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## Using Strategic Text Messages to Reduce Summer Melt

Students' ways of communicating are changing. Indeed, in a 2012 study of teen behavior (Lenhart), only 6% of participants reported checking their e-mail daily. In contrast, approximately 90% of college students use text messaging daily (Lenhart, 2015), making texting a powerful tool for connecting with incoming students.

Recognizing this trend, Brigham Young University (BYU) piloted a pre-arrival summer initiative in 2015 that uses text messaging to connect incoming students to highly-trained peer leaders (PLs). This pre-arrival mentoring initiative integrates features of two interventions (i.e., strategic text messaging and PL support) demonstrated to mitigate summer melt (Castleman & Page, 2015), the phenomenon wherein college-bound high school seniors fail to matriculate in college following their graduation.

Objectives of this initiative were to

- offer personalized assistance to incoming students as they prepare to matriculate;
- foster a meaningful relationship with an experienced and well-trained peer who can answer questions, make referrals to key campus resources, and support students in planning for their first year;
- facilitate simple, yet frequent interactions between students and their PLs; and
- deliver critical information regarding policies, deadlines, and resources to students via text message.

BYU partnered with a third-party vendor (Signal Vine) to provide PLs with a two-way, web-based text messaging platform that allows them to send customized, well-timed information directly to incoming students' mobile devices. To evaluate the impact of this initiative, newly admitted students were assigned to one of three treatment groups: (a) students who received only e-mail communication from their PL (i.e., E-mail Only;  $n = 1,390$ ); (b) students who received text messages from PLs' personal mobile devices (i.e., Personal Device;  $n = 1,045$ ); and (c) students who received text messages from their PL via Signal Vine (Signal Vine;  $n = 1,369$ ). PLs were assigned to approximately 100 students each, all of whom had been assigned to the

### Bryce Bunting

Assistant Clinical Professor,  
Counseling & Career Center  
Brigham Young University

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same treatment group. Additionally, as a further control, PLs in all three groups were instructed to send the same messages on the same schedule – only the medium of delivery differed across groups.

Students selected for the Signal Vine and Personal Device groups were contacted via e-mail and informed that their PL would be communicating with them via text message during the months leading up to their arrival on campus. This e-mail also provided instructions for how students could opt out of receiving these text messages. Signal Vine participants were then enrolled in the Signal Vine platform by BYU; students were not required to register, download an app, or complete any other sort of onboarding process.

## Implementing the Text Messaging Platform

First, administrators worked with a team of senior PLs to develop an overall strategy for a series of text-messages that were sent throughout the summer months. Based on a pre-determined schedule, these text messages were then sent to incoming students through an automated delivery feature of the text-messaging platform. Messages were delivered directly to students' mobile devices like a traditional text message and were customized with students' names and the name of their PL. The messages typically included embedded hyperlinks to additional web-based content (e.g., BYU informational webpages, contact information for key campus resources, short video clips). When students responded to these personalized text messages, their replies were routed into a personalized web-based inbox that allowed PLs (as well as staff supervisors) to read and respond to student's questions (just like e-mail). This allowed students to receive key information and personalized text messages from their PLs, while providing PLs with a simple web-based interface to facilitate engagement with a large number of incoming students.

Students received an introductory text message in April (see Figure 1), followed by a series of nine scheduled and automated text messages from April through the end of July. These messages addressed topics such as new student orientation, class registration, finding employment, and financial aid. Delivered on a just-in-time basis, the messages provided incoming students with key information at times when they would find it most relevant and useful.

## What We Found

The results of a one-way between-subjects analysis of variance (ANOVA) demonstrated that students in the Signal Vine group (a) interacted with their PL more frequently ( $F = 50.597, p < .001$ ); (b) saw more value in having a PL during their first year of college ( $F = 9.648, p < .001$ ); and (c) reported having a stronger relationship with their PL ( $F = 4.773, p < .001$ ) than did students in the E-mail Only or Personal Device groups. Interestingly, there were no statistically significant differences between the E-mail Only and Personal Device groups across these three measures.

“Text-messaging holds promise for improving students’ engagement with and connection to PLs, particularly when messages are delivered on a regular basis and PLs have tools allowing them to manage large volumes of responses in a timely way.”

