

Key Findings from a Conference on Student Success at the Liberal Arts College

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Abstract - Undergraduate retention and completion rates are the subject of national interest and questions of cost, value, and quality remain the focus of public debate. In April, 2015 Grinnell College hosted a conference regarding best practices in student success operations and research. Conference participants included faculty and staff from eight highly-selective liberal arts colleges, two state universities, the EDUCAUSE Learning Initiative, and the RAND Corporation. Topics discussed included findings from a five-year longitudinal study of student use of academic support services at Carleton College, those from the Survey of Undergraduate Research Experiences (SUREIII) at Grinnell College, the use of analytics tools in institutional research work at Grinnell College, and ongoing work with the theme of “Beyond the Classroom Matters” at the University of South Carolina, a program on their campus intended to create a comprehensive unit record for students. Presentations and discussions identified several key points, including the need for multifaceted data collection regarding student experiences, the value of data sharing across offices and divisions, the promise of intervention science, and the imperatives of leadership and coordination.

Introduction

Liberal arts colleges provide students with an opportunity to discover intellectual and personal interests, acquire vital skills, and learn through high-impact pedagogical practices in an intimate, residential setting shaped by close interactions with dedicated, tenure-track faculty. Classes at the nation’s best liberal arts colleges are small and inquiry-driven; students have access to excellent research opportunities, libraries, laboratories, and infrastructure. Yet the liberal arts model also faces significant challenges in terms of finances, access, sustainability, technology, and heightened public scrutiny. To succeed in that environment, liberal arts colleges will need to make compelling arguments regarding cost, value, and quality. They will also need to devote renewed attention to questions of student retention and success, demonstrating that they are able to deliver an outstanding education that enables students to learn, thrive, and complete their degrees at high rates. To explore this challenge, in April of 2015 Grinnell College hosted a conference with the objective of sharing important questions and best practices in both operations and research work related to student success.

Challenges for Liberal Arts Colleges

Liberal arts colleges, like many undergraduate institutions in the United States, now operate in an increasingly complex environment that places a greater premium on student retention and success than ever before. Over the past decade, tuition and fee increases at private, non-profit liberal arts colleges and universities have averaged 2.4% above the rate of inflation. In the past few years increases have averaged four to five percent, roughly twice the consumer price index (Anderson, 2012). As tuition has climbed, competition among institutions for high performing students has also led to the aggressive, broad use of increased financial and especially merit aid in an attempt to build and sustain enrollments. From 2000 to

2010, the national freshman discount rate increased from 37.3% to 42.4%, contributing to a cycle of higher tuition and higher discount rates, eroding revenue per student and putting pressure on institutions lacking the resources to compete.¹ While longer-term endowment returns have remained solid, colleges face sharp swings that make such financial arms racing difficult. In 2011, for example endowment returns averaged an impressive 19%, but in 2012 they remained basically flat.² In addition to this complex financial picture, colleges must also respond to shifting national demographics. Over the next twenty years, for example, the number of high school graduates in the northeastern United States is expected to fall by approximately ten percent, and similar trends are appearing in other markets. The nation's high school graduating pool is increasingly diverse as well. By 2020, students from minority groups are projected to account for 45% of the nation's public high school graduates, a steady increase from 38% in 2009.³ Liberal arts colleges, therefore, face the challenge of delivering an outstanding education, preserving accessibility to students, and supporting an excellent faculty while still remaining financially strong. To succeed in that changed landscape, moreover, they will need to recruit, retain, and support larger numbers of minority and first-generation college students, often reaching into markets that they have historically had less engagement with and that have frequently completed college at rates below those of more affluent students from privileged backgrounds.

