# Improving Retention with Technology

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Abstract

Since fall of 2006, the Undergraduate Academic Advising Center at the University of Illinois Springfield has administered a program to identify early in each academic term students who under-perform in their classes. The Early Alert System enables faculty to identify at-risk students in their first year courses, and refer those students to an advising professional who determines the factors impeding academic success and develops strategies to overcome those impediments. To reduce the inefficiencies of a paper system and to address problems with data mining, the UIS Advising Center implemented a state-of-the-art retention software program during the last academic year. Improvements in student and faculty participation, data management, and reporting capacities are already apparent. The poster session (see Appendix A) documents the journey through various technology tools and academic advising and support needs that brought the Center to the Starfish Retention Solutions software.

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Improving Retention with Technology

Over a six-year period, the Undergraduate Academic Advising Center at the University of Illinois Springfield has continually improved its efforts to retain at-risk students through an Early Alert system.  That system has employed increasingly sophisticated technologies to report at-risk students, monitor student academic progress, and provide intervention services.  With improved technologies has come the ability to expand services, increase faculty involvement, increase student commitment to academic success, and coordinate the retention efforts of multiple entities across campus.

University Background

UIS is a small, public, liberal arts institution first established as Sangamon State University in 1970.  Situated in the state capital of Illinois, the university was established as an upper-division institution with a public affairs mission for students who had already completed an associate's degree at the junior/community college level.  In 1995, the school joined the University of Illinois system.  Working toward the goal of becoming a four-year institution, a cohort of 100 honors-level freshmen were admitted in 2001.  In 2006, the first fully expanded class of freshmen students matriculated representing a broad range of academic profiles.  UIS currently enrolls over 5000 students, with just over 2000 graduate students.  Approximately one-third of all students are enrolled in online programs of study (UIS, 2012).

Simple Beginnings

The twenty-first-century higher education landscape presents formidable challenges to current educators and administrators.  In the higher education environment, there is an increasing concern for value received (Arnone, 2004; The Lawlor Group, 2009).  Declining national ACT composite scores suggest more freshmen are entering college under-prepared to succeed

(Kaworski, 2009). Bigger (2005) reports that twenty-eight percent of college freshmen in public institutions fail to continue beyond their first year in college. Tuition increases have consistently outpaced inflation for the past decade (Supiano, 2008) and student debt now surpasses credit card debt in the US (Brown, Haughwout, Lee, Mabutas, & van der Klaauw, 2012). As the pressure to demonstrate that the quality of the education received is worth the dollars spent and will result in expected outcomes (Field, 2006), higher education institutions are expanding areas of assessment and examining ways to measure how value is added to the education experience.

UIS was certainly not immune to any of these realities when opening its doors to traditional first time freshmen. An honest assessment of the range of abilities and academic preparedness represented in the first full freshmen class in 2006 prompted faculty governance at UIS to call for a formal mechanism to address students' academic needs and ensure academic success. In response to this call, the Office of Undergraduate Education created the Early Alert system to monitor the progress of students in 100- and 200-level courses.

The first iteration of the Early Alert (EA) system involved email referrals to a single EA advisor who tracked referrals and contacts through a paper filing system. The referrals were generated by an email survey sent to faculty at the beginning of the fourth week of the semester. Survey submissions were sent to a confidential mailbox assigned to the EA advisor. When a referral was retrieved from the mailbox, the EA advisor informed the student of the referral and requested an appointment to review the details of the referral. The EA advisor also informed the student's academic advisor of the referral and at times solicited input in development of the intervention plan. The EA advisor tracked all email, phone, and in-person contacts through paper documentation and established folders for each student separate from the regular advising folders for all students served in the Center. The rationale behind this closed paper system was

to protect the students' privacy and confidentiality around matters of academic under-

performance.

Sixty-eight faculty referrals were received in the first semester, and another 87 in the

second semester.  Of those 155 referrals, approximately 100 had at least one contact with the EA

advisor, and the academic advisors followed up with the students at least once on their

intervention plan progress.  The first year-end report consisted of the counts: number of referrals,

number of unique students referred, number of total referrals for each student, number of faculty

making referrals, number of courses from which students were referred, number of referrals from

specific courses, and number of student contacts with the EA advisor.  The report also included a

list of the types of issues for which students were referred and the number of referrals in each

category.  The processes of manually counting all these numbers from the emails and case

folders led to the maintenance of excel spreadsheets to capture these specific counts as the events

occurred.

