Rethinking Advising:
Developing a Proactive Culture to Improve Retention

Amber Settle
DePaul University
243 S. Wabash Avenue
Chicago, IL 60604
(312) 362-5324

asettle@cdm.depaul.edu

John Glatz
DePaul University
243 S. Wabash Avenue
Chicago, IL 60604
(312) 362-8321

jgtlatz@cdm.depaul.edu

ABSTRACT
In 2009 DePaul University's College of Computing and Digital Media (DePaul CDM) discovered a significant lag in undergraduate retention rates as well as four, five and six-year graduation rates as compared to other major colleges at the university. DePaul CDM's investment in online student service resources had over time caused the unintentional reinvention of the college advising office into one that supported a very limited number of students, focusing primarily on students either in academic distress or students nearing graduation. In an effort to modify the advising culture at DePaul CDM into a more proactive one, a strategic student service plan was formulated, with the goal of addressing issues related to retention and graduation. We describe early successes and failures in changing the approach to student advising and provide information about future initiatives and evaluation.

Categories and Subject Descriptors
K.3.2 [**Computing Milieux**]: Computers and Education – *Computer and Information Science Education*.

General Terms
Management, Measurement, Design.

Keywords
Advising, retention, graduation rates, student success

1. INTRODUCTION
Student retention has been of interest to computer science and information technology educators for many years. As early as the 1980s educators began to look at the factors that impact student success in computer science. Some of the original work attempted to determine which students would be most successful as a way to narrow a large pool of applicants [5], but computer science and information technology educators are equally interested in student performance as it impacts retention during times of declining enrollments. Strategies for retaining women and underrepresented minorities have been of particular concern [6, 10, 12, 15, 20], but other studies have considered the impact of possessing previous programming or math experience, certain personality characteristics, and particular work-styles on retention in computing courses [5, 21]. Researchers have also examined approaches and techniques to facilitate successful transitions for

technical students from community colleges to 4-year colleges [4], retention in computing programs as a whole [19], or the factors that are correlated with student performance and persistence in technical majors [2, 3, 5, 6, 10, 21]. What is surprising is that relatively few of these studies have considered the relationship between advising and retention in technical majors. It has been noted that the composition of the faculty can impact student retention, with female faculty improving female student retention [6], and advising events targeted at improving mentoring showing promise in developing community among computing students [20]. Another study found that computer science majors required mentoring and networking to feel happy about their educational choices, specifically mentioning the difficulty in encouraging undergraduates to interact with their assigned faculty advisor [7]. The lack of emphasis on advising as a means to retain technical students is surprising given the evidence in the literature for the strong effect of advising on college student retention. Studies on freshman retention have shown that high-quality advising reduces student attrition through effects on GPA, student satisfaction, and intent to leave the university [16]. A retention approach that considers both academic and non-academic factors is seen as being the most effective, since academic performance is not the only reason for poor retention particularly among underrepresented minorities [13]. It has been specifically suggested that one strategy for reducing student attrition is a more extensive program of high-quality advising [16], and other work calls for the evaluation of advising programs as a means to improve retention [14]. It has also been shown that educators need to take the lead in providing advising to students, since many students may be initially reluctant to seek out help on their own, and that establishing ongoing faculty-student relationships early in students' college careers is recommended [1].

Like many other institutions, the College of Computing and Digital Media at DePaul University (DePaul CDM) is concerned with measuring and improving student retention. In 2009 DePaul CDM performed an analysis of one-year and two-year student retention rates and four-, five-, and six-year graduation rates. This analysis showed that while DePaul CDM's retention rates are respectable, they consistently lag behind at least one other college at DePaul. DePaul CDM has long been a leader in student advising and the results of the analysis led to a reevaluation of the approach taken toward student advising. DePaul CDM students have a variety of online resources available to them, and over time this encouraged many of them to take a self-service approach to advising resources. While online resources encouraged independence among traditional students and provided access for the large population of online students, it also resulted in a devaluation of in-person meetings with staff advisors. This

caused the unintentional reinvention of the college advising office into one that supported two primary groups of students: those on academic probation or facing dismissal and those preparing to graduate.

In response, the advising staff at DePaul CDM began an evolution of the office into a proactive student service unit, with the goal of improving the retention and graduation rates and the student experience. In the remainder of this paper we give the data that led to the change in the advising office, the strategy used in developing the advising changes, some initiatives directed at first-year students, early successes and problems during the first academic year, changes made during the second year, and our plan for evaluating the success of the new advising program.

2. DePaul CDM

DePaul CDM began as the Department of Computer Science in the College of Liberal Arts, becoming its own school in 1995 and its own college in 2008. Over the years DePaul CDM has developed a large number of degree programs which has necessitated investment in quality advising to ensure student success. In this section we describe the DePaul CDM curriculum and provide a brief history of advising in the college.

2.1 The Curriculum and Advising

DePaul CDM is one of the largest and most innovative information technology institutions in the country. Approximately 1800 graduate students and 1300 undergraduates are enrolled in 16 Bachelors and 18 Masters degree programs. DePaul CDM has two schools, the School of Computing which includes degree programs in computer science, information technology, and network technologies among others, and the School of Cinema and Interactive Media which includes programs in the digital arts. Some degrees, such as computer game development, are joint programs between the two schools.

Academic advising at DePaul CDM has a long history. With a multitude of graduate and undergraduate degrees to choose from, students commonly need assistance in choosing their degree program so that first-year advising is crucial. But advising throughout a student's career is also important, particularly since degree programs are typically updated on a yearly basis. Navigating new requirements to ensure academic success can be difficult. Every fulltime faculty member at DePaul CDM is an academic advisor, and faculty typically address any student questions about curricular requirements. But there are a host of other issues, including general education requirements, tuition payments, scholarships, etc. about which faculty are not well informed. Staff advisors are crucial for students in solving non-curricular problems. A staff of professional advisors has been in existence since at least 1996, and the advising staff at DePaul CDM currently includes four fulltime members. This sort of dual approach to advising has long been recommended as the ideal model for student advising [18].

Along with the development of new degree programs and the continual revision of existing degree programs, DePaul CDM has a reputation for quick response to student needs. Beginning in 2000 DePaul CDM deployed Course Online (COL), a semi-automated lecture-capture system, which allowed the rapid expansion of online degree programs particularly at the graduate level [11]. Online students now account for 40% of graduate enrollments, and while no undergraduate degrees can be completed online many undergraduates also take online courses.

Partially in response to the growth of the online student population, there has been a focus on the deployment of online student advising resources. These resources allow students to plan their degrees, select courses, schedule appointments, and register for events, among other things. Such resources are important for any institution with a large online student population, but making such resources available can have unintended consequences as we describe in the next section.

2.2 An Evaluation of Advising

For many years it was believed that the academic advising office at DePaul CDM functioned well because there were few complaints on the part of either students or faculty and because the office had a history of timely responses to students' needs. With many online resources at their disposal it seemed natural that the in-person traffic at the advising office would decline. In response, the advisors began to develop new programs to provide academic intervention for students in danger of probation or dismissal. The combination of these two phenomena led to an unintentional reinvention of the advising office into one that primarily supported two groups of students: those facing academic probation or dismissal and those preparing to graduate.

In 2009 an analysis of the DePaul CDM advising office was conducted. Most striking from this analysis were the undergraduate retention and graduation rates for the unit as compared to DePaul as a whole and to other units in the university. In the tables below, the one- and two-year retention rates for DePaul CDM, the average for DePaul University as a whole, the College of Commerce, and the College of Liberal Arts and Sciences are presented.

Table 1: One-year retention rates for DePaul colleges

Year	CDM	DePaul	Commerce	LA&S
2002	82.0%	82.9%	87.7%	81.7%
2003	86.1%	83.9%	88.5%	82.9%
2004	84.7%	84.7%	87.8%	84.1%
2005	90.2%	82.6%	85.0%	80.2%
2006	86.3%	83.7%	87.9%	80.6%
2007	83.4%	84.9%	86.7%	83.1%
2008	89.9%	85.2%	87.6%	81.6%
2009	88.7%	86.9%	90.7%	85.0%

Table 2: Two-year retention rates for DePaul colleges

Year	CDM	DePaul	Commerce	LA&S
2002	75.3%	74.1%	81.0%	71.8%
2003	76.9%	73.4%	80.4%	72.2%
2004	76.8%	75.5%	82.5%	72.5%
2005	79.0%	72.3%	74.7%	69.4%
2006	77.2%	75.3%	81.8%	70.5%
2007	75.8%	75.3%	80.5%	71.8%
2008	82.9%	78.1%	82.5%	73.7%

Much worse were the 4-, 5-, and 6-year graduation rates. The following tables provide those rates for DePaul CDM, the average for DePaul University, the College of Commerce, and the College of Liberal Arts and Sciences.

Table 3: Four-year graduation rates for DePaul colleges

Year	CDM	DePaul	Commerce	LA&S
2001	37.3%	42.4%	44.4%	43.1%
2002	43.6%	44.2%	50.8%	42.3%
2003	37.6%	43.0%	49.7%	41.8%
2004	35.7%	47.6%	52.8%	44.0%
2005	40.9%	43.1%	41.9%	42.3%
2006	45.2%	49.9%	53.8%	46.3%

Table 4: Five-year graduation rates for DePaul colleges

Year	CDM	DePaul	Commerce	LA&S
2001	60.6%	59.1%	64.8%	56.9%
2002	58.7%	59.7%	67.4.%	58.9%
2003	52.0%	59.9%	67.8%	58.6%
2004	51.8%	62.1%	75.5%	58.0%
2005	58.1%	59.0%	60.5%	56.7%

Table 5: Six-year graduation rates for DePaul colleges

Year	CDM	DePaul	Commerce	LA&S
2001	64.3%	62.6%	67.3%	61.0%
2002	63.7%	63.5%	71.9%	62.4%
2003	55.2%	63.3%	71.4%	62.1%
2004	62.5%	67.7%	73.9%	64.6%

While these rates are not outside the norm, since the average six-year graduation rate for all students entering a 4-year institution is 55% [13], this data led the advising staff to believe that changes to the DePaul CDM advising office were necessary. Within DePaul, CDM has over the years been seen as a model for how to do effective advising, and statistics showing retention rates below the other two largest colleges were disturbing. A new mission for the office was developed, with a shift in the manner with which services are delivered to students. The goal is an improvement in student success, as partly measured by one- and two-year retention, and four-, five-, and six-year graduation rates.

3. Revamping Advising

The retention and graduation data led the advising office administration to rethink the operation of their office, with the goal of reducing the number of underutilized services and of refocusing the resources of the office. Regardless of the impact on the retention and graduation rates, the goal is to alter the DePaul CDM student culture so that the advising office is no longer seen as an avenue of last resort and becomes another resource that students utilize during their time at DePaul.

3.1 The Plan for Change

Changes in advising need to be done in a way that can be consistently maintained over a long period of time. Effecting such changes requires coordinated efforts, consistent messages, clear expectations on the part of all parties, and delivery of services that support those expectations. Four strategies for the new advising plan were identified:

1. **Recognizing student populations**: Student needs and expectations differ depending on the population, and the message and delivery methods for each population need to be identified. For example, first-quarter freshman need more directed and prescriptive advising than transfer and graduate students, whose academic needs tend to be more individualized. First-quarter freshman also manage a greater range of emotional and social issues than other groups as they deal with separation from family and friends. The retention literature supports the importance of determining student needs and characteristics as a part of a successful student retention program [13].

2. **Clarifying faculty and staff roles**: Because there are both faculty and staff advisors at DePaul CDM, there must be a good understanding of the roles each advisor plays for students. Without a clear understanding of these roles, appropriate messages and a plan for delivery of advising services cannot be developed.

3. **Physical changes to manifest the change in culture**: The DePaul CDM Advising Office was renamed the DePaul CDM Academic Success Center. This more closely matches the kind of services students can obtain from the office. Further there was an investment in the physical infrastructure of the Academic Success Center, the DePaul CDM Tutoring Center, and the student lounge, with resources dedicated to producing more welcoming and usable spaces.

4. **A year-by-year approach to changes**: Effective retention and graduation plans cannot be implemented immediately and changes to the culture and behavior of returning students is more difficult. So the focus for the first year was on developing a targeted retention strategy for incoming DePaul CDM freshman and first-year transfer students. Freshmen are more likely than other student populations to use advising services [16], and since they are new to college they are more likely to be influenced by external support systems, including social support systems [13]. Attrition also occurs more frequently during the freshman year [16]. There is also some support for this approach in the computing literature, as it has been found that the majority of students leave computer science by the end of their freshman year [9, 17]. Programs developed for first-year students may also make students more likely to respond to advising initiatives in their second, third, and fourth years, and first-year programming has a significant impact on academic achievement, academic persistence, and graduation for the students who participate in it [13]. As each year of the new advising plan unfolds, activities for students in each new class level will be developed and evaluated.

With the focus on initiatives for first-year students, the following advising high-level changes were implemented for the 2009 – 2010 academic year:

- The reinvention of the summer orientation program into a teamed approach, with representatives from the DePaul CDM Dean's Office and the Academic Success Center both delivering messages and expectations to students
- The development of initiatives targeted to specific student populations.
- The implementation of second-quarter registration restrictions to encourage student-advisor interactions at the earliest possible point in the academic year
- Modification of the academic progress reporting system to include students as early as the midpoint of the first term and to include all students instead of just those facing academic difficulty

The approach taken in the latter two bullets is supported by the college retention literature, with one study noting that "the single best strategy for improving retention is to offer good advising to students who would otherwise belong to the no advising group" [16]. The importance of an early alert, assessment, and monitoring system is particularly stressed [13], and researchers recommend that advisors take the initiative in reaching out to students so that productive student-advisor relationships can be established early [1]. However, the results of advising during 2009 – 2010 were mixed, and in the next two sections we describe the specific advising changes and the positive and negative experiences identified during the first academic year.

3.2 Successes in 2009 – 2010

There were several approaches that were successful in the first academic year. First, communication between various DePaul CDM offices and between the Academic Success Center and students were improved. The undergraduate orientation sessions for freshman (Premiere DePaul) and transfer students (Transition DePaul) were revised to include both DePaul CDM administrative and student services personnel. The primary goal was to devise a clearer and unified message for students and the improvement in communication was notable. Also important was the improvement in communication between the Academic Success Center and students. The advising staff worked to develop targeted messages for students, which were sent out on a regular schedule to students. For example, the messages related to registration stressed the importance of early planning and meeting with advisors. Messages are delivered at times when planning would be optimal for students, and increases in advising appointments point to successes in the approach. Messages to transfer students emphasized involvement in college and university organizations during the first year, as it is most important for this population to take advantage of academic enhancement opportunities early in their academic careers.

The change in the use of registration holds was also successful. All freshman were blocked from enrolling in courses during the second quarter until they met with an advisor, either a faculty or staff advisor. As a result nearly every first-year DePaul CDM student had contact with an advisor during their first quarter, which allowed them to receive information about planning for 2nd quarter courses.

3.3 Problems during 2009 – 2010

Part of the first year strategy was to deliver time-appropriate messages to freshman, and Freshman Friday events to deliver this information were planned weekly during the fall quarter. Attendance at the first two events was adequate, but there was a severe drop-off after that point. We believe that several things prevented the initiative from being successful. The day and time of the event may not have coincided well with the students' schedules since many DePaul CDM students do not have classes on Fridays. The drop off in attendance may be explained by a mismatch between the agenda for the events and the students' needs, resulting in a failure on the part of students to continue attending. Finally, the plan to host events every Friday may have been simply too ambitious.

A final event for freshman during the spring quarter was planned to celebrate the successful end of the academic year. The goal was to recruit a planning committee of 5-10 freshman for the Freshman Fest in the hopes that the students would feel that they owned the event. Unfortunately the call for a planning committee only resulted in one response, and the Freshman Fest was cancelled. It may have been that the event was planned too late in the year, or the Academic Success Center staff may have not effectively communicated the importance of and purpose of the event to students.

The summer orientation and registration sessions for freshman and transfer students (Premiere DePaul and Transition DePaul respectively) were not changed during the first year. As in previous years faculty advisors were solicited for participation in the sessions, and there was just one staff advisor available for each session. The role of the staff advisor was to monitor the sessions and answer any questions raised by students or faculty advisors. Several problems with this approach were identified. As in previous years it was difficult to secure enough faculty advisors for many of the sessions. Although faculty are provided with some compensation for their participation, it is completely optional, and faculty schedules often changed during the summer resulting in last-minute cancellations. Both combined to produce short-staffed events. Faculty advisor specialties did not always match with students' majors, resulting in faculty assisting students outside of their area of expertise. Finally, faculty advisors helped students with the actual enrollment process, providing the students with too much assistance and hindering their ability to register on their own in subsequent quarters.

The existence of both faculty and staff advisors at DePaul CDM allows for students to be assigned to a fulltime faculty advisor after admission. For many years it was common practice to assign faculty advisors to newly admitted undergraduate students immediately after their summer orientation session. During the academic year 2009 – 2010 several flaws in this system were identified. Students were often assigned to the faculty advisor they met with during orientation, which seems like a reasonable choice. Unfortunately not all faculty participate in the optional orientation events so this policy results in very uneven assignment of advisees. In the rare situations where students were not assigned to the faculty advisor with whom they met during orientation, they became confused about the person with whom they should meet later in the year.

3.4 The Academic Year 2010-2011

There are several changes in the first-year initiatives that were made during the 2010 – 2011 academic year. We also began to gather data, and it seems to indicate that the initiatives are making a positive difference.

The first change for the academic year was to avoid the unsuccessful approaches from the first year, so the Freshman Fridays and Freshman Fest events were not continued.

The biggest change for the most recent academic year was a revamping of the Premiere DePaul and Transition DePaul events for freshman and transfer students during the summer. The changes included the following: **A more prominent role for staff advisors**: Staff advisors managed all aspects of the advising and registration sessions. They initiated contact with all transfer students prior to their arrival to help students prepare for the events. They also reviewed records for freshman at the end of the first day of advising. First-year advising plans were created and students were registered into several required courses. This allowed advisors and students to focus on the more qualitative aspects of the advising and registration system. **A greater focus on student self sufficiency**: The staff advisors created and delivered a tutorial about online resources as a part of each event. Further, students were advised in a group setting, allowing for more interaction between students and more peer mentoring. Students were also required to finish registration themselves under the supervision of the staff advisors, in the hopes that this would provide them with the ability to register independently in future quarters. **More oversight of the event**: All first-year plans and fall quarter class schedules were reviewed by the Director of Advising after orientation, allowing for follow up and adjustments as necessary. **A revision of faculty advisor assignments**: Faculty advisor assignments were made later in the summer for all students. The new approach allowed time for the advising staff to gather information about students during the summer to arrive at the most appropriate assignment. Students were also assigned to faculty in a more equitable fashion.

Because of the success of first-quarter advising holds for freshman and transfer students and second-quarter advising holds for freshmen, second-quarter advising holds were implemented for transfer students. Finally, a new event was created to allow first-term undergraduates an opportunity to meet faculty advisors. On September 24, 2010 CDM hosted its first "Meet Your Advisor" luncheon. The event was designed to facilitate early introductions and connections between first-term students and their faculty advisors. Over 100 students and 30 faculty advisors attended, making this inaugural event a huge success.

There is some evidence that the changes made over the past 18 months have been successful. During the 2010 – 2011 academic year, the Academic Success Center staff are averaging 19 more appointments and 7 more walk-in sessions per week. The success of registration holds is evident. During the academic year 2009 – 2010 there were 79 freshmen who had no record of having met with an advisor by the start of winter quarter registration. This academic year there were only 39 freshmen who had no record of meeting with an advisor by the same point in the year. In 2009 – 2010 there were 40 freshmen who had holds put on their record for the spring quarter because they had no yet met with an advisor. During 2010 – 2011 only 17 freshmen were in this situation by the spring quarter. It would appear that registration holds are conveying to students that the DePaul CDM faculty and staff believe that meeting with an advisor prior to registration is important. The goal is to ensure that students are better informed and choose classes more effectively.

3.5 Future Initiatives and Evaluation

The goal of the changes to the advising office is to use a phased approach in changing the way that students view the advising services at DePaul CDM. To this end, there are several initiatives aimed at sophomore students that we are considering for the near future. These include specialized degree information sessions for students who remain undecided about their academic plans and promotion of academic enhancement opportunities such as study abroad and internships. Building on the targeted messaging campaigns of the first year, these initiatives are tied to themes of staying on track and informed decision making.

Certainly one of the ways that the changes to academic advising at DePaul CDM will be measured is through the continued monitoring of the one- and two-year undergraduate retention and 4-, 5-, and 6-year graduation rates. However, there are additional questions that we would like to answer about the approaches we have developed for first-year students, including:

1. Are first-year students involved in more face-to-face or other interactions with either faculty or staff advisors?
2. Are first-quarter and second-quarter retention rates for first-year students improved?
3. Are first-year students more satisfied with faculty advisor assignments?
4. Have the first- or second-quarter completion rates for first-year students improved?
5. Are students more satisfied with the Premiere DePaul or Transition DePaul summer events?

Some of these questions can be answered by analyzing data that is already gathered by the DePaul CDM Academic Success Center, but additional data gathering will need to be done. Data that should be considered includes orientation session survey data, fall-to-winter quarter retention data, the registration dates for winter and spring quarter registration on the part of first-year students, the percentage of first-year students meeting with advisors (both staff and faculty), and the percentage of first-year students changing faculty advisors during their first year. Data that can also be reconstructed from prior academic years is particularly useful since it will provide a control. Once a comprehensive plan for data gathering is constructed for the first-year initiatives, it will be adapted as the plans for other student populations are developed and implemented.

4. CONCLUSIONS AND FUTURE WORK

Prompted by a 2009 analysis that showed lower than desired one- and two-year retention, and four-, five-, and six-year graduation rates at DePaul CDM, the advising staff began a revision of the advising office and processes. The initial focus of the work was on initiatives for first-year students, since the literature has shown that first-year advising has the most potential to impact retention for a variety of reasons [9, 13, 16, 17]. Registration holds for first-year students, a revamping of the summer orientation programs for freshman and first-year transfer students, clarification of roles for faculty and staff advisors, changes to faculty advisor utilization and assignment, and quarterly outreach to students were some of the changes made during the first 18 months of the program. The initial results of the changes are

promising, and a more formal evaluation plan is in development. Plans for sophomore-level initiatives are also underway.

One of the observations to come from this project is the difficulty in creating developmental advising initiatives. Developmental advising refers to shared responsibility between the student and advisor, one that promotes growth on the part of the student [8]. Prescriptive advising, by contrast, is characterized by an authoritarian relationship in which the advisor makes a diagnosis and finds an appropriate course for the student to follow [8]. Many of the successful first-year advising initiatives are prescriptive, including first-year registration holds and summer orientation sessions, and the initiatives that most notably failed, such as the Freshman Fest, were developmental. It is possible that prescriptive interventions are simply more appropriate for first-year students, but finding a balance between prescriptive and developmental approaches will be important for the future, particularly as the focus switches to more mature students.

5. ACKNOWLEDGMENTS

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