Most crucially, colleges will need to make compelling arguments about the enduring value of the liberal arts, demonstrating that a major investment in a degree in history, English, or anthropology will not leave students to graduate deeply in debt, with few employment prospects, doomed to live in their parent's basements. While dire predictions of disruptive innovation and massive consolidation have yet to be realized, colleges will need to empower their students to succeed in an environment in which rapid technological change has altered the nature of libraries, classroom instruction, and skills demanded for entry into the job market. Starting with the 2006 Spellings Commission Report and its call for a "culture of accountability and transparency" in data collection and measurement of outcomes-based student learning, governmental demands that colleges demonstrate the value of their product have increased as well. More recently, the Obama Administration's plans for a rating system, potentially linked to federal financial aid allocations, has put a heightened premium on strategies to measure, promote, and enhance student success, retention, and completion. Now more than ever before, liberal arts colleges will need to bridge effective data collection, predictive analytics, and interventions to support their students. To do so, moreover, they will need to develop integrated systems for information sharing across campus offices and expand their focus from traditional academic preparation and support to the other "non-cognitive factors" shaping student outcomes, including social integration, resilience, and mental health.

The Conference Structure

Guided by the aforementioned concerns, Grinnell College convened a small gathering of faculty and staff from eight highly-selective liberal arts colleges, two state universities, the EDUCAUSE Learning Initiative, and the RAND Corporation. The day-long meeting was designed to include four core presentations, areas of particular and current interest contributed by several participating institutions, and concluding group discussions of cross-cutting themes.

¹ National Association of College and University Business Officers, as reported in Chronicle of Higher Education, Aug. 21, 2011.

² National Association of College and University Business Officers, as reported in Chronicle of Higher Education, Feb. 1, 2013.

³ SUNY Albany Rockefeller Institute of Government, as reported in the Chronicle of Higher Education, Feb. 6, 2013.

Presentations

Soliciting Student Feedback

For the past five years Carleton College (Nixon, 2015) has implemented the Survey of Student Engagement with Academic Support (SEAS), a survey asking students to describe their recent experiences with both challenging and familiar academic assignments. Response rates have ranged from forty-six to forty-eight percent for each administration (2008, 2009, 2010, 2011, and 2014) and have resulted in a total sample of over 1,417 respondents. In the rush to collect data from staff regarding student interventions, it seems that many institutions may have missed the opportunity to go directly to the source and ‘just ask the students’ about their experiences. This approach has been quite successful at Carleton.

In SEAS, the students are asked the same questions twice, once for familiar assignments and again for those they consider challenging. These questions include details about help-seeking behavior including; where students work on assignments, what time of day the students work, any support they received (specifically from whom), the nature of the questions for which they sought help, how they sought help (mode of contact), and characteristics of the space in which they studied. The survey has served not only as a means for measuring participation and interaction with spaces and help-seeking, but also as a way to promote help-seeking behaviors across campus.

Between 2008 and 2010, student and staff researchers at Carleton identified statistically significant changes in the responses from the first-year class - specifically who they ask questions of when seeking help. Between the 2008 and 2010 administration of the survey there were large and statistically significant jumps in first year students reporting asking questions of anyone, asking questions of classmates, and asking questions of student workers at academic support centers. The 2014 administration of the survey reveals the same upward trend in help-seeking behavior. This direct approach to data collection is a promising model of student engagement, research as intervention, and the ability of that research to impact student behavior.

Unit Record Data

The University of South Carolina is engaged in an effort to create a more holistic view of the student experience (Bowers, 2015), including educationally-purposeful activities and individual student involvement outside of the traditional classroom. This initiative has been identified as ‘Beyond the Classroom Matters™’. During the presentation on this work and the discussion that followed, it became clear that the problems associated with unconnected data are not unique to large institutions. Data silos present a problem both in administrative functionality and in the students’ own record keeping and self-promotion. In order to implement a continuous improvement framework, higher levels of accountability and transparency, and co-curricular transcripts, institutions will need to move from a department-centered data collection model to a student-centered model, where activities the student has participated in follow them throughout their tenure at their college or university.