While academic advisors and the Office of Undergraduate Education were concerned

with identifying appropriate interventions to improve performance, external stakeholders

including the UIS Undergraduate Council were concerned with the impact of those interventions,

wanting evidence that interventions employed by the advising team in fact led to improved

academic performance resulting in successful completion of courses, student persistence, and

retention.  The Office of Institutional Research was able to pull data from the university's student

information system documenting semester to semester and year-to year retention.  Connecting

that data to the retention efforts of the Early Alert system was difficult at best.

In the second year of the program (07-08), the data were fed into a database to create

reports detailing the referrals to the Early Alert system – student, course, faculty, and reason for

referral – and interventions employed for each referral.  Tracking and documentation of the

outreach, contacts, and interventions was also captured electronically instead of on paper.  The

database proved to be much more efficient than the paper system, even with increased volume,

as administrators of a number of pre-identified "at risk" sub-populations (athletes, honors,

transfer students, etc.) also required separate notifications whenever a referral was received for

members of their groups.  The database format was designed to pair the referral data with the

retention data (grades, academic standing, and enrollment in the subsequent semester) for the

referred students.  This pairing proved to be easier said than done and efforts to correlate

performance and persistence data with the EA data continued to present challenges.  Even with

notations about students who had referrals in both semesters and specific interventions

employed, the second year-end report was again mostly just counts of the contacts with little that

served as evidence that the early interventions improved performance and positively impacted

retention.

In the third year of the program (08-09), the database was upgraded to automatically

capture the survey data.  While this was a vast improvement for the EA Advisor, the volume and

participation had also increased, especially among the at-risk populations.  At the time that the

database was updated and automated, the Office of Undergraduate Education also implemented

pre-enrollment placement testing software (COMPASS).  In addition to aiding placement into

appropriate writing and math courses, the placement exams created a more effective method of

identifying at-risk students who then became one of the "watch groups" of special populations

requiring additional administrative follow up.  To handle these increased demands, an additional

EA Advisor was hired into the program who took on more of the actual contact and follow up

with the students.  This freed the primary EA Advisor to attend to more of the administrative

details, maintain contact with the specialty program administrators, and manage the database.

The third year-end report reflected this growth in the program.  It was evident that

faculty, particularly those in the writing, math, and science general education courses, had come

to recognize the impact the program had on addressing issues that impeded students' academic

progress.  Intervention plans integrated several resources on campus and necessarily included

follow up with the referring faculty.  The EA Advisors also became consultants to faculty

making proactive efforts and trying to determine the most appropriate approaches and

interventions to manage inappropriate classroom behaviors.  The EA System had established

itself as an academic support resource to students and faculty.  Despite this testament to the value

of the EA system to student success, problems with mining the data to measure and reflect the

effectiveness of the EA system continued.

Meeting the Increasing Need

In the fourth (09-10) and fifth (10-11) years, the EA program continued to experience

growth and increased prominence in academic and student affairs realms.  Integrating and

coordinating services with other academic support units and several student affairs units, the

program also became a resource for student service units outside of the classroom.  In particular,

student life, housing, and athletics invested much energy into establishing formal relationships

with the Advising Center and the EA program specifically to help address student difficulties

arising in their venues.  In addition to the Undergraduate Council, the General Education

Council, the Deans' Council, and the Campus Senate began to request more evidence of the

program's effectiveness and impact on retention.  Efforts to mine the data in the EA system

database to reflect accurate measures of the effectiveness continued to stymie and tax members

of  the Advising Center, the Office of Institutional Research, and the university Information

Technology teams.  Having stretched these resources beyond their capabilities to provide

integrated meaningful reports for all the retention efforts, the Advising Center and Office of

Undergraduate Education began an earnest search for a software package that could capture and

report the necessary data.

Advisors intentionally sought to secure a system that would make sense of volumes of

data already collected through the EA system.  Additionally, with all advisors involved in the

development of intervention plans, an ideal system would integrate data from EA, placement

testing, academic advising, and manage communications between the Advising Center and other

units on campus.  The system also needed to be able to connect the students with as many

resources as possible.  Given the expanded advising and retention services and programs for at-

risk sub-populations including first generation, ESL, and students in remedial courses, it was

important that multiple support units on campus also be able to communicate and monitor their

efforts in a unified system.