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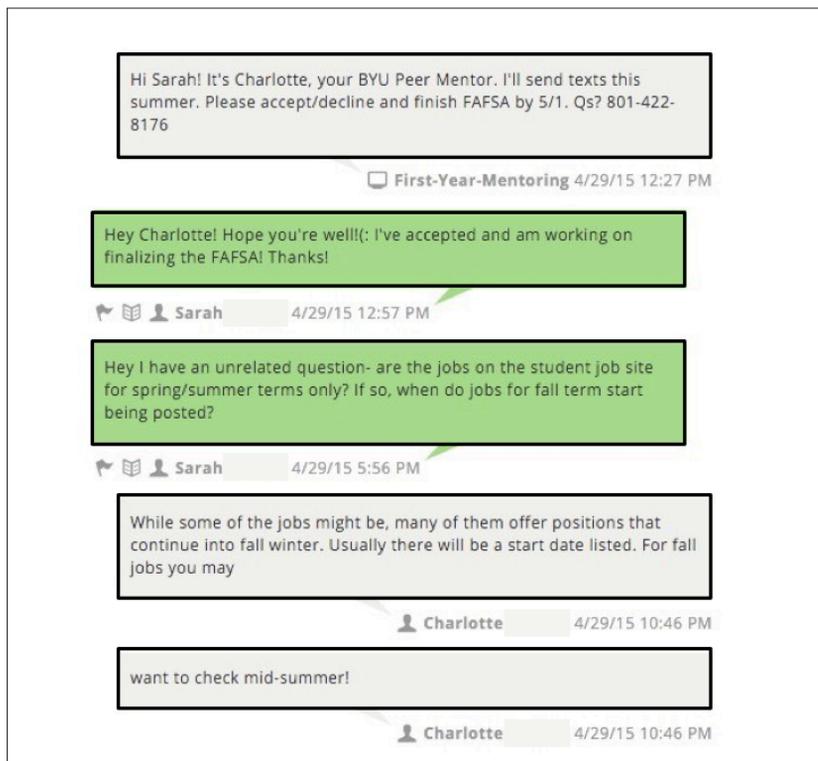
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Figure 1. Screenshot of sample Signal Vine introductory message and follow-up messages.

While it is not possible to draw definitive conclusions from these data regarding why students in the Signal Vine group were more engaged with and connected to their PLs, it is hypothesized that the web-based platform ensured more consistent contact between new students and their PLs because of its ability to deliver automated, pre-scheduled messages. In contrast, the PLs in the E-Mail Only and Personal Device groups were required to manage this process independently and may have, at times, failed to send messages according to the schedule outlined in their training. Indeed, PLs in the Personal Device group reported that managing large volumes of student responses using only their personal mobile device (as opposed to having them routed into a web-based inbox) proved very difficult. Not surprisingly, PLs in the E-Mail Only group benefited from the familiarity and efficiency of the e-mail interface. However, they experienced frustration with low response rates among students and attributed this to the fact that “students don’t read e-mail.”

Ultimately, the text messaging platform seemed to allow PLs to capitalize on the intimacy and personal connectivity of text messaging, while mitigating the challenges reported by the PLs in the Personal Device group (i.e., managing high volumes of messages). The personal connection that resulted from sending and receiving multiple text messages, across a period of months, allowed students to ask questions related to the content of the scheduled messages, as well as very individualized questions. In

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sum, the text messaging platform increased engagement among students, connected them to their PL, and provided a simple mechanism for asking questions and receiving responses in a relatively short amount of time.

Although students in the Signal Vine group appeared to be much more engaged with their PLs than were students in the other two treatment groups, a similar one-way between-subjects ANOVA did not demonstrate any difference in yield rates across groups (i.e., students were neither more nor less likely to matriculate depending upon the treatment group to which they were assigned). One possible reason for this finding may be BYU's already very high yield rate of approximately 78% and the fact that nearly 90% of admitted students report that BYU was either the only school to which they applied (17%), or their first-choice school (71%).