The data collected in the ‘Beyond the Classroom Matters™’ model can answer questions regarding the impact and effectiveness of what has traditionally been the domain of student affairs programming. Understanding how extracurricular programming might shift completion and retention rates, employability, and learning is an important part of determining value in an era when both students and educational institutions are seeking improved outcomes measures. This effort has helped the South Carolina community to better understand and communicate the purpose of non-academic activities, the knowledge and skills applied during such activities, student interactions, and the vast array of extracurricular activities on a campus of 32,000 students.

The Role of Undergraduate Research

The Survey of Undergraduate Research Experiences (SURE) is a nationally-known survey focused on science and primarily intended, but not limited to Howard Hughes Medical Institute (HHMI) grant award recipients - approximately thirty percent of those who participate (Lopatto D. , 2004). This survey includes general demographics, questions related to future career plans and the influence of

current projects on those plans, the peer mentoring experience, and evaluation of the mentor and peers. The survey assess twenty-one possible learning gains including understanding of the research process in one's field, learning to work independently, self-confidence, and ability to analyze data.

Between 2007 and 2014 the number of institutions/groups using SURE has grown to over one hundred, with more than 3,843 individual participants in the 2014 year. Implemented by a wide variety of colleges and universities, the survey shows no pattern of differences between sexes, ethnic groups, or institutional types in the twenty-one areas of assessment. Generally, students have reported increased motivation to learn and independence after participation in a summer research experience (Lopatto & Williams, 2007). This type of multi-institution data has proven to be valuable in understanding what the survey's creator describes as 'stealth attrition' from the sciences (when students opt into a non-science major and go on to graduate).

Inspiring Action with Data

A major source of interest in student success originates from the diversity of the students - embodied, cognitive, and socioeconomic at Grinnell and similar institutions. The incalculable combinations of the curricular environment and student interactions, however, also poses a challenge for a comprehensive method for assisting and assessing students as they chart their course through their individually-advised course of study. Grinnell's intention is to 1) understand the current availability of qualitative and quantitative information concerning student support, 2) to initiate a system of information collection and analysis that will permit the study of the relational success of the efforts of the supportive environment, and 3) to map the "micro" successes of the real-time support efforts to the "macro" indices of student success, namely persistence and completion rates. In attempting to do this at Grinnell, the concept of *early indicators* of academic performance has come to the surface. These indicators include, for example, test scores, early grades, attendance, and faculty reports of students' academic ability. We are currently exploring ways to bolster these systems so that they are more systematic and have more predictive power.

It is important to note that the current campus context at liberal arts colleges is quite different from those with a high degree of online activity. Such schools do not necessarily have daily or even frequent electronic "footprints" corresponding to student activity. We also note here that recent in-house research has led to the conclusion that for many students, academic performance indicators do not serve as flags for transfer, drop out, or withdrawal from the college. This is true for more than half of the students who withdraw from Grinnell. This finding has led to the interest in so called non-cognitive factors as discussed in a subsequent section.

In combining existing data, newly collected information, early indicators, and measures of non-cognitive traits and abilities we are attempting to provide a more holistic view of the student, tracked throughout their time at Grinnell. These data have allowed us to visualize student trajectories (for example, change in term over term GPA) and the relationship between these changes and later outcomes for specific groups of students. As described in the *Analytics at Work* (Davenport, Harris, & Morison, 2010) framework, in addition to mining data from the past, we are increasing the emphasis on improving our ability to create meaningful and near-real-time alerts and to produce effective predictive models. The ability to identify, on an individual- level basis, students who fall into a variety of negative or positive risk categories has proven to be useful in daily practice for those on the front lines of student advising and counseling work. Although these findings have been helpful, we are now focused on increasing the frequency of data collection in order to provider a closer to 'real-time' view of student dynamics, both in and out of the classroom.

Institution-Specific Issues: Group Discussion

As part of the meeting design, invited institutions were asked to submit a problem statement or question of interest during the conference registration process. These statements served to shape discussion groups that followed the presentations summarized above and fell under three broad

categories: retention and completion for special populations, academic advising (staffing and effective use), and the emerging popularity and use of ‘non-cognitive’ data in student success research.