During this same period, inspired by NACADA's "Advising is Teaching" concept

(NACADA, 2006), the Advising Center was developing an intentional advising model that

requires several specific supportive advising contacts within the student's first three semesters.

Gardner (1986), Kuh, (1997), and Tinto (1999) make compelling arguments for the role of

frequent academic advising contacts and pursuit of specific learning objectives in achieving

student success.  The model was piloted in 2010 and fully implemented for the class entering in

2011.

Also, capitalizing on the successes realized in the coordinated efforts with other campus

units, the Office of Undergraduate Education facilitated a campus-wide holistic approach to

supporting student success.  Spence (2011) advocates strategic partnerships between academic

and student service entities to improve student persistence and academic outcomes.  Likewise,

Kuh (2008) encourages institutions to invest resources into effective programs and activities

focused on at-risk populations.  The intentional advising model and holistic support programs

focus on personal engagement and individualized intervention planning specific to the students'

characteristics and needs.  Advising and Undergraduate Education joined their efforts to identify

a commercial software program that would serve the retention efforts of the campus.

In 2011, the Advising Center purchased and implemented the Starfish[®] Retention

Solutions software (Starfish, 2012).  The software not only tracks EA referrals, contacts,

interventions, and outcomes, it also provides a convenient repository for documenting support

activities by all respective support units.  For example, when an athlete receives an EA referral,

be it a notice of academic under-performance or a kudo for a particular achievement, the student

is notified, the academic advisor is notified, and the athletics advisor is notified.  When any of

these resources intercede on the student's behalf, that activity is documented in a central

location.  The student is also able to communicate with any of the support units through the

system.

<p align="center">Metrics - the UIS retention story</p>

The metrics have evolved from simple participation counts for faculty referrals and

student contacts to including differentiation by types of referrals and types of interventions and

corresponding performance indicators.  Advisors efforts to correlate mid-semester and end-of-

term grades with EA interventions and resolutions are becoming a reality.  The data is now

collated, comprehensive, and analyzable to investigate the factors involved in student

persistence.  Metrics now involve more sophisticated strategies that are beginning to evaluate the

effectiveness of the early alert system and document coordinated retention efforts.

Having just completed phase three of the pilot and graduated roll out, analysis of the first

year of data from the Starfish system is currently in progress.  The fall to spring semester

retention numbers jumped significantly from the prior year (see Appendix B) and the data is

being analyzed to determine which interventions and Starfish components may have contributed

to this dramatic increase.  The reports are being customized to include components of the

intentional advising model and holistic support approach.  Anecdotal and informal measures

suggest attrition in the freshmen class declined after this academic year, but persistence will be

fully measured and analyzed after fall census.

The software's reporting capabilities have truly created the return on the investment.

Reports are available on demand as well as at periodic cycles.  The software is integrated with

the campus learning management system (BlackBoard) to provide immediate access to academic

progress in current, and past, courses.  The software also accepts feeds from the student

information system (Banner) which allows advisors to track midterm and end-term semester

progress, and subsequent term enrollment within the Starfish software.  The integration with the

university's existing email, learning management, and student information systems provides a

dashboard array of student progress that ideally serves both the intentional advising and holistic

support programs.

<div align="center">Future Expectations</div>

Starfish has helped UIS realize its goals of an automated EA management program that

allows capture, documentation, and reporting of multiple, coordinated retention efforts across

campus.  An added benefit is the software company's approach to maintaining a superior

product.  UIS and other Starfish customers are active members of the development team.  This approach embodies the tenets of the learning organization (Senge, 1990) and Greenleaf's (1997) recommendations to infuse the value of service in the liberal arts educational mandate.  UIS is part of a vibrant learning community with other Starfish users.  Users have lively communications about their experiences, questions, and concerns to improve use of the software, and access to a very responsive support team for the truly technical issues.  The software developers regularly request specific customer input on feature enhancements.  Customizable reports and enhancements to streamline the documentation process are two such projects currently in development.  Seasoned users are regularly asked to communicate with potential and new users about the benefits that can be realized with Starfish.  This level of involvement generates a sense of certainty that Starfish will continue to meet our evolving retention needs and goals.