## Implications for Change

Based on these results, as well as overwhelming feedback from first-year students that they appreciate having the ability to communicate with PLs via text message, BYU launched a second year of text-based pre-arrival mentoring. For those institutions interested in developing a similar model, a detailed strategic plan, well-trained PLs, and clear objectives are critical. At BYU, needed resources included funding to purchase a contract for the text-messaging platform, staff time in becoming familiar with the technology and training PLs, and funding to employ a team of PLs to engage with incoming students. Additionally, consideration should be given to how this model might be employed to offer support to specific cohorts of students (e.g., students within particular academic programs, at-risk students, underrepresented populations).

Overall, BYU's text-based pre-arrival mentoring initiative has proven to be an effective way to provide strategic support to incoming students during the time between admission and matriculation. Further, using text-messaging to facilitate communication between PLs and first-year students holds promise for improving students' engagement with and connection to PLs, particularly when messages are delivered on a regular basis and PLs have tools allowing them to manage large volumes of responses in a timely way. For institutions that are not in a financial position to purchase a tool like Signal Vine, mobile-to-mobile texting could be a useful alternative. However, in these cases, high-quality PL training, close supervision, and strong accountability measures would be critical in ensuring effective implementation. ☺

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## Contact

Bryce Bunting  
[Bryce\\_bunting@byu.edu](mailto:Bryce_bunting@byu.edu)

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# Mandatory First-Year Seminar Supports Transition to Engineering Majors

Each year at the University of Toronto (U of T), a new cohort of approximately 1,200 first-year students begins a rigorous engineering education in the Faculty of Applied Science and Engineering. The school offers a four-year Bachelor of Applied Science degree in one of nine different engineering disciplines, and eight of these form the Core 8 cohort of students. At U of T, students report that the fast-paced learning environment, heavy workload, and academic rigor of their first-year engineering program is greater than they expected. In an effort to help students with this transition, we developed and piloted a new seminar course called Orientation to Engineering.

## Course Origins

In the Faculty's 2014 first-year exit survey, 54% of 320 respondents indicated that their first year was harder than they expected, and 38% said that their workload was unmanageable or overwhelming. The average Core 8 student has 25 hours per week of scheduled classes with the expectation that at minimum an equal number of hours are spent outside of class on their studies. A large number of respondents (39%) reported they did not understand at all or only somewhat how their first-year courses were linked to their upper-year engineering studies. These results were consistent with survey results collected in previous years.

Based on these results and a faculty-wide first-year engineering curriculum review, the development of a first-year seminar, APS100: Orientation to Engineering, was recommended in 2014 and piloted in Fall 2015. This course was designed to help students acclimate to the engineering academic environment, gain a preliminary understanding of engineering design thinking, and link various engineering disciplines to both educational and career opportunities. Additionally, academic success strategies and skills were embedded within the course to provide students with college-level academic skills to aid in their transition.

## Course Structure

The initial Orientation to Engineering course consisted of six hours of lectures and 12 hours of small-group seminars led by an upper-year undergraduate mentor in the same engineering discipline as the students. The students were separated by discipline into four large lecture sections ranging in size from 217 to 267 students. The biweekly lectures included guest speakers (e.g., live video interviews with industry leaders, graduate students with exciting research, student leaders, and recent alumni).

The weekly seminars provided an opportunity for students to connect lecture material with their personal perspectives as well as collaborate and engage with their peers. There were 30 seminar sections in all, averaging 30 students per section.

**Leslie Grife**  
Assistant Director, First Year  
Academic Services

**Cori Hanson**  
Assistant Director, First Year  
Student Success and Transition  
*University of Toronto*

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## Course Content

Learning outcomes, geared specifically at easing the transition from high school to university, included the following:

- describe and locate the services, resources, and extracurricular opportunities available to them as an undergraduate student;
- formulate their own comprehensive study plan;
- define their own professional and personal short- and long- term goals and be able to connect those goals to the topics covered in their first-year engineering curriculum; and
- identify the connections between engineering disciplines and begin to imagine how their area(s) of interest can foster cross-disciplinary collaborations.

The lectures served to introduce the main topics and concepts to students, while the seminars were geared toward exploring these ideas more deeply, facilitating personal discussions, and encouraging dialogue and reflection.