Retention and Completion in Special Populations

Of the participating organizations, two indicated a focused interest on retention in special populations; one specifically related to retention and completion in STEM fields and the other in first-generation and minority students. More specifically, the institution focused on STEM students has been analyzing entrance exam scores (SAT and ACT) as predictors of early success in entry-level science and math courses (often times seen as ‘weed out’ courses for entrance into a field of study). Of additional interest in the future is the role of student motivation and other measures of achievement in predicting performance in early STEM coursework, looking specifically at differential levels of motivation or achievement in at-risk populations.

The interest in retention and completion is not limited to specific fields of study. The colleges represented at this meeting all have an interest in providing effective retention and completion programs for traditionally underrepresented groups. Following is a quote from an example problem statement focused on this issue. “Supporting the recruitment, retention, and persistence of diverse students is an integral component of promoting healthy community life and for advancing retention and graduation rates; determining best practices for proactively supporting retention and persistence across diverse students is of top priority. In many smaller residential settings students have high contact with peers and professional staff in Residential Life and in Student Life, and these offices use a team-based approach to initiate proactive contact with students who show signs of needing additional support or resources. Although the staff and faculty may consistently implement programs and interventions intended to sustain and improve retention and persistence, we are also interested in learning what more we could do to identify students who may be struggling academically, personally, or otherwise and to meet the diverse needs of our students. Of particular focus are (1) effectiveness of current practices, (2) needs assessment, and (3) building an assessment platform for new initiatives.”

Academic Advising: Effective use of advisors and staffing

In the liberal arts environment it is not unusual for faculty to also act as students’ primary advisors during their time at the institution. Of particular concern in this area is how faculty, in conjunction with professional advising staff, may be utilized to both meet students standing needs for direction in curriculum and engagement and to support institution-wide efforts to increase retention and graduation rates.

For one of the participating institutions, previous efforts to understand the college’s student retention and timely degree-completion challenges have included external and internal analyses of both quantitative and qualitative variables associated with student persistence. The resulting recommendations have included the restructuring of academic advising from the first point of contact through to graduation and the hiring of additional full-time College Advisors (professional advisors) to provide increased continuity and support for undergraduate students. Often, faculty assist students with course selection, graduation planning, and other activities commonly associated with advising, while the professional Advising Team is primarily charged with “reactive” advising duties; responding to alerts or other deficiencies as communicated to their office.

External and internal studies and reports have noted that the current organization of advising activities does not include consistent, systematic, and proactive tracking of student progress toward their degrees, and meeting participants made it clear that a new advising structure is necessary to improve institutional outcomes and the overall student experience. However, the need for additional advising staff has sparked lively debate about the importance of faculty-directed advising. The leadership team is asking and exploring how, at a liberal arts college with a tradition of faculty led advising, they may continue to meet student needs with growing demands on both faculty, staff, and students as well as positively impact retention and graduation rates.

Use of non-cognitive data in student success work

Beginning with an examination of the current and historical four-year and six-year graduation rates, one institution expects to improve the methodology of tracking student success in real time, using both individual and aggregate data to model features of student success, to examine these features to understand student behavior, and to enhance those support services that promote student success. This institution has very few academic requirements and students have been encouraged to design their own course of study in collaboration with their academic advisor. Although six-year completion rates at this college are stronger than that of higher education as a whole, some institutions in their peer group regularly see graduation rates five percentage points higher. In considering their student population and the weak relationship between standard academic indicators and future academic success, they are now moving towards the study student behavior on a more “micro” level by collecting meaningful information from the student support offices of the College and integrating this information with so called ‘non-cognitive’ data. A novel feature of this new effort is that this school will not treat various offices as isolated centers of student support, but will attempt a relational analysis of student support as a whole.