Summary

In the UIS home-grown Early Alert system, the Advising Center was able to record the data to track at-risk referrals and interventions, but lacked the capacity to translate that data into meaningful reports to stakeholders outside the unit.  By investing in the Starfish software, we have vastly improved our monitoring and reporting capacities.  The increase in faculty and student participation is directly attributable to the efficiencies of the interactive communication components of the system.  All advisors are now able to monitor student progress with less risk of compromising records privacy and data integrity.  The current system provides an on-demand dashboard indicator of student progress with immediate access to documentation of contacts and interventions.  Advising and other campus units supporting specific retention programs are also

able to monitor their interventions and better able to coordinate their efforts.  Most importantly, the software allows effective coordination of campus resources through technology.

The evolution from a mostly paper system to adaptive uses of the MS Office Outlook, Excel, and Access Applications to a commercial product that successfully integrates multiple electronic systems has been an incredible journey.  Our retention efforts as a campus have been coordinated in ways that allow creativity and more immediate responsiveness to our students' needs.  We now have much better reporting mechanisms and we are able to report more than just "counts."  The higher retention numbers realized in the few months we have used the product suggests that we have a useful tool that supports our retention goals.  An added plus is that we are confident that we have invested in a product that will grow with us over time.

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**Appendix A**

**Poster Presentation**

Our poster represents a timeline of technological advancement and illustrates key decisions made to improve the early alert system and retention services.  Factors in decision-making included the expansion of the student population being served, increased demands for interventions that led to increased staffing, and the need for a system in which information could be disseminated through a shared access point while retaining confidentiality.  Significant points along the timeline include

--Year One(2006-07): starting an early warning system for an expanded class of first-year students and identifying the components of the initial paper and email version of the tracking system;

--Year Two (2007-08): manual data entry and refinement of categories for at-risk referrals;

--Year Three (2008-09): developing a custom database that allowed automatic downloading of email referrals and electronic tracking of outreach and intervention services;

--Years Four and Five (2009-11): realizing the limitations of the system for outcomes tracking and reporting, adding staff to cope with increased student referrals; and initiating a search for commercial software to meet a variety of needs on campus and enable expansion of the system beyond first- and second-year students; and

--Years Six and Seven (Spring 2011-Spring 2012): running dual systems while piloting STARFISH Early Alert and Student Connect.

Appendix B

Retention Metrics 2006-2011

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|---|---|---|---|---|---|---|
| | ***UNIVERSITY OF ILLINOIS SPRINGFIELD*** | | | | | |
| | First-Time Fall to Spring Retention Rates (as of Census) | | | | | |
| | Fall 2006 - Fall 2011 Cohorts[1] | | | | | |
| | Fall 06 | Fall 07 | Fall 08 | Fall 09 | Fall 10 | Fall 11 |
| | AS OF | AS OF | AS OF | AS OF | AS OF | AS OF |
| | Spring 07 | Spring 08 | Spring 09 | Spring 10 | Spring 11 | Spring 12 |
| All New Freshmen | 90.9% | 87.0% | 90.3% | 93.8% | 89.5% | 90.5% |
| Total | (N=243) | (N=261) | (N=309) | (N=288) | (N=294) | (N=241) |
| | First-Time Fall to Fall Retention Rates (as of Census) | | | | | |
| | Fall 2006 - Fall 2010 Cohorts[1] | | | | | |
| | Fall 06 | Fall 07 | Fall 08 | Fall 09 | Fall 10 | Fall 10 |
| | AS OF | AS OF | AS OF | AS OF | AS OF | AS OF |
| | Fall 07 | Fall 08 | Fall 09 | Fall 10 | Fall 11 | Fall 12 |
| All New Freshmen | 71.5% | 65.5% | 73.1% | 76.0% | 74.1% | *not available until Fall 2012* |
| Total | (N=243) | (N=261) | (N=309) | (N=288) | (N=294) | (N=241) |

\* One Capital Scholar from the 2006 entering class passed away during his 2nd semester at UIS.  Following federal guidelines, the class headcount is reduced accordingly in the retention calculations.

[1] Only students who met the federal definition of a first-time freshman are included.  Transfer freshmen are excluded from the federal cohort due to their prior attendance at another postesecondary institution.