STUDENT RETENTION AND RETENTION INFORMATION SYSTEMS IN HIGHER EDUCATION

By

ALEXANDER PAUL SMITH

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A Thesis Submitted to The Honors College

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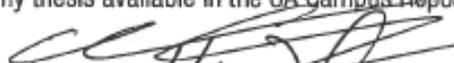THE UNIVERSITY OF ARIZONA

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Abstract

Student persistence and retention within the higher education system has been a concern on a broad scale and on a university scale for a long time. Information systems have only just begun to gain traction as another solution for student retention, but they are being proven to be extremely effective. Traditional retention methods such as academic assistance, skills training, student clubs, and other on-campus resources can only go so far. Student retention information systems offer a new dimension within university student retention: these information systems gather, analyze, and report persistence data to academic advisors, professors, and other faculty and staff so that university representatives can proactively help students who are at-risk of dropout or academic failure. Traditionally, these support systems have only been able to identify at-risk students based on academics –but there is much more to persistence. Student retention systems enable parties around campus to identify at-risk students based on metrics far beyond academic success. These systems also offer collaboration between supporters, so advisors are armed with a multitude of information before intervention. I believe that CampusLabs offers an excellent student retention system, Beacon, which will help our university improve academically, financially, and socially through improved student retention.

Student Retention and Retention Information Systems in Higher Education

Honors Thesis

THE UNIVERSITY OF ARIZONA HONORS COLLEGE

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Authored by: Alexander P Smith

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Introduction

Before we can appreciate the time, money, and effort that universities should put into student retention, we have to learn what student retention is and why it matters. Why should we care about student retention in higher education? Why is it important to students, universities, and society as a whole? In the first section of this paper, I will discuss how complex student retention is—it goes far beyond the classroom—and how important it is to all stakeholders in college education. Student retention is clearly important to universities—students represent their customers, their revenue, and their reputation. Retained students are ones that pass on positive reviews, and create a positive connotation with an institution. Generally, students who drop out do not help get new students in, nor do they help other students stay enrolled. Student retention is also clearly important to students themselves: rarely do students go to college hoping to drop out; rather it is a product of adverse elements such as finances, social life, coursework, health, etc. Identifying why student retention is important to society as a whole is slightly more difficult, although it is indisputably important. In his third State of the Union address, President Barack Obama even spoke on the importance of college completion. (Seidman, 2005, p. 86)

Higher Education Student Retention: What is it?

Although most higher education institutions agree that student retention is important, it is a very difficult concept to define, and even more difficult to agree on a definition. However, each institution that tries to improve student retention must first define it in order to attack the problem. A clear definition of student retention is the foundation of programs that try to

improve it—and without that foundation, student retention programs will be doomed to fail. In this section, I will begin to define exactly what I am referring to when I write "student retention" in this paper.

Persistence and Retention

In a basic sense, there are two categories of college students: persister and non-persister. Let me define here the difference between persistence and retention: a student persists through university, and a university retains the student. Although the terms are often used interchangeably, they are differentiated by that definition.(Seidman, 2005, p. 85) A persister is a student that enrolls in college until she completes a degree. A non-persister is a student who enrolls in college and then drops out without a degree and does not return. However, the path of college is far from standardized. Some students drop out and return years or sometimes decades later. Some students transfer from one institution to another, and some enroll in two at the same time. Some students take full-time course loads, and some take one course at a time for years. Some enroll in certain courses and drop out of many of them. Some students work online, some in community college, some in universities. There are countless paths to a degree, and countless ways and reasons to fail to achieve that degree. These paths complicate the concept of student retention, and show how difficult it is to label students into just two groups.

On the other side of student retention is the university. At a basic level, a university wants its students to complete their degrees. However, that is not a university's only goal. The university also wants its students to complete degrees quickly, and without failing courses. It

also wants students to feel like their experience was worthwhile and pass that on as part of the university's reputation. It also wants students to get jobs that are high-paying, influential, and diverse—another element of helping the university's reputation.

In the end, a dropout cannot be simply defined as someone who leaves college before earning a degree. Some students may plan on returning after a period of time. Some may never return, but may have achieved their goals of higher education without completing a degree. John Bean argues that students who drop out but feel like they have accomplished their goals of higher education should not be considered dropouts.(Seidman, 2005, p. 84) However, for purposes of measurement, an institution cannot tell whether a student that dropped out felt accomplished or not—so for most definitions, these cases will be regarded as dropouts.

Models of Retention

Student retention is a concept that has been studied for a long time, and various scholars have created definitions and models for what exactly student retention is. The most acclaimed model of student retention is a work by Vincent Tinto in 1975, who was the first to introduce the importance and prediction of student retention. Tinto argues that one of the roots of the problem is "inadequate attention given to questions of definition [of the dropout process]."(Tinto, 1975, p. 89) Universities commonly fail to distinguish dropouts by choice from those who fail out, and dropouts who plan to leave permanently from those who plan to return. Failing to group dropouts into more categories easily leads researchers and institutions to contradictory findings, because the circumstances of these various categories are vastly different. By acknowledging these types of differences, Tinto's model of student retention is the

most acclaimed and complete model. I will explain this model in this section, and the rest of the analysis in this paper will be done through Tinto's model.

Tinto's theoretical model of dropout behavior is rooted in Durkheim's theory of suicide, which, in short, argues that "suicide is more likely to occur when individuals are insufficiently integrated into the fabric of society."(Tinto, 1975, p. 91) In Tinto's theory, dropouts are similar to suicide in that they are both a removal of oneself from a society. Obviously, suicide is a much more extreme case, but the core concepts are very similar. Tinto (1975) argues that both suicide and dropouts are often the result of social conditions in which the person in question feels that their values are divergent from those of the collectivity, or conditions in which the person feels outcast due to lack of interaction with other members of the collectivity. These elements lead to a lack of connection with the collectivity, in this case the community that is a university. That lack of connection contributes to low levels of motivation and commitment, which in turn leads to the student seeing dropping out as her best option. However, in college, there are two domains which students can be pushed out of—both leading to dropouts. These two domains are academic and social. Academic failure leads to forced dropouts: students with low grades will be released from the university. Social failure leads to voluntary dropouts: if a student feels like the university is not their place due to social elements, she may opt to dropout even though she may be fully capable of passing classes and earning her degree. As any college student knows, these two worlds must be balanced properly to achieve success in college. Many students find themselves contributing too much time and energy to their social lives, and end up unable to pass their classes and maintain a sufficient GPA. On the other hand, some students spend so much time trying to excel in classes that they fail to become integrated

socially with the community, and some drop out due to that lack of integration. Every student is different, and each has to find her own balance between the two worlds that make up the college experience.