This institution has, for the first time this past year, collected two sets of non-cognitive data; the Duckworth 12-question ‘grit’ index as well as the Educational Testing Service “Success Navigator” Survey. Initial analyses reveal a weak relationship between these measures and first semester grade point average, but continued analysis and longitudinal data may provide greater insight. In addition, this college is investigating the feasibility and appropriateness of sharing students ‘grit’ and other non-cognitive survey results with them directly. The ethical and staffing implications related to this new knowledge are an area for further discussion.

Some Key Findings

What follows are some examples of the take-aways faculty and staff at Grinnell were left with after the meeting outlined earlier in this paper. The authors don’t claim this to be a comprehensive list nor does it necessarily represent the views of participants from other institutions. However, these examples do provide a sense of the most important issues, questions, and actions we are pursuing at this time and that were influenced by the conference.

Student Success is Everyone’s Business

Student success, and learning success, is everybody’s business in the liberal arts college setting. “Responsibilities for creating effective learning environments in which our students can and do succeed are broadly distributed. Students themselves must take responsibility for their own learning; faculty must design and teach educationally effective courses, student affairs staff provide developmental support and residential contexts, and academic affairs colleagues aid the development of educational programs and provide resources and expertise to support students and faculty alike. Institutional research and IT organizations are called upon to support the entire enterprise.”⁴ Because this important work is everyone’s business, we are faced with an alignment challenge. Effective communication and collaboration across the many different functional areas of a college, even a small, private college, requires both strong leadership from the top and grass-roots buy-in for the work. At Grinnell College with this requirement in mind, we have made the decision to focus on developing an improved understanding of current retention and completion rates in the Quality Initiative that is part of the current accreditation cycle for the college with the goal of improving those rates over time.

⁴ Nixon, Andrea and Stiles, Randall, “Studying Learning Success: Exploring Factors, Questions, Data and Ways of Using Your Analyses to Greatest Effect,” EDUCAUSE Connect, San Antonio, April 23, 2015

Conceptualizing and Categorizing Data

The work of the past two years at Grinnell has led us to a new conceptualization of data related to student success as illustrated in the following figure.

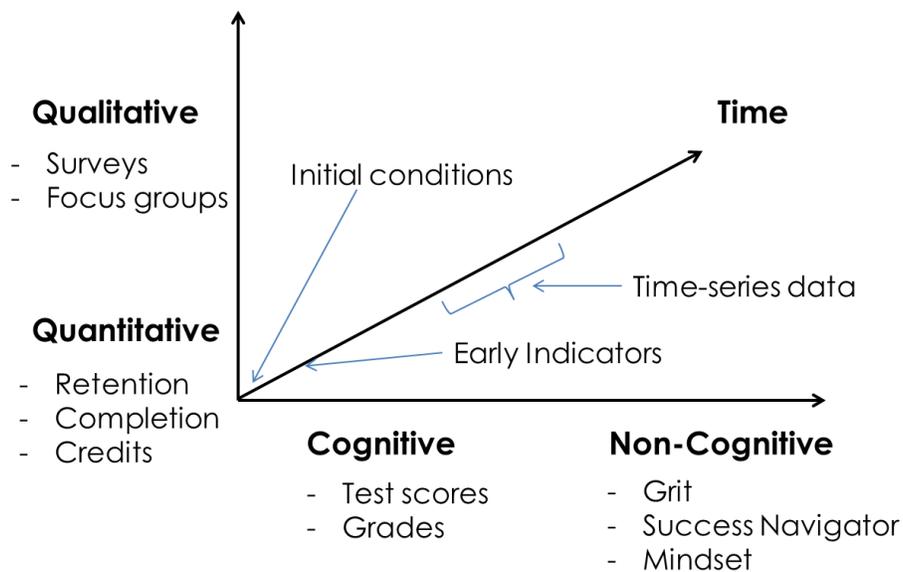


Figure 1. Conceptualization of student success data

As noted on the vertical axis in figure 1, we recognize the need for mixed-methods research and as a result are developing more robust collections of both qualitative and quantitative data. We have developed a new protocol and procedures for exit interviews with our students that will yield a much richer data set. We are revisiting the results of our many years of UCLA’s Cooperative Institutional Research Program (CIRP) Freshman surveys for new insights, particularly those related to CIRP “Constructs” - indicators “designed to capture the experiences and outcomes institutions are often interested in understanding, but that present a measurement challenge because of their complex and multifaceted nature.” At the same time, we are bolstering our quantitative data collection efforts with new analytic skills and data views with an emphasis on cohort and individual student trajectories.

