this, it can act like an AI-enabled CRM solution, with event-driven triggers that alert staff of potential distress and provide recommendations for next best actions. Student success staff will benefit from automated support because it frees them up to focus on

CASE STUDY

We helped Georgia State establish cloud infrastructure for its Student Dashboard, which students use to stay on top of their course schedules, bills, and financial aid.

SERVICES USED

Jenkins

AWS Lambda with TypeScript

Amazon API Gateway

[View case study](#)

servicing students rather than figuring out which students need servicing and why.

The system can also help administrators improve decisions over time by tracking those decisions (and subsequent interventions) against actual outcomes. As time passes, the data pool grows richer and offers greater opportunity for supervised machine learning. Machine learning then makes it possible to further personalize recommendations. A student at risk of isolation, for instance, might receive personalized suggestions for campus clubs and events based on interests expressed in orientation surveys or elsewhere. And as data representing student voice increases, institutional listening also increases, allowing schools to integrate student perceptions, experiences, and outcomes into their own decision-making process.

Differentiating on supportive and engaging student experience is a powerful approach. As predictive and responsive technology grows in the coming years, schools that have a continuous listening program supported by data and tools will have better insights and a more genuine understanding of their students. Listening at scale is no longer the experimental practice it once was. It is now imperative to stay in tune with evolving student challenges and preferences. When done well, students are engaged, healthier, and happier—making for happier faculty and staff.

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04

Act

One of the top priorities across all industries is improving the “experience” for those you are dedicated to serving. Whether they are patients in a healthcare setting, constituents in a government service setting, or customers in a retail setting, organizations are focused on modernizing what their experience looks and feels like.

As outlined in this whitepaper, modern technologies and ways of working can help higher education institutions sense, perceive, decide, and act on student data—and student voice—in ways that reshape the student experience. Integrated, cloud-based systems and platforms can sense indicators of student experience in near real-time. These systems can enable two-way conversations with students through AI-enabled chatbots, and they can help staff perceive the meaning of many different experience indicators using unified analytics engines and more. Last, these systems can help administrators decide on the most effective course of action for students’ continued success.

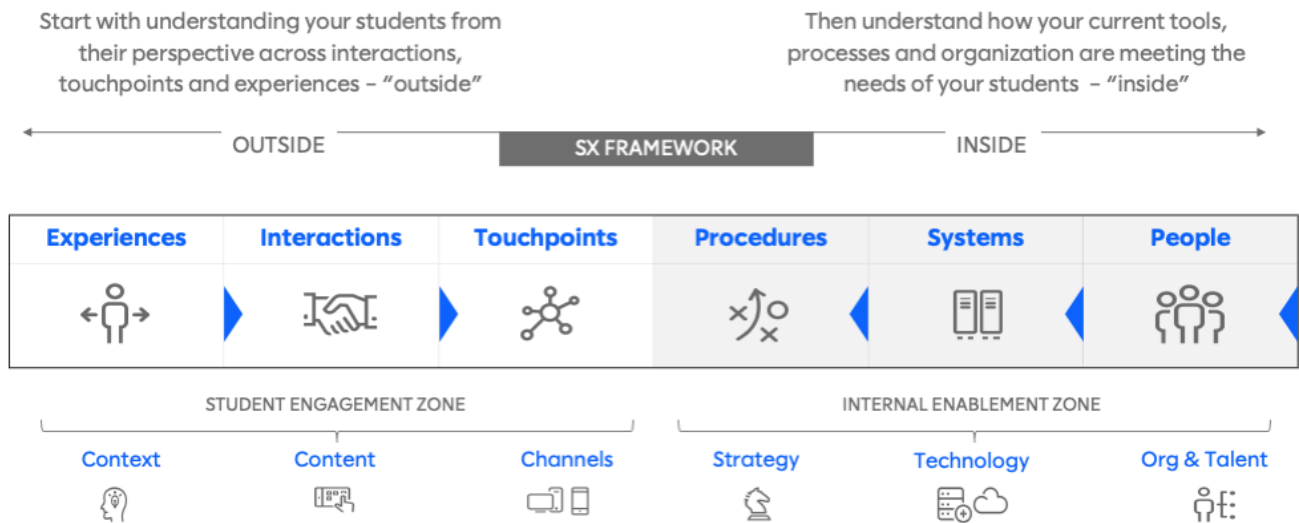
Modern technologies and ways of working can improve not only the success of the student, but also the success of the communities in which these students decide to live, work, and play. Given the unprecedented challenges of our time related to inequity, violence, poverty, and homelessness, it is our calling and our duty as educators to identify improvement



opportunities and implement solutions in each of our communities that we know start with educated and gainfully employed community members.

To identify these types of solutions, educators need to holistically understand the people, process, technology, and data aspects that are impacting the student experience. Such a mapping exercise helps schools understand where they are doing well in serving students, as well as where improvements can be made. A community of seasoned educators and passionate consultants at Slalom has developed a framework for this kind of exercise to help our customers start charting the most effective course.

Slalom Student Experience (SX) Framework



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At Slalom, our purpose is to “help people and organizations dream bigger, move faster, and build better tomorrows for all.” As educators and consultants, we are especially passionate about building better tomorrows in higher education. In addition to developing our own frameworks, we’ve developed partnerships with the world’s top technology providers to further support our mutual customers. We’ve formed relationships with organizations including Amazon Web Services (AWS), whose vision for education we wholeheartedly support: “a world where education is always available, personal, and lifelong for everyone.”

We look forward to making an even greater impact with colleges and universities across the globe, working in tandem with customers and partners to modernize the delivery of education and improve student experience and success.

About the authors



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Andy Alt is an organizational effectiveness consultant for Slalom with a focus on digital transformation and change management. Before joining Slalom, Andy invested nearly 20 years in education, most recently serving as a senior leader at a mid-sized public university. In that role, Andy was responsible for driving student success initiatives, equitable outcomes for all students, building cross-division coalitions and partnerships, enabling data and technology, and leading the transformation of the student experience. Andy earned a doctorate in Education Leadership and a master's degree in College Student Personnel.



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- Public Sector
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About Slalom

Slalom is a global consulting firm focused on strategy, technology, and business transformation. In 43 markets around the world, Slalom’s teams have autonomy to move fast and do what’s right. They are backed by regional innovation hubs, a global culture of collaboration, and partnerships with the world’s top technology providers. Founded in 2001 and headquartered in Seattle, Slalom has organically grown to over 12,500 employees. Slalom has been named one of Fortune’s 100 Best Companies to Work For seven years running and is regularly recognized by employees as a best place to work.

Learn more at [slalom.com](https://www.slalom.com)