The assignments for Orientation to Engineering provided students the opportunity to apply the concepts they were discussing in the weekly seminars. Students had three main graded assignments, which included a two-week plan, a case study report on ethics in the engineering profession, and a draft engineering résumé. The two-week plan brought together a wide array of academic skills including time management and action planning and required students to reflect on the effectiveness of their plan toward achieving their goals and leading a balanced life for that period.

While not all aspects of the course were graded, the many in-class assignments and activities provided high value. Each assessment or task in the course was developed to give students the opportunity to apply course material in a practical and meaningful way. For example, students developed a personal mission statement based on their values and goals with the objective of illuminating the intrinsic motivation that led them to study engineering. Further, many activities during the seminar were specifically geared to creating connections and forming strong bonds within the engineering community at U of T, hopefully leading to an increased sense of belonging and decreased feelings of isolation or uncertainty.

## Assessment Results

In addition to official course evaluations (45% response rate), students were asked to complete an expanded course experience survey. Of the 922 students enrolled, 242 students responded (a 26% response rate). Both the survey and the course evaluation were delivered online with no incentives for completion, so while the response rates are not high, a diverse sample of students by discipline completed the surveys. Key findings include perceived increases in the

“ Many activities during the seminar were specifically geared to creating connections and forming strong bonds within the engineering community at U of T.”

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- ability to develop their own personalized study plan (87.9% felt very or somewhat able);
- ability to seek assistance from professors, teaching assistants, academic advisors, or peers (91.3% felt very or somewhat able);
- ability to use past assessments as a learning tool through thoughtful review and reflection (58.2% felt very able); and
- confidence in their ability to succeed in their engineering program (47.8% felt confident).

Students were also asked to assess their time management skills, study skills, and enthusiasm for studying engineering. On average, students reported an increase in skill levels and enthusiasm (see Figure 1 for a full summary of these results).

Feedback also illustrated some significant impacts the course had on underrepresented groups. In 2015, 30% of the first-year engineering class was female and 30% was international. Female respondents reported that the course helped them integrate within the community to a greater degree than male respondents. International respondents felt the course better prepared them for the academic environment than did Canadian respondents.

In addition to these assessments, we also asked the upper-year undergraduate TAs for feedback on the course. All of the TAs who responded (53% response rate) felt the seminars that focused on time-management and ethical issues in engineering were the most useful for first-year students. All but one TA who responded to this survey felt the course helped students develop an effective study plan.

Because assessment of the course has been limited to feedback from students and TAs, further assessment will include a more detailed analysis of grades in the future. We will continue to monitor student grades over the next few years and hope to have a more comprehensive understanding of the impact this course has on student academic success once more cohorts of students have completed the course.

To gain a better understanding of how students' transition to the new challenge of managing a heavy course load and getting lower marks than they are used to, we implemented a new survey in September 2016 to collect more data on student motivations for studying engineering and perceptions of their academic skills. By establishing a baseline for student self-efficacy, career clarity, and learning skills, we hope to gain more insight into the impact this course has on the student experience. In particular, we hope that by collecting these data we will have a better understanding of why so few students were feeling confident after completing Orientation to Engineering in 2015.

## Moving Forward

Overall, the most successful aspects of the course were the practical assignments and the undergraduate TA mentors. Assignments like the two-week plan concretized the students' academic study skills, while the case studies on ethical issues in engineering and the résumé draft helped students practice academic skills and understand the value of the profession

“ Case studies on ethical issues in engineering and the résumé draft helped students practice academic skills and understand the value of the profession for which they were preparing.”

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for which they were preparing. The undergraduate TAs acted as mentors, helped foster community, and supported their students through what is often a difficult transition into the university.

In an effort to create a more intellectually stimulating environment, summer reading has been introduced to incoming students. Students will be required to reflect upon the readings throughout the term and make connections to their experiences and challenges. Opportunities will be presented throughout the course for discussion and reflection on equity and diversity within the campus community and professional engineering field. Finally, student assignments will be more closely aligned with the course goals, and submission deadlines will be shifted to better accommodate course workload concerns.