The horizontal axis of figure 1 suggests the need for more data than are found in a typical student information system. This year, for the first time, we collected new sets of non-cognitive data for our students using the Duckworth 12-question “grit” index instrument and the Educational Testing Service “Success Navigator” survey. As noted in the Web site for the Duckworth Lab at Penn State University, “Our lab focuses on two traits that predict achievement: grit and self-control. Grit is the tendency to sustain interest in and effort toward very long-term goals (Duckworth, Peterson, Matthews, & Kelly, 2007). Self-control is the voluntary regulation of behavioral, emotional, and attentional impulses in the presence of momentarily gratifying temptations or diversions. (Duckworth & Seligman, 2005). On average, individuals who are gritty are more self-controlled, but the correlation between these two traits is not perfect: Some individuals are paragons of grit but not self-control, and some exceptionally well-regulated individuals are not especially gritty (Duckworth & Gross, 2014).” At Grinnell for the fall 2014, cohort, we added the “Duckworth 12” grit survey questions to the CIRP Freshman Survey and now have a grit index score for more than 90 percent of that class. This has allowed us to begin looking for relationships between that index and performance at the College.

Also for this first time this year, we have tested an instrument called “Success Navigator” that was recently developed by the Educational Testing Service (ETS). We obtained a 65 percent response rate with this survey. The instrument focuses on non-cognitive factors that may have an effect on student

retention and college completion rates. Specifically, the Success Navigator survey measures four areas of a student's non-cognitive ability (<https://www.ets.org/successnavigator/about>):

- *Academic Skill*: Behaviors, beliefs, and skills directly related to academic success
- *Commitment*: Commitment, drive, and perceived importance of academic success
- *Self-management*: Response to pressure and academic rigor
- *Social Support*: Resource availability

Figure 1 also illustrates the importance of the time dimension in data collection. Like many other colleges of our kind, Grinnell operates on a semester scheduling system with typical completion of a Bachelor of Arts degree in eight semesters of work. When they arrive on our campus, they come with a very rich data set – *initial conditions* for the trajectory they are about to establish at the college. The initial conditions include scores from our Office of Admissions regarding their academic potential, the quality of their high school, their promise of contribution to the college community, and their demographic characteristics. During new student orientation, we acquire additional information about their attitudes and experiences through the CIRP Freshman survey and others. *Early indicators* of academic performance at Grinnell include systems for faculty and staff to flag students who show signs of academic or behavioral difficulty and, of course, their first semester grades. We are currently exploring ways to bolster these systems so that they are more systematic and have more predictive power.

The initial conditions and early indicators described above are examples of relatively *strong signals* in our system, especially first-semester grades. What we are lacking at this time, are systems and associated data (“*time-series data*”) from the daily lives of our students. Our college is richly-resourced with support staff all doing their best for students in a variety of programs and activities every day. However, the data collection and sharing by these services is highly idiosyncratic and irregular. As a small campus with low student/faculty and student/staff ratios, we are indeed providing robust and highly-personal support services; it's a “high touch” environment. But, it is possible that we would do better with additional data regarding the frequency and effectiveness of these interventions as they affect the development of our students.