Tinto goes on to create a theory of college dropout that attempts to integrate and connect the elements that lead to dropout. This schema is diagrammed in Figure 1.
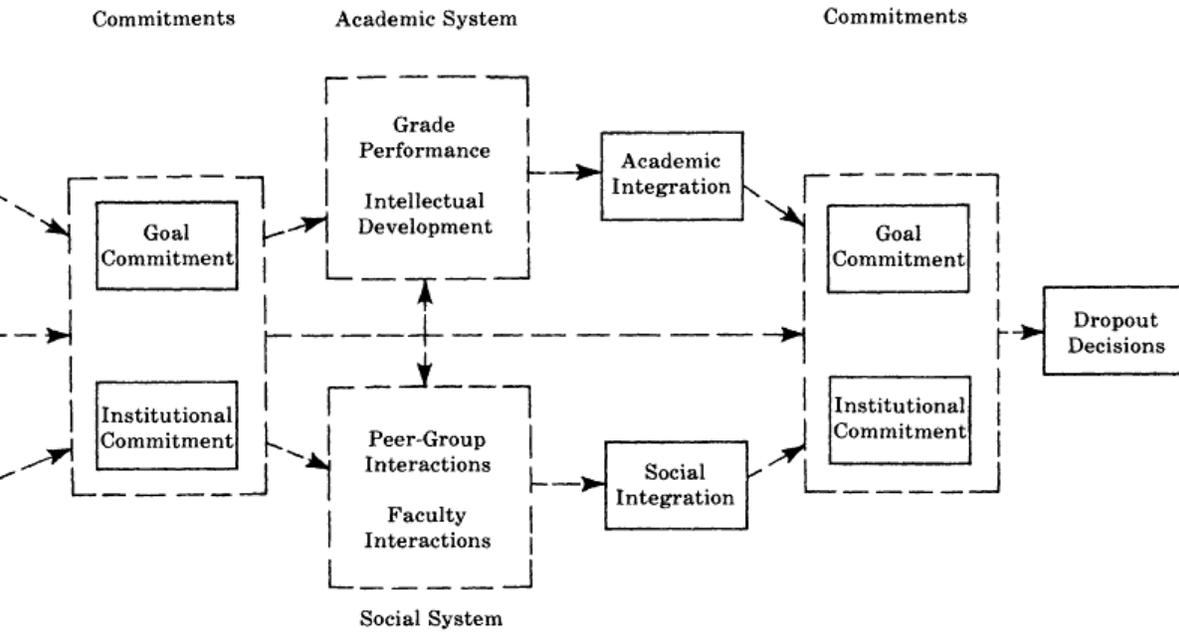
Commitments   Academic System   Commitments

Grade Performance

Intellectual Development

Goal Commitment

Academic Integration

Goal Commitment

Institutional Commitment

Peer-Group Interactions

Faculty Interactions

Social Integration

Institutional Commitment

Dropout Decisions

Social System

FIGURE 1
A CONCEPTUAL SCHEMA FOR DROPOUT FROM COLLEGE (TINTO, 1975, P. 95)

This schema shows the wide factors that lead to commitment, which in turn reflect themselves

on a student's interactions and development within academic and social systems at a

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university. Depending on a student's relationship with these systems, she will feel more or less integrated and therefore committed to continuing an education with the university. Additionally, certain scenarios within this schema will commonly lead to different outcomes. For example, if a student feels highly committed to her goals of a degree, but uncommitted to the institution due to lack of social integration, she may be likely to switch institutions. In this situation, she would not be retained by the university where she began, but she will likely persist to achieve her academic goals. The complexity of this schema offers some insight into the wide variety of reasons that lead to a wide variety of factors that lead to dropping out of a university.

Although there are various other models of student retention, Tinto's is the most commonly accepted, and most other models are very similar. For these reasons, I will consider student retention through the lens of Tinto's model for the rest of this paper. Reasons for dropout are as different as the people that have them, and for that reason, it is a difficult science to study on a large-scale basis. However, many studies have been conducted on student retention, and many ideas have been theorized. In the next section, I will discuss how student retention is measured—an idea which is very closely tied to the definitions I have discussed here.

Measuring Retention

As I have made clear in this section, defining student retention is not as simple as grouping students into two categories. However, it is something that must be done in order to be able to properly measure student retention. All colleges and universities must submit regular

retention rate reports to federal and state authorities—and therefore must measure their

retention rates regularly and consistently. There is no disagreement that there should be a

standard measurement for student retention—it would make results viable for comparison and

deeper analysis. However, there is still no standard formula to measure retention. The closest

thing to a standard is the United States' federal definition of graduation rate, created in 1990 as

part of the Student Right-to-Know and Campus Security Act. ("Student Right to Know Act,"

1990) This act defines graduation rate the percentage of students who meet the following

criteria:

- Full-time
- Degree-seeking
- Enrolled
- Graduate by 150% of the normal time for degree completion

Although the common definition is necessary, this is incomplete to truly measure student

retention and persistence. For example, this definition excludes transfer students, part-time

students, non-degree seeking students, students who enter mid-semester, undeclared

students, etc. All of these exceptions combine to make a large percentage of college students,

especially at community colleges. Because of all these exceptions, the federal definition of

graduation rate is definitely insufficient as a measurement of student retention and

persistence.

Fortunately, there is a federally defined formula for retention rate, defined by the

National Center for Education Statistics. This formula calculates year-to-year retention, and not

retention for students' entire college careers. This formula is defined as follows: (Seidman,

2005, p. 89)

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This formula leads as the standard for calculating retention rates, but it is not a universally accepted standard. Many institutions and government bodies use modified calculations depending on their specific goals. Additionally, the measurer of retention must change her calculations depending on the scale of measurement. System retention measures the retention of a student within the entire educational system, disregarding the institution. Institutional retention measures retention within an entire university, but sometimes university officials will want to measure even more specific retention, such as retention within a major or course. Each of these measurements is useful for different reasons. For example, system retention is important to federal and state governments, but less important to each individual university, which is losing out whether or not the student transfers or quits entirely. Retention within a major or course can be very useful information for officials in specific colleges or professors, but less important for broader-scale viewpoints.

There is good reason for the lack of a universal calculation of retention: there are too many variables to include every type of student in an accurate calculation. However, this lack of a standard creates problems within the university system. For example, universities sometimes manipulate these numbers by raising admissions standards during the Fall, when retention is measured, and lower standards for Spring admissions.(Seidman, 2005, p. 93) In *College Student Retention,* author Alan Seidman proposes a broader formula for system persistence measurement: (Seidman, 2005, p. 95)

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Pure system persistence: Performed annually

$$\frac{\text{Current total national FTE degree-seeking enrollment} - (\text{current year newly enrolled students})}{\text{Past year's total national fall FTE degree-seeking enrollment} + (\text{FTE enrollment of degree-seeking spring and summer}) - \text{FTE graduates}}$$

While this calculation includes parties excluded in other calculations, such as spring admits, transfer students, etc., it is still not a perfect solution. Simply put, there is no way of perfectly measuring persistence and retention on a broad scale. Not only is it impossible to create a definition that is non-exclusive, but there is no entity which gathers nationwide data sufficient to create these measurements. Therefore, it is often left up to the individual universities to determine their retention rates. Unfortunately, it is in the institution's best interest to exaggerate those numbers, so it is often difficult to get realistic pictures of retention rates on a broad scale. This section has made it clear just how difficult it is to measure retention, and in the following section I will delve into one of the reasons it is so difficult to measure: because retention rates are immensely important to universities, students, and countries.

The Importance of Retention

For Institutions

Financial

Whether public or private, a university must be run like a business. In order to stay afloat, universities must garner funding that exceeds their costs—and this funding comes from a variety of sources. Many of the sources of funding for universities create requirements regarding student retention. Therefore, student retention rates are directly (and indirectly) related to the revenues of the university. (Seidman, 2005, p. 87) However, this is not the only

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way retention affects universities financially: when a student withdraws, the college must invest in recruitment to replace that student as well as other significant fixed costs associated with the addition of another student. In 2009, the median cost for recruitment, per student, in public and private universities was $461 and $2,143, respectively. (Seidman, 2005, p. 112) In 2004, Noel-Levitz showed in their *Retention Savings Worksheet* that even a small decrease in dropout rate results in significant cost savings for the institution. (Seidman, 2005, p. 96) From a business standpoint, students represent significant revenue generators for institutions. In 2009, public universities received 20% of their revenue through tuitions and fees, and private universities received 78%. (Seidman, 2005, p. 102) However, it doesn't end there: students create revenue for their institutions through not only tuition and fees, but through housing costs, book revenues, and various on-campus expenditures such as food and memorabilia. All of these sources of revenue lead back to one group: the students. Retention, therefore, is of utmost importance to the financial health of educational institutions.

Graduation Rates and Exceptional Students

Tinto, in his research of dropout from higher education, determined that the differences between voluntary dropout and academic dismissal. In the case of academic dismissal, students are generally either lacking in academic and social integration, or extremely socially integrated to the point of academic failure. When dismissing a student, the university is simply saying that she does not meet the intellectual, academic, and/or social demands of the institution. However, Tinto argues an interesting case for the instances of voluntary withdrawal by students. In some cases, students who voluntarily withdraw from universities do so with higher grades and higher intellectual abilities than their peers. (Tinto, 1975, p. 117) In these cases, the

university has been structured in a way that is unable to meet the needs of its best performers, and often those with the most potential fall through the cracks due to being outliers. Although it is difficult to measure, because most withdrawing students do not give full feedback to the institution, Tinto believes that this lack of structure for extraordinary students is also a problem worth considering for universities. If the goal of the institution is to educate and graduate the largest number of students possible, then these cases are not much of an issue. However, if one of the goals is to produce excellent and extraordinary students into the world, then the institution should focus on creating infrastructure catered to these students.

For Students

Financial

According to the U.S. College Search, the difference in earnings between a college graduate and a high school graduate is at least $1 million. (Seidman, 2005, p. 95) These gains are recognized thanks to a 5.2% better unemployment rate for college grads than high school grads. (Seidman, 2005, p. 102) Therefore, on the personal level, persistence is clearly important for individual students in terms of financial gains. On a broader scale, higher persistence by students across a country has been shown to decrease poverty, increase income per-capita, and benefit the economy on a national level. (Seidman, 2005, p. 96) In general, those who earn college degrees are more financially stable throughout their lives.

Lifestyle

While the financial gains of a college education are a major focus for many, there are also some less obvious benefits to college graduates. Studies have correlated college education with intangibles such as lower blood pressure, lower stress, and healthier lifestyle choices.

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(Hardy, 2013) More tangible benefits of college education come paired with the jobs that graduates get after college. These jobs include better health insurance, higher job satisfaction, and much improved job stability. (Hardy, 2013) Not only do college graduates enjoy financial gains, but studies have shown that they live healthier, happier lives. These three benefits of a college education are invaluable to students, and are a big reason why persistence is important from the students' perspectives.

Current Practices

Effective Retention Practices

Student dropouts have always been a concern for colleges, and as an effort to combat high dropout rates, institutions have created a wide variety of programs and services that attempt to connect students with their university, their education, and their community. For example, nearly ubiquitous to universities are counseling programs, career centers, programs for the economically disadvantaged, programs for minorities and other niches, wide varieties of clubs, and other organizations and services along these lines. However, none of these additional programs, services, and organizations has been proven to have improved student retention. (Noel-Levitz, 2011, p. 4) Fortunately, in 2011, Noel-Levitz created a report on the best practices that universities are using now to retain students. Figure 2, shown below, outlines some of the best practices for private institutions, as indicated by the Noel-Levitz study.

Student Retention Practices at Four-Year Private Colleges and Universities—by Percent Rated "Very Effective"

|	Percent very effective	Percent somewhat effective	Percent using method
Programs designed specifically for first-year students	45	44	93
Giving students practical work experiences in their intended major to apply their learning*	39	43	95
Academic support program or services	37	59	99
Institutionwide emphasis on the teaching of undergraduates and undergraduate learning	37	48	92
Mandatory advising, one-on-one and face-to-face, between faculty and students	34	51	84
Early-alert and intervention system	34	50	92
Programs designed specifically for at-risk students	30	54	88
Honors programs for academically advanced students	29	49	56
Collaboration between academic affairs and student affairs to minimize attrition	29	45	93
Using on-campus student employment as a strategy to engage/retain students	27	43	83

FIGURE 2

THE 10 MOST EFFECTIVE STUDENT RETENTION PRACTICES AT 4 YEAR PRIVATE INSTITUTIONS (NOEL-LEVITZ, 2011, P. 3)

This study has shown that, for private institutions, most of the best practices are directly tied to the students' educations. Six out of the ten best practices are related to coursework or advising, and the remaining four involve correlation with academics through student affairs, employment, intervention, and at-risk programs. This study clearly shows that directly improving the content and methodology of student education at private universities is the best way to retain students at those institutions. However, Figure 2 only details the best practices for private universities. There are many differences between students at public and private

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institutions, including many of the factors of student retention found in Figure 1. For example,

students at public institutions will have less college experience in their family background, and

on average, less pre-college schooling. Therefore, the average public school student will have

less commitment to the academic system. These types of differences are why the 10 most

effective practices for private institutions are very different from those of public institutions.

From the top 10 practices for each, 6 overlap—but they are in a completely different order and

have very different current usage percentages. Figure 3 shows the 10 most effective practices

used by public institutions.
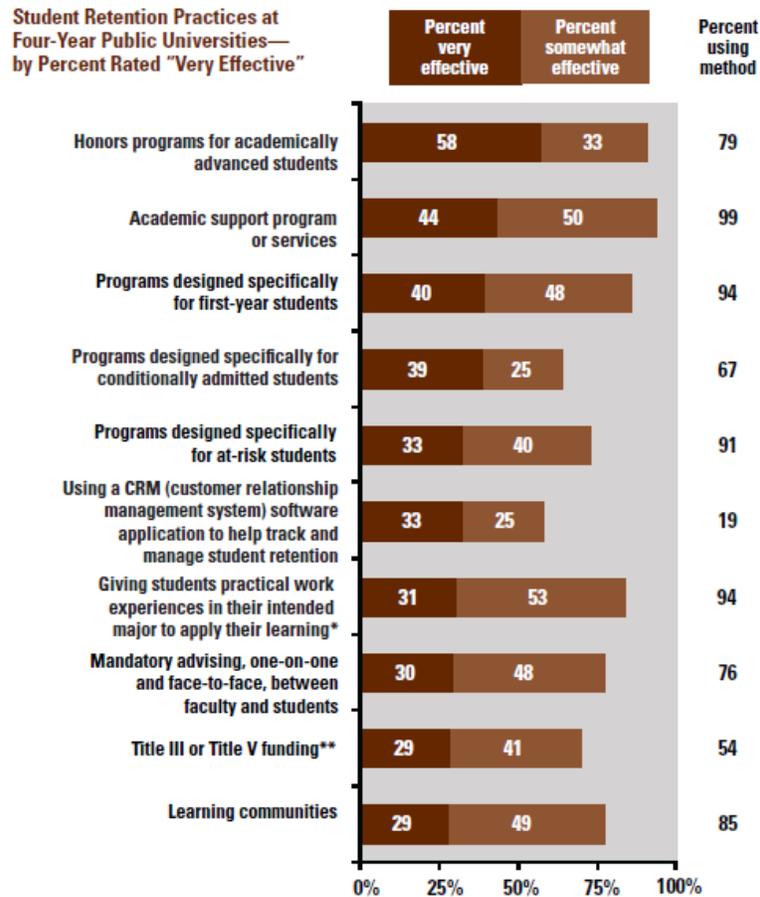
Figure 3
The 10 Most Effective Student Retention Practices at 4 Year Private Institutions (Noel-Levitz, 2011, p. 4)

Figures 2 and 3 reveal some of the differences between the challenge of student

retention in public versus private institutions. Public universities' most effective retention

tactics involve targeted strategies such as programs for groups like honors students, first-years,

conditionally admitted students, and at-risk students. While these programs are effective at

private institutions as well, they are more effective at public universities. This is likely because

public universities have larger enrollment, and these types of programs help certain students

avoid feeling lost in the size of large public institutions. Tables 2 and 3 also detail the

percentage of institutions polled that were using each method at the time of polling. While

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most successful tactics were being used by around 75-100 percent of institutions, certain

outliers are present in each table. For private institutions, the most notable outlier is honors

programs for academically advanced students, which was being used by only about half of the

institutions. Many private schools, therefore, could benefit from adding that type of

infrastructure. One of the most popular items in each graph was mandatory advising—which

was given high marks for not only public and private institutions, but two-year universities as

well. It is widely agreed that face-to-face interaction is one of the most important factors of

student retention, and mandatory advising is the most common way to get that interaction.

The most interesting outlier, however, is found in Figure 2 under public institutions. Only 19

percent of public universities were using CRM (customer relationship management) software,

despite it being the 6th most effective practice for student retention.

Over and Under-Utilized Retention Practices

The University of Arizona is currently working on implementing a new student retention

information system—a system which will enable faculty and staff to retain students by

identifying at-risk students and focusing many of the other current student retention tactics on

those groups. Noel-Levitz' study has identified using student retention information systems as

the least used practice for student retention in both private and public four-year institutions,

but it is also one of the most effective. (Noel-Levitz, 2011, p. 6) Therefore, the authors argue,

that CRMs, or information systems, may be an emerging opportunity for student retention.

Table 1 show the five-least effective student retention practices and compare them with the

five least-used practices. Notice the disconnection between low effectiveness and low usage: if

universities can re-focus their student retention tactics based on this information, then they

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can retain student more cost-effectively. As the #1 least-used practice, but the #6 most-useful

practice, using information systems for student retention is the best place for universities to

focus their student-retention dollars.

	5 Least-Effective Practices	5 Least-Used Practices
Public	Student Retention Practices at Four-Year Public Universities—by Percent Rated "Minimally Effective" (Percent minimally effective / Percent using method) Requests for permission to remain in contact with students who are leaving — 65 — 26 Using student engagement assessments to make changes to the ways faculty and staff interact with students — 60 — 73 Interviews or surveys with students who are withdrawing, before they leave — 59 — 67 Requests for intended re-entry dates from students who are leaving — 57 — 32 Social networking to engage students in online communities — 56 — 63	**Student Retention Practices at Four-Year Public Universities—by Lowest Percent Using Method** — **Percent using method** Using a CRM (customer relationship management system) software application to help track and manage student retention — 19.0% Requests for permission to remain in contact with students who are leaving — 26.2% Programs designed specifically for online learners* — 30.3% Requests for intended re-entry dates from students who are leaving — 31.8% Programs designed specifically for second-year students — 37.9%
Private	Student Retention Practices at Four-Year Private Colleges and Universities—by Percent Rated "Minimally Effective" (Percent minimally effective / Percent using method) Using Web-based tools such as Blackboard, WebCT, etc., for engaging students in co-curriculars — 60 — 45 Social networking to engage students in online communities — 59 — 55 Requests for permission to remain in contact with students who are leaving — 56 — 43 Programs designed specifically for veterans — 50 — 28 Programs designed specifically for second-year students — 48 — 31	**Student Retention Practices at Four-Year Private Colleges and Universities—by Lowest Percent Using Method** — **Percent using method** Using a CRM (customer relationship management system) software application to help track and manage student retention — 19.2% Programs designed specifically for online learners* — 19.4% Programs designed specifically for veterans — 28.1% Programs designed specifically for adult/non-traditional students — 30.2% Programs designed specifically for second-year students — 30.8%

TABLE 1

POOR EFFICACY VS. LOW USAGE IN PUBLIC AND PRIVATE INSTITUTIONS (NOEL-LEVITZ, 2011, PP. 6-7)

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Table 1 highlights some of the least effective and least used student retention practices in education (both public and private). The disconnect between low focus on a practice and low efficiency of that practice is clearly shown in table 1, where only two categories overlap for both public and private institutions. This lack of overlap means that three of the least effective student retention strategies are receiving significant funding and focus, while three retention activities are considered more effective but not being focused on. However, one of these categories has extremely low usage coupled with high efficacy ratings: using a CRM software application, or information system, to track and manage student retention. Only 19 and 19.2 percent of public and private institutions, respectively, utilize CRMs for student retention—but it is rated to be one of the most effective methods for universities to increase retention. (Noel-Levitz, 2011, p. 6) These statistics make student retention information systems the biggest opportunity for educational institutions to improve their retention using a technique that many do not use currently. However, the process of choosing and implementing student retention system is far from simple. Successful student retention information systems must include data from a wide variety of aspects of students' lives—and the more data; the more complicated the systems get. Fortunately, there are research projects and organizations dedicated to creating, improving, and implementing student retention information systems.

Student Retention Information Systems

A customer relationship management (CRM) software suite is an enterprise-wide software package designed to organize, automate, and synchronize customer contact. CRMs are used in all kinds of organizations, but are only gaining traction in University systems as of late. A CRM provides "a consolidated, integrated view of customers across all business areas to

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ensure that each customer receives the highest level of service." (Seeman & O'Hara, 2006, p. 1)

The goal of the CRM is to integrate all functions of the organization that come in contact with

the customer, so that each part of the organization is fully aware of every other part. In the

context of the higher education system, the students are the customers and the business is the

university. As any college student can attest, there are many points of contact between a

student and her university. For example, students interact with universities through course

registration, professor contact, advising, career counseling, academic support, clubs and

groups, and many other categories. The number of ways that a student interacts with her

university is almost countless—and the only way to integrate those interactions is through

software. Therefore, a CRM implemented in a university setting benefits almost every

department in different ways: advisors can see more information about their students,

professors can see other professors' comments, students can be offered more personalized

enrollment options, etc. However, the CRM is a major factor in student retention because

almost every and any aspect can influence a student's persistence through college. When

deciding to drop out, students consider a wide variety of factors—and if the CRM can capture,

log, and analyze many of those then it can predict with more accuracy which students are at-

risk for dropping out. Similarly, a wide variety of factors influence students to perform poorly in

their coursework, and if a CRM can identify problem patterns then students can be stopped

from failing out of the university. There are a number of options for CRM implementation, but

one thing is clear: CRMs are an excellent practice to improve student retention simply because

of the volume of data they are able to collect.

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Current Practices

Currently, there are a number of CRM options for universities that have a partial or total focus on student retention. CRMs in universities offer numerous benefits to students and institutions, some of which are outlined below: (Seeman & O'Hara, 2006, p. 1)

- Student-centric focus
- Improved customer data and process management
- Increased student loyalty
- Retention and satisfaction with the college's programs and services

Oracle, an information systems market leader, offers a CRM software called PeopleSoft CRM. PeopleSoft CRM is widely used in all kinds of businesses and organizations, but Oracle offers a package designed for higher education solutions specifically. According to Oracle, PeopleSoft CRM is excellent at identifying risk factors pointing to dropout, and enabling faculty and staff to intervene and help students persist through encouraging student success. (Oracle, 2008) Later in this section, I will discuss a case study that focuses on a PeopleSoft CRM in a university setting. Oracle is a major competitor in CRM software for businesses, but there are many other CRM options that focus on University system, and might be more tailored for student retention.

One of PeopleSoft's competitors in the higher education market is Campus Management's Talisma CRM software. Talisma's CRM is a leader in automated communication: it is able to automatically email, chat, call, text, and mail communications. (Langmead, 2013) This makes Talisma CRM a great way to target campaigns at a variety of student organizations. One of Talisma's customers is Arizona State University, in Tempe, AZ. ASU's primary goal, however, was to improve its recruiting—a function which needs a major focus on communications. Although communication is important for retention, one-on-one and face-to-

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face communication has been shown to improve retention much more than mass-communication like Talisma's. However, retention starts with recruitment. If a university like ASU is able to recruit students through targeted efforts, it will get fewer at-risk candidates and reduce dropout rates. Nevertheless, there are many more choices of CRM that focus even more on student retention.

One example of an information system that is tailored specifically to student retention is EBI's MAP-Works. MAP-Works is a CRM-like web-based student retention system. This software allows faculty and staff on university campuses to identify at-risk students as early as possible, evaluate those students, and intervene before they drop out. (Woosley, 2011, p. 3) The software also works as a CRM suite by coordinating contact university-wide, through a system of alerts, notes, and contact information. On the student side, MAP-Works contains a portal through which students can gain insight about themselves compared to other students on campus and find resources that can help them address any issues they are having with their education or social lives. Later in this section, I will go into much more detail about MAP-Works, because it is one of the options for a new student retention system being considered by The University of Arizona, along with a suite called CampusLabs.

The last student retention system I will discuss here is CampusLabs, which is a CRM for universities. CampusLabs has five software pieces that focus on data collection, strategic planning and compliance, course evaluations, financial information, and student retention. The student retention section of CampusLabs' software is called Beacon, and it is a package similar to the MAP-Works retention system discussed above. Beacon is a web-based solution that focuses on six major factors and identifies at-risk students. The software measures both

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cognitive and non-cognitive skills through an assessment given to each incoming student. Beacon is another of the options that faces The University of Arizona, and I will also analyze the CampusLabs option when I compare it to MAP-Works' software later in this section. However, to gain a better understanding of student retention information systems, I will discuss a case study of DePaul University, which adopted a CRM to drive student retention in 2004.

Case Study: DePaul

In 2004, DePaul University made the decision to implement a PeopleSoft CRM to help manage the university. DePaul's CRM had many functions, but in this section I will focus on the student retention benefits and modules of the CRM. When implemented, DePaul had an enrollment of 24,691 students. (Collins, 2004, p. 8) The university's leadership decided to implement a CRM for two reasons: first, DePaul had not scaled its relationship with students, despite the relationship getting more complex through new technology. The second of two reasons is that student retention at DePaul was sensitive to many influences, which could only realistically be tracked by an information system. Although the CRM being implemented was intended to help a number of departments and university functions, student retention was one of the two major focuses of the system.

DePaul began their student retention system project by first asking strategic questions. These questions show where the university would focus their efforts. The first and most important question was "How can we improve retention and graduation?" Secondly, DePaul asked "What changes would we need to make to improve our ability to manage student relationships?" (Collins, 2004, p. 16) These questions show the focus of DePaul's CRM: student

retention and communication. DePaul's CRM would use a variety of metrics to identify at-risk

students, and intervene using a system called Students Together Are Reaching Success (STARS).

STARS is a program focused on retaining minority students through peer-mentor interactions,

staff interventions, and monitoring academic success. DePaul was confident in the STARS

program going in because it had been proven to improve retention in other implementations.

(Collins, 2004, p. 18) The STARS system, a major piece of student retention within the context
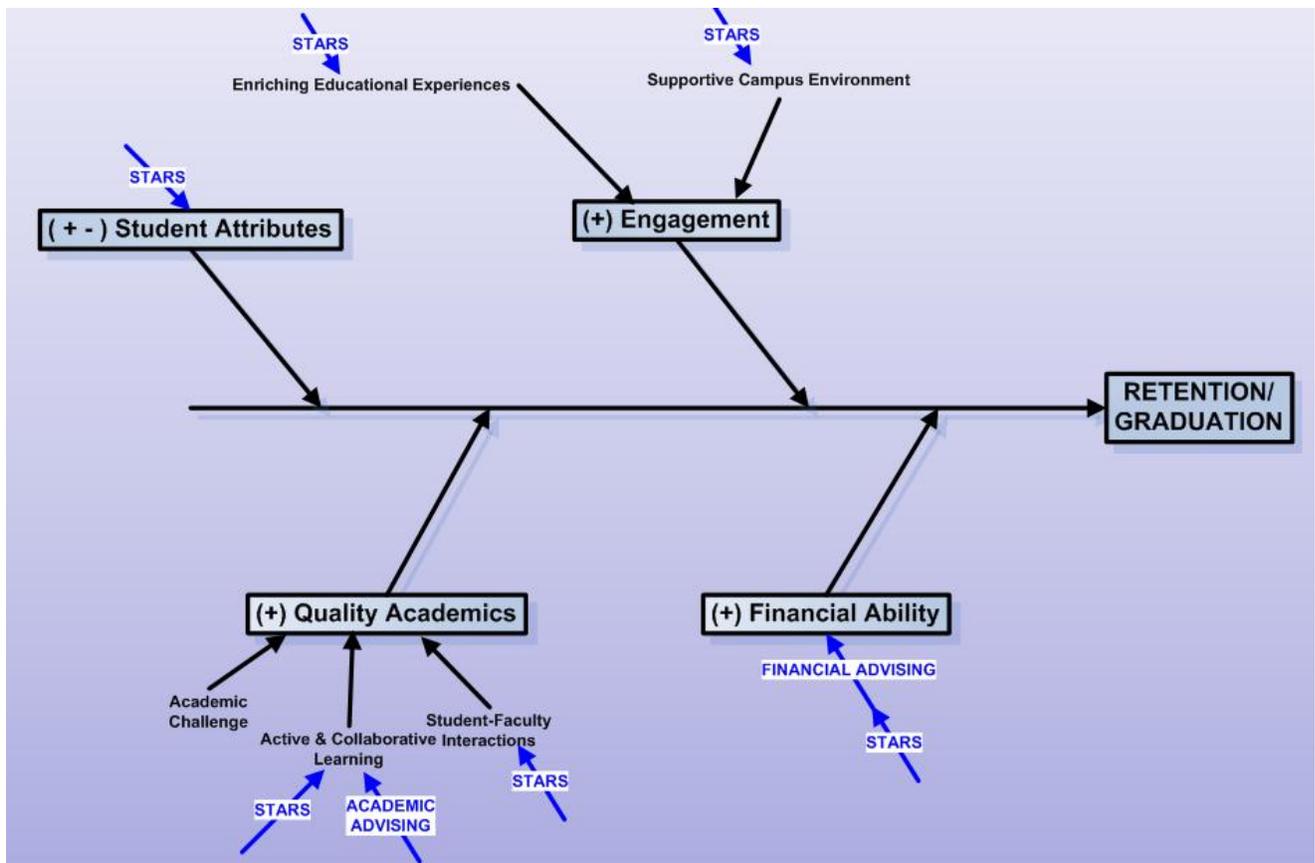
of DePaul's CRM, is shown in Figure 4 below:

FIGURE 4
STARS PROGRAM INFLUENCE ON RETENTION (COLLINS, 2004, P. 20)

Figure 4 shows all of the different places that a student retention system influences a student

on her track from admittance to graduation. DePaul's system, STARS, is made to help students

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in academic, financial, social, and environmental fields. The system communicates with students through a variety of media, both electronic and real-world. The more points of contact the university has with a student, them more likely she is to feel a connection to the university and persist with her education. In the first STARS campaign at DePaul University, twelve students were flagged as needing immediate interventions. Of those twelve, three were actively considering transferring or dropping out—and two of the three decided to stay after receiving help with financial and social issues. The most important statistic, however, was that the timeframe for discovering students that need assistance and intervening was reduced from three weeks to three days. (Collins, 2004, p. 30) This reduction in intervention time is a major factor for student retention and persistence for any type of dropout (financial, academic, or social). If a student is struggling, it is to the advantage of the university to help her as quickly as possible, and student retention systems like STARS are the most efficient way of doing so. Although STARS and DePaul's CRM were implemented many years ago, the same tenets apply to student retention systems today. Figure 4 details all of the points of contact between students and the student retention system, and with advancing technology, those points of contact will only increase. Today, retention systems take in a wide variety of data from students' records, faculty and staff, and the students themselves. In the next section, I will discuss the specific retention system choices that The University of Arizona has faced in its implementation of student retention information systems. The systems available today are similar to ones like DePaul's, but much more advanced and include more points of contact. With technological advancements available today, information systems can be even more effective at student retention.

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Student Retention Systems at the University of Arizona

RFP

To begin the process of finding, purchasing, and implementing a student retention information system, The University of Arizona issued a request for proposals (RFP). This document requested proposals "for the purchase and implementation of a software platform that will identify at-risk students." ("RFP #S061305," 2012, p. 1) Although the title only specifies a requirement of identification of at-risk students, the proposal includes more detail about the scope of the information system being requested. The RFP requests a product which features the elements listed below: ("RFP #S061305," 2012, pp. 22-23)

- Product Features
    - User Interface
    - Engagement of Students
    - Monitoring Students
    - Reporting Capabilities
    - Survey Features
- Implementation Activities
    - Implementation and Installation
    - Training
- Sustainability
    - UA Responsibilities
    - Data Integration
    - Security
    - Support

One of the most notable features on this list is "engagement of students," which is a very broad category, but very important to student retention systems. While some data can be pulled from student records such as grades, GPA trends, and financial information, a lot of information fed to student retention systems is qualitative and quantitative self-reported information from

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students. The challenge, however, is to engage the at-risk students—those who are already having a difficult time engaging with their university community. A successful student retention system is one that gets maximum responses from at-risk students, so those students can be identified and helped before dropping out. Because of these factors, this element of the student retention system requested by The University of Arizona is one of the most difficult to perfect. The university asks in its RFP, "What makes your product easy to use for students?" ("RFP #S061305," 2012, p. 23) At-risk students will not want to respond to long, intimidating surveys—especially if they are already strongly considering dropout. Therefore, information gathered from students has to be convenient and extremely efficient to maximize response rate. This is an element which both of the proposals considered by the university will discuss. Student engagement is hugely important in retention systems, but many of the other factors in the list above are also very important for success in student retention.

The last group of elements required is sustainability. This is another very complex issue for the respondents to the RFP. A retention system may be successful on its own, but the systems considered by a large organization like The University of Arizona must be able to integrate with the wide variety of existing systems on campus. The RFP asks, "What student information can be entered into the system automatically from [existing systems]?" ("RFP #S061305," 2012, p. 23) Not only will this integration make training and implementation more successful and efficient, but the retention system itself will benefit significantly from additional sources of data to identify at-risk students. Integration and system sustainability are another major factor for the university to consider when choosing a vendor for this RFP because they are major factors in how efficiently data will be entered, and at what quantity.

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Data entry into the retention system is one of the biggest considerations for the university—the more data goes into the system, the more information can come out in the form of identification of at-risk students and trends. Some of the specific ways data can be inputted into the system are listed on the RFP as part of the requirements. These methods include integration with student administration systems, blackboard, and D2L, self-reporting from students, surveys of students and faculty, and intervention information, and tracking student behaviors such as class attendance, meetings, appointments, and workshops. ("RFP #S061305," 2012, pp. 24-25) However, data input is only the first step of a successful retention system. Next, the system must analyze that data and create outputs that are efficient and successful. The processing of the data is also outlined in the RFP, including elements such as prediction of retention/persistence, graduation, other student success measures, and identification and action upon at-risk students. Finally, and perhaps most importantly, the system needs to be able to output information that faculty, staff, and students themselves can use to increase persistence and retention. These outputs include communication with students via email, SMS, and alerts. Other outputs are in the form of reports such as excel files, custom UA reports, summary reports, and individual student reports. The reports output by the retention system are where the information system meets the human side of student retention—which makes their clarity and information very important to student retention. Even if the system can identify at-risk students well, it is useless if it cannot enable faculty and staff to intervene and help the students persist with their education. Clear and informative reports, however, are not the only aspect of the system that will help faculty help students. The RFP also requests vendors to train users—not a simple task within a large organization.

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Training and implementation are a major part of the RFP and a major part of retention systems as a whole. With proper training, staff and faculty will be able to provide individually-tailored and timely help to at-risk students. The vendor, however, has to limit their training to fit the schedules of already busy university employees, who do not feel like they have time to learn a new system. Many users are resistant, so training must be engaging and simple. The RFP asks specifically, "What training will be provided to the University? How will it be provided (in class, on line, etc.)? How many University staff members will be provided with each type of training?" ("RFP #S061305," 2012, p. 26) This question shows that The University of Arizona, in its decision, is considering many factors of training such as method, timeliness, and trainees. Later in the RFP, the university urges the vendor to incorporate retention system training into in-house staff training. Along the same lines as data integration, training integration is a major benefit to both parties. Trainees will be more engaged during in-house training, and the university can save time and money by integrating that training. Just like in the case of information integration, training integration is a beneficial to all parties involved in the retention system.

The RFP distributed by The University of Arizona includes many more specifications than I've included here, but the main points have been outlined in this section. The best information system solutions for student retention will include significant integration with existing systems and policies within the university, and they will be easily used by faculty, staff, and the students themselves. In fall 2012, the university received many proposals for the retention platform RFP. Based on the proposals submitted in the fall, university faculty chose two "finalists" with the best tailored options to propose their solutions in a live presentation. The presentation was

given in late November to a group of key faculty, advisors, administrators, students and campus

colleagues. As an interested party and a current student, I was invited to attend these hour and

a half long presentations along with about thirty other members of The University of Arizona

community. The two finalists chosen were Educational Benchmarking Inc.'s MAP-Works

platform and Campus Labs Co.'s Beacon platform. Both companies offered excellent all-around

student retention solutions that have been tested and proven on many other university

campuses. In the next section, I discuss each of the solutions presented.

Solutions

MAP-Works

The first software platform presented to the committee was EBI's MAP-Works student

retention system. MAP-Works began as a project at Ball State University in 1980. The MAP-

Works platform is based off of Tinto's theory of student retention, discussed earlier in this

document. The system aims to empower faculty, staff, and students in the context of retention

and persistence with the following focuses:

- Speedy identification of at-risk students
- Efficient intervention through targeting of relevant issues
- Consistent evaluation of students' persistence
- Coordination of retention efforts
- Data analysis
- Student self-insights
- Connecting social and academic success
- Maximize utilization of on-campus resources

Each of these elements of MAP-Works system is integral to improving student retention. MAP-

Works began by developing three items that the system would act upon: earlier intervention,

education of students on behaviors that lead to success, and information gathering and

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analysis. With these goals in mind, MAP-Works looked to theoretical research on student

retention in order to focus development of the software. MAP-Works drew from various

studies on student retention, described in the list below.

- Early Adjustment to College
    - Upcraft, Gardner & Associates (1989) asserted that the success of first-year students is determined largely by pre-enrollment variables (Woosley, 2011, p. 6)
    - Interaction with peers is of major importance
    - Persistence is largely influenced by first-year experience
    - MAP-Works focuses heavily on first-year students' academic and social experiences
- Involvement
    - Astin defined college student involvement and related involvement to both student learning and development (Woosley, 2011, p. 6)
    - Quantitative involvement (amount of time) and qualitative involvement (type of interaction) are both important
    - Students that are more involved with their campus community are more likely to persist
    - MAP-Works considers on quantity and quality of involvement on campus
- Tinto's Theory of Attrition
    - Tinto's classic theory describes the interaction between a student and the academic and social systems of a college environment (Woosley, 2011, p. 6)
    - Pre-Entry characteristics, goals and commitments, institutional experiences, integration, and the departure decision
    - MAP-Works surveys students on every area in Tinto's theory
- Self-Efficacy and Institutional Commitment
    - Bean and Eaton (2000) emphasized the importance of self-efficacy and the development of positive coping strategies (Woosley, 2011, p. 6)
    - This study focuses on commitment for residential students
    - Perceived self-efficacy, or confidence in one's abilities to persist is important
    - MAP-Works encourages students by promoting self-reflection and positive behaviors
- Student Expectations
    - Kuh, Gonyea & Williams (2005) acknowledge the importance of expectations on student persistence (Woosley, 2011, p. 7)
    - MAP-Works addresses and analyzes student expectations as a retention predictor
- Student Development
    - Chickering's seven vectors describe stages of college student development (Chickering & Reisser, 1993) (Woosley, 2011, p. 7)

- (1) developing competence, (2) managing emotions, (3) moving through autonomy toward interdependence, (4) developing mature interpersonal relationships, (5) establishing identity, (6) developing purpose, and (7) developing integrity
- MAP-Works includes each of these stages in its calculations, using personal information given by students

With this research in mind, MAP-Works developed a software solution for student retention. One of the most important aspects of MAP-Works system is the first-year Fall Transition survey, one of the system's major sources of data to draw from. The survey measures behaviors and expectation of new students through categorical, numerical, and scaled questions. Over the 15+ years of MAP-Works' implementation at Ball State, the survey has been tuned to efficiently and effectively collect information from new students to be used in the software solution. This information is then analyzed by the MAP-Works system.

After information is collected, MAP-Works uses correlations between various elements of student experience and correlations between responses and outcomes regarding persistence to predict at-risk students. The result of the software's analysis is output in the MAP-Works risk indicator. This risk indicator is the result of an algorithm created by Dr. Woolsey at Ball State which continues to be perfected by researchers at EBI. (Woosley, 2011, p. 8) The correlations between MAP-Works variables and student outcomes like academic performance, persistence, retention, and graduation are factored into the algorithm, which improves with additional data and is customized with data from the university implementing the system. The risk indicator is dynamic and includes data such as entrance test scores, GPA, survey responses, and faculty input. In fall 2010, EBI added additional algorithms customized for other campus contexts. Not only does MAP-Works flag student who are at-risk for dropout or academic failure, but it can

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predict college-specific factors. For example, Eller College of Management could use MAP-Works to predict which pre-business students will meet criteria to gain admission. The MAP-Works risk indicator works by creating flags when students exhibit behaviors or patterns that are known to the algorithm as predictive of academic failure or dropout. These flags are then pushed to faculty and staff, who coordinate and intervene with the help of MAP-Works software. Finally, the success of the program is analyzed and improved to restart the cycle.

EBI MAP-Works has already been implemented at over 1,500 campuses nationwide. As one of the final two options for a solution, The University of Arizona has acknowledged that MAP-Works is an excellent software solution for its RFP. However, MAP-Works cannot integrate with certain existing systems around The University of Arizona, which represents a major issue for implementation and system success. MAP-Works cannot integrate with D2L, which is used widely around campus, especially among first-year courses—a major focus for student retention. D2L hosts a multitude of data on almost every freshman that is much more specific than just grades or GPA. Without D2L integration, MAP-Works' solution cannot update records with the host of real-time grade information that is input into D2L every day. Additionally, MAP-Works cannot integrate with Outlook or Gmail—the two most prominent email clients at The University of Arizona. The vast majority of faculty and staff at The University of Arizona use Microsoft Outlook as their email client, and students use CatMail, which is hosted by Gmail. Without integration through Outlook, faculty will have unnecessary difficulty communicating with at-risk students, especially in batches. On the student side, lack of Gmail integration means that at-risk students will have a more difficult time accessing certain resources provided by MAP-Works. As discussed earlier, at-risk students are some of the least likely to take initiative

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because they are already considering dropout. Therefore, the lack of Gmail integration is problematic for MAP-Works implementation at The University of Arizona as well.

MAP-Works has been proven to be an excellent retention solution for many universities around the country. It is a constantly evolving solution, and it will get better and better at predicting student failure as more and more data is input into the program. The lack of certain integrations is problematic, but MAP-Works solution is still an excellent software application. In the next sections, I will discuss MAP-Works competitor and compare and contrast the two.

CampusLabs Beacon

The second finalist for The University of Arizona's student retention RFP is part of a larger, very advanced CRM focused on university campuses called CampusLabs. The CampusLabs CRM suite includes five different applications that are used in various departments of a university campus. Total adoption of the CampusLabs suite (including Beacon, the student retention system) would enable better coordination, integration, and functionality around campus. However, I will only discuss the Beacon platform in this section, considering that total adoption of CampusLabs' CRM would be a much larger undertaking. Fortunately, the Beacon platform is an excellent standalone student retention system with many unique benefits.

CampusLabs Beacon platform is a software application that gathers, analyzes, and outputs data regarding student retention and persistence. Beacon is a hosted software as a service, remotely hosted at a secure datacenter run by CampusLabs. Beacon gathers assessment data about students' non-cognitive skills and data from student records, and compiles all of that into a report called the Student Strengths Inventory. ("Building Bridges to

Student Success: Beacon," 2013) The Student Strengths Inventory is the result of a 48-question

self-reported assessment that is designed to efficiently and effectively gauge elements leading

to dropout or academic failure. Survey items range in topic, including questions regarding

campus involvement, demographics, preparation and expectations, academic reports, life and

emotions, and other key questions. The Student Strengths Inventory was developed by

CampusLabs using rational and factor-analytic test development techniques and reduced to a

manageable, non-imposing survey through psychometric evaluation of responses. ("Building

Bridges to Student Success: Beacon," 2013) The survey has been proven to be extremely

reliable, with alpha levels of .81 to .90, results which came from a nationwide validity study on

the Student Strength Inventory's ability to predict college student retention and GPAs.

("Building Bridges to Student Success: Beacon," 2013) The Student Strengths Inventory output

comes in the form of six scales that measure motivation factors that predict persistence.

("Building Bridges to Student Success: Beacon," 2013) The program also outputs two indices

that display student success and risk, showing the probability of persistence and the probability

of academic success—the two things that lead to dropout. The 48-question survey is given to all

incoming students, and is customized to the university implementing the software. Beacon is

able to identify at-risk students that do not show traditional indicators of academic failure like

low GPA and low test scores by correlating and analyzing non-cognitive information pulled from

the survey. Beacon also enables faculty and staff to administer targeted interventions to at-risk

students—interventions that get students into the appropriate campus resources such as

advising, clubs, tutoring, or skills training. Additionally, the results of the Student Strengths

Inventory can be formatted for and given to the students themselves, who can use the

information to highlight their potential weaknesses and focus their academic or social efforts on certain areas. The Student Strength Inventory creates three reports based on the information inputted: a student report, an academic report, and an executive report. This reporting allows faculty, staff, and the students themselves to gain insight into issues that may be putting student persistence at risk. The report given by Beacon can efficiently and quickly enable intervention before student dropout occurs.

CampusLabs Beacon is an excellent solution to get data-driven information regarding student retention. The platform's ability to look at data across all realms of the student experience is what makes Beacon so successful. For years, campuses have been relying too heavily on academic reporting to predict student persistence. Research has shown that GPA and other cognitive measures only account for 25 percent of a student's persistence. ("Building Bridges to Student Success: Beacon," 2013) However, as any college student knows, there is much more to campus life than academics—and any aspect of the college experience can lead to dropout. Beacon enables reports from all over campus including residence life advisors, information from faculty, and self-reported data to be analyzed centrally and reported with accuracy. Beacon's ability to integrate a wide variety of data is what makes it so successful. For example, students who have friends who are dropping out of school are six times more likely to drop out as well. ("Building Bridges to Student Success: Beacon," 2013) Beacon is able to use that data to alert faculty and intervene. Another benefit of the software is that faculty can begin their interventions with much more information than before. Rather than having to ask a student all about what might be wrong, advisors or professors can research a student's issues ahead of time and use that information to be of more help to students. An additional function

of the software is called ongoing alerts. These alerts are set off by triggers which have been implemented by the software or by university faculty. If one of the triggers is set off—for example, a student fails a course or quits a campus organization—a faculty member will immediately be alerted and able to help. The variety of inputs, analyses, and outputs are what differentiates Beacon from the competition.

CampusLabs Beacon has another major benefit of being a web-hosted and delivered product. This means that students, faculty, and staff can access all of the information they need on any computer or on their smartphones. The ease-of-use of Beacon is a major benefit of the platform, especially if it is used in concert with the rest of CampusLabs' software suite—which has functions such as data-collection and reporting, compliance, course evaluations, and administration. Additionally, Beacon offers a very simple and convenient dashboard for pertinent faculty, staff and administrators. Figure 4, below, shows a snapshot of the Beacon dashboard.
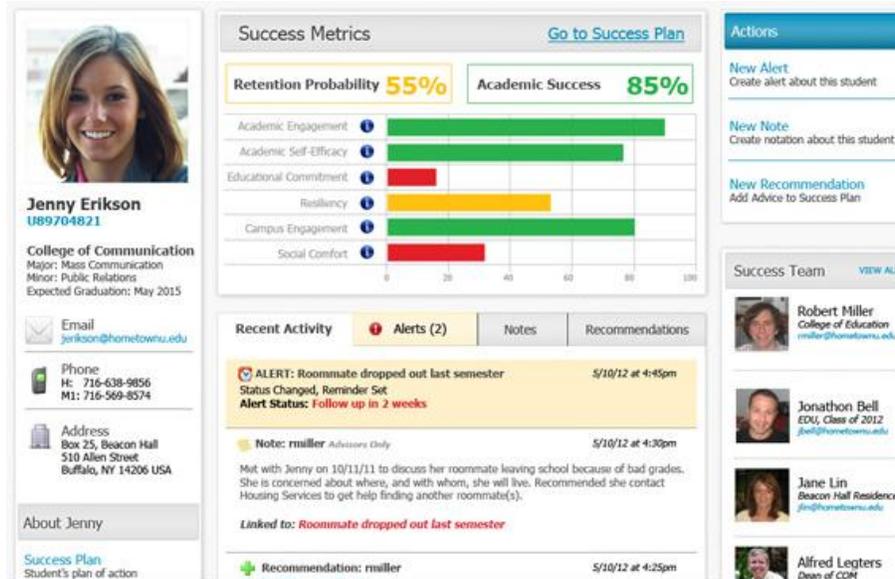
FIGURE 5
CAMPUSLABS BEACON DASHBOARD ("BUILDING BRIDGES TO STUDENT SUCCESS: BEACON," 2013)

Well-organized data dashboards like the one above are one of the major selling points for

Beacon and the CampusLabs suite. Faculty and staff are able to view metrics on a wide scale, or

detailed information about specific students. Figure 5 shows the wide variety of metrics used to

analyze student retention. In the example above, the student needs intervention to improve

her educational commitment and social comfort. The software also makes contacting students

very simple: faculty and staff can email, call, text, or mail directly from the software.

The ease of use, convenience, and efficiency of CampusLabs Beacon is what makes it an

excellent solution for The University of Arizona's student retention request for proposals.

CampusLabs is already a market leader, and their software, like MAP-Works, is an excellent

student retention software. The university chose two excellent options to present to the

committee, and in the next section I will discuss which one I believe fits the specific needs of

The University of Arizona best.

Best Option

After analyzing both of the presented solutions, CampusLabs has shown that its Beacon platform is the best suited student retention system for The University of Arizona. With an easy-to-use platform that can efficiently and effectively identify and notify at-risk students and their advisors, Beacon is a great fit for the university. The lack of integration with current systems is an issue for MAP-Works, but Beacon is able to pull data from its own surveys and previous student records. Additionally, Beacon's dashboard is an excellent one-stop look at student retention for advisors, faculty, and staff, and offers usability beyond the MAP-Works system. Furthermore, the hosted software-as-a-service nature of CampusLabs Beacon makes implementation easy, and leaves the door open for further implementation of other pieces of CampusLabs CRM if The University of Arizona so chooses. Beacon will enable faculty and staff to see far beyond traditional metrics thanks to Beacon's Student Strengths Inventory, and the results of that survey will also enable students and their support systems to better identify what university resources they need to persist with their education. The student strengths inventory has been proven to be an effective method of identifying student persistence, and it will be easy to implement for incoming freshman on campus. For these reasons, I believe that The University of Arizona should implement CampusLabs Beacon software package as its new student retention system.

Conclusion

Student persistence and retention within the higher education system has been a concern on a broad scale and on a university scale for a long time. Information systems have

only just begun to gain traction as another solution for student retention, but they are being

proven to be extremely effective. Traditional retention methods such as academic assistance,

skills training, student clubs, and other on-campus resources can only go so far. Student

retention information systems offer a new dimension within university student retention: these

information systems gather, analyze, and report persistence data to academic advisors,

professors, and other faculty and staff so that university representatives can proactively help

students who are at-risk of dropout or academic failure. Traditionally, these support systems

have only been able to identify at-risk students based on academics –but there is much more to

persistence. Student retention systems enable parties around campus to identify at-risk

students based on metrics far beyond academic success. These systems also offer collaboration

between supporters, so advisors are armed with a multitude of information before

intervention. I believe that CampusLabs offers an excellent student retention system, Beacon,

which will help our university improve academically, financially, and socially through improved

student retention.

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