Engineering students at the University of Toronto are expected to meet high academic expectations starting in their first year of study and struggle to make an effective transition from high school to university and adapt to the new academic environment. While preliminary results show there is still room for improvement, we have seen that the course provides students with an engaging learning opportunity that supports a successful transition into an academically rigorous program. [e](#)

### Contact

Cori Hanson  
[cori.hanson@ecf.utoronto.ca](mailto:cori.hanson@ecf.utoronto.ca)  
 Leslie Grife  
[grife@ecf.utoronto.ca](mailto:grife@ecf.utoronto.ca)

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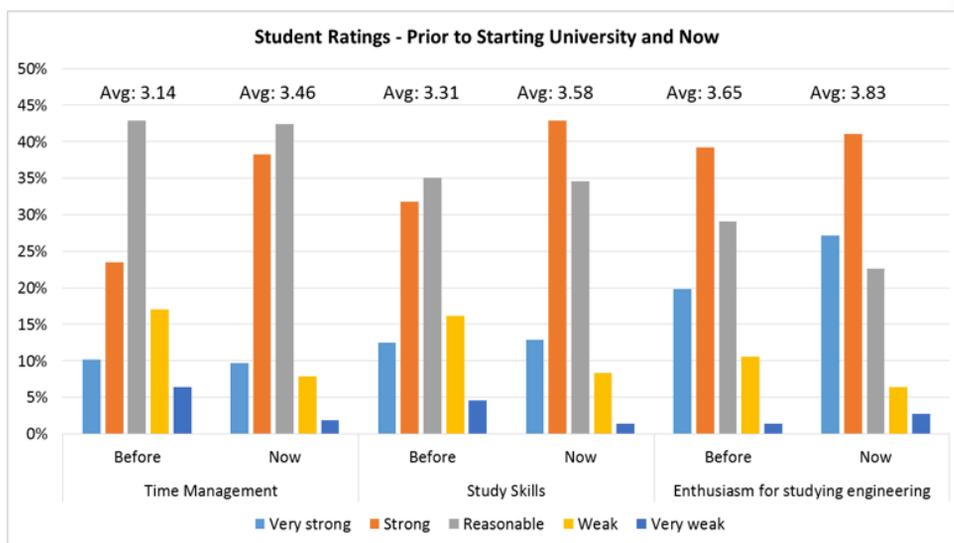


Figure 1. Summary from respondents to the course experience survey to questions asking students to self-assess their skills before and after completing Orientation to Engineering. The scale of responses was 1-5, where 1 was very weak and 5 was very strong.

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# Supporting the Transition and Ongoing Success of First-Generation and Low-Income Students

**Aspasia Apostolakis Miller**  
Director, Office of Change  
Management

*Northwestern University*

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Northwestern University, located outside Chicago, Illinois, is a four-year, private university with 12 schools and colleges serving approximately 8,000 full-time undergraduate students. The institution recently expanded its recruitment of low-income and first-generation college students in order to offer greater educational opportunities to a broader range of students. Pre- and post-enrollment programs designed to respond to this enrollment shift also increased but without an organized way to support the new students or processes to evaluate their effectiveness. This proved frustrating to students who did not know where to turn for support, leaving them with unmet needs. The Provost charged the Office of Change Management to review these programs and create a comprehensive University-wide strategy for addressing the unmet needs of this growing population.

## Key Findings from the Review

Five distinct pre-enrollment programs designed to address the transition needs of first-year students and more than 11 post-enrollment programs providing academic support in the form of peer mentoring, tutoring, and workshops are in place at Northwestern. Staff from the Office of Change Management conducted a review of the programs, examined student focus group feedback, and assessed challenges and opportunities to strengthen support for these students.

They found that recruitment was handled separately by each program, creating a risk of competing for the same students and leading to student confusion. Additionally, students stated they found it challenging to navigate the University's resources and, sometimes, felt alienated from the larger student community. Other student concerns included lack of clarity surrounding peer mentoring, tutoring, and academic services, among others; not having a go-to person for any question or topic; and a lack of cultural capital, which could have a negative effect on a student's higher education experience. Another finding was that there was no strategic approach to providing financial aid, and some students did not attend cocurricular programs because of financial barriers. Students were also likely to look at the cost of books before deciding to sign up for a class, which may have resulted in students missing valuable classes necessary to their major.

While attrition is not a big problem at Northwestern, data suggest lower income and first-generation students are less satisfied and do not feel that they have the support necessary to succeed in their programs or in college. For example, a disproportionately large percentage of these students choose STEM and pre-med majors and then transfer out of those majors possibly because they did not get the transition support they needed upon entering college. These findings, among others, prompted University leaders to convene a special council to respond to the student concerns and deficiencies in program consistency and connections.

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## The Response

The Transition Programs Plus Council was created in 2014 to develop a strategy to coordinate program enhancements and design a supporting infrastructure. This 40-member council is composed of stakeholders who understand the University and students' needs. The group is co-led by the Associate Provost of Undergraduate Education and the Vice President of Student Affairs. The membership includes program managers, STEM faculty, academic leaders from each undergraduate school, and staff from Financial Aid, Information and Analytics, Athletics, the Searle Center for Advancing Learning and Teaching, and the International Office.

## Action Taken

One set of priorities for the Council is to establish consistency among the programs by determining how to offer credit for each pre-enrollment program, eliminate barriers to participation, and coordinate recruitment efforts. The program managers are developing a shared presence on the University's web site and are collaborating to provide a joint presentation at Wildcat Days, an on-campus event for admitted students before they make their final college decision. The goal is to educate admitted students about the breadth of services available and to provide consistent, cohesive messaging that academic help-seeking behaviors are valued and encouraged for all students.

A second priority of the Council is to coordinate curricular support. Representatives from the undergraduate schools' advising offices and the Searle Center for Advancing Learning and Teaching considered the disparate nature of academic support and determined how to increase knowledge of academic resources and services. An Academic Resource Portal was created in 2015 to serve as a one-stop hub for all academic support programs and services throughout the University. Council members are encouraging administrative staff and faculty to increase student awareness of these resources by directing students to this portal and recommending academic support programs, such as peer-led weekly study reviews in social sciences, math, and sciences; workshops to improve study skills; and academic tutoring and mentoring.

Some academic support programs were filled to capacity and were wait-listing students because of a lack of resources. Before requesting funding to expand these programs, the Council verified that the programs were meeting their goals. For instance, in the Academic Mentoring Program (AMP), which helps at-risk students be successful in math and social science courses, participants tend to earn higher grades in linked courses than comparable nonparticipants. Participants also make gains over the quarter in use of study strategies and confidence in their abilities. The Undergraduate Program for Advancing Learning (UPAL) is a peer-mentor program designed to enhance awareness of preferred learning styles, fine-tune academic skills, and develop and implement individual academic advancement plans.

“ Student concerns included lack of clarity surrounding peer mentoring, tutoring, and academic services, among others and not having a go-to person for any question or topic.”

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Participants are more likely to move off academic probation than those who do not join UPAL. All participants make gains in academic help-seeking behavior, use of effective study strategies, and sense of belonging at the institution.

Based on this evidence, the Council supported a request for additional funding to expand these academic support programs, which was approved. Program enrollment for the three largest academic support programs increased from 18 to 40% between 2015 and 2016.

- AMP increased enrollment from 342 to 478.
- The Peer-Led Undergraduate Study (PLUS) program increased enrollment from 455 to 539.
- UPAL increased enrollment from 90 to 112.

A third priority of the Council was to respond to the needs of students to have a single place to seek information about resources, financial advice, and any other issues that could impact the higher education experience. To overcome the sense of alienation first-generation and low-income students sometimes feel, the Student Enrichment Services office (SES) was created to work with these students and enhance their academic success, personal development, and professional growth. The SES office addresses students' needs by connecting them with resources on campus, providing peer mentoring, and



*Students from the 2016 Summer Academic Workshop (SAW) speak with Northwestern University Provost Dan Linzer at the SAW reception. Photo Credit: Jill Norton, Northwestern University.*

responding to financial needs such as textbooks, laptops, and health insurance. For example, the decentralized, inconsistent approach to responding to students' financial needs meant that students had to repeatedly provide the same information to different offices to justify their financial needs. In response, SES is working with Financial Aid to develop a single application for low-income students to request financial assistance for

extracurricular activities and programs. SES is also working with the Development office to obtain donor support for low-income students' financial needs.

In the past, program assessments were managed separately by cobbling together disparate pieces of data without any coordinating structure. A fourth priority of the Council was creating a central database supporting program assessment. This assessment framework will assist program managers in evaluating the impact of their programs by enabling them to compare outcomes of participants to non-participants with similar characteristics. The framework includes criteria to measure success in meeting program goals, learning outcomes, and community-building.

“There has been a change from operating in silos to fostering more coordination and holistic thinking at the University.”

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## Outcomes/Impact of Response

Over time, there has been a change from operating in silos to fostering more coordination and holistic thinking at the University. Programs still maintain their distinct identity, but managers are working together and have established a more collaborative spirit. The conversation has changed from “this is what I’m doing” to “this is what we want to do collectively” to address the needs of our students. So far, we have found that communication and collaboration among administrative staff, program managers, and faculty has increased; resource, infrastructure, and financial aid needs are being addressed; and more students are being served. SES, now in its second year, has a steady rate of approximately 30 touch points per month with students. The Searle Center for Advancing Learning and Teaching is now a learning hub with greater visibility, increased enrollment, and enhanced financial resources to accommodate more students. Outcomes data show that student participants tend to earn higher grades than comparable nonparticipants and that fewer are on probation than nonparticipants.

The 2016 – 2017 academic year is the Council’s third year of developing a coordinated strategy to support low-income and first-generation students. Significant take-aways from this work include the following:

1. Engage a cross-section of institution leaders from academic support units, academic departments, student affairs, admissions, data and analytics, and financial aid to proactively address the resources and infrastructure needed to support first-generation and low-income students.
2. Solicit student feedback about barriers and enablers to success to define the greatest areas of enhancement needed.
3. Use peer-led mentoring as supplements to faculty and TA academic support.
4. Make it an institution-wide priority to address financial barriers in a coordinated manner so that all students can have a complete curricular and cocurricular undergraduate experience. [e](#)

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### Contact

Aspasia Apostolakis Miller  
[a-apostolakis@northwestern.edu](mailto:a-apostolakis@northwestern.edu)

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## High-Achieving Pre-Health College Students' Perceptions of Academic Success

While many pre-health students express an interest in the health professions upon entry to the university, they face heightened challenges as they transition to undergraduate study, often due to the increased rigor and volume of science and mathematics coursework required for medical or dental school entry. In an effort to understand these challenges and promote student success, we invited high-achieving pre-health students to participate in a qualitative study with the goal of identifying ways to support these students more effectively.

### Data Collection and Analysis

Seventeen undergraduate students (6 juniors and 11 seniors, 12 of whom were females) with an average GPA of 3.73 participated in focus group discussions. The study was designed to have students give a holistic view of success, including psychological and contextual factors related to achievement, and to provide recommendations for incoming students based on their personal experiences.

Sessions began with students writing a letter of advice to incoming pre-health students responding to the prompt: "Based on your experiences during the last several years as a pre-health student, share advice you would give to new pre-health students to help them be academically successful during their transition to college." After completing the letters, focus groups were conducted using a semi-structured format, drawing on university context and motivational theories, including grit (Duckworth, Peterson, Matthews, & Kelly, 2007) and academic mindsets (Dweck & Master, 2009). The focus group questions included: "How do you define academic success?" and "Remember back to your first semester as a pre-health student. What is some advice that you wish you had at the time?" Following best practices in the field, the five members of the research team individually coded the reflection letters and focus group transcripts and then met weekly to conduct a line-by-line analysis of codes until agreement was reached (Corbin & Strauss, 2015).

### What We Learned

Our study revealed two primary themes related to perceptions of academic success and four related to advice to incoming students.

#### *Perceptions of Academic Success*

Theme 1 stressed the importance of grades as students recognized academic performance as a substantial component of their applications to medical or dental school. Students emphasized establishing strong GPAs starting their first year. However, Theme 2 focused on changing definitions of success to meet expectations. While students reported value for the process of learning as a key component of being "academically successful," they were willing to revise their definitions of success to align with perceived expectations. Several students revealed an inner struggle as they described the desire to master and learn course material while recognizing that high grades were imperative to remain

**Erika K. Dumke**

Director of Academic and Health  
Careers Advising  
Stevenson University