Mental Health and Social Integration

An analysis of Grinnell-specific trends in leaving found that the main drivers of non-completion are mental health issues and concerns, a difference between expectations and the reality of the academic rigor at Grinnell College, and incomplete or dysfunctional social integration (Beatty, 2013); these findings are consistent with anecdotal evidence from multiple constituencies on campus. In addition Brown asserts that previous medical and/or personal leave are both inversely associated with eventual graduation from Grinnell College (Brown, 2013), although by the time a student plans to take a leave, much of the evidence pointing towards an issue should be apparent. In assessing the impact of social integration on the college campus the idea of ‘belonging’ arises (Walton & Cohen, 2007). Currently, Grinnell College (along with other institutions) is evaluating the impact of interventions focused on measures of social integration, belonging, and ‘fit’, which include questions such as ‘I fit in well in [subject] at [school name]’ (Walton, Logel, Peach, Spencer, & Zanna, 2015) and ‘sometimes I feel that I belong at [school name], and sometimes I feel that I don’t belong at [school name]’ (Walton & Cohen, 2011). Because Walton and Cohen have established measures for these constructs, the data collected regarding belonging may be comparable across institutions in the future.

Intervention Science

At the end of June, 2014, Grinnell entered into a contracted partnership with a company providing data science services and strongly influenced by lessons learned about interventions in health care.⁵ This company provides data science expertise as well as software products and services aimed to improve our understanding of our student population profile in order to more effectively support students and align faculty advising and retention resources to targeted areas based on findings from the data. As

⁵ Civitas Learning in Austin, Texas

noted earlier, this level of deep understanding is absent from current discussions at Grinnell because of a lack of the time-series data needed to extract and conduct real-time analysis across the many disparate information systems on campus. Among the options we are exploring for increased frequency for data collection are; 1) better tools and data input incentives for staff providing support services, 2) card-swipe systems that provide real time entry and dwell time data for student use of services, and 3) student “activity tracking” regarding their academic and co-curricular lives on campus.

Cost/Benefit Considerations

We have the privilege of working at a small, private, residential, and highly-selective liberal arts college along with many strong peers who share our interest in serving highly-talented and motivated students from all around the world. Our retention and completion rates with hand-picked students are already quite strong when compared to national levels. That said, it is reasonable to question the need for additional effort and costs that might be associated with small percentage gains in these outcomes. There are two compelling arguments that favor such an investment. First, as institutions that market themselves as providing programs of the highest quality for *all* students and at a substantial cost, it is imperative that we strive for continuous improvement in the full range of our support services. Second and from the view of the institution as a business, because of the especially high levels of institutional aid provided for students at these schools, student attrition is very costly; students who withdraw are not likely to have a positive or philanthropic relationship with the college in the future. Staffing for specialized support services at liberal arts colleges is often quite extensive – and expensive. Also, as we have discovered in recent explorations of the market for data collection and sharing software, these systems can add considerably to college costs, staffing needs, and IT system complexity. Build versus buy decisions, and if “buy,” decision making about what system or collection of systems will be best has proven to be especially challenging.

Conclusions

Among the major conclusions the authors and conference participants shared were:

- Student success work at liberal arts colleges will benefit greatly from comprehensive data collection that includes not only academic but also co-curricular and non-cognitive information. Indeed, factors related to student mental health, sense of belonging, and residential experience may often be undervalued in current means of assessment.
- The collection and sharing of time-series data across different offices engaged in student education and retention (faculty instructors and advisers, student affairs staff, academic resource centers and others) is essential if our goal is learn about the effectiveness of particular interventions. There are lessons to be learned from health care about such work and there is a rapidly developing market for software tools that will help.
- Liberal arts colleges have long sought to provide comprehensive networks of support for students, but they have historically done much less to analyze the impact of particular strategies on retention. While student enrollments at liberal arts colleges are small, data collection over time may provide both predictive analytics useful for early intervention with students and facilitate decisions regarding which interventions are most worthy of investment.
- Given the need for extensive coordination in data collection, assessment of interventions, and improved actions in support of students, comprehensive approaches will require strong leadership support, commitment across multiple offices, and clear means for accountability and follow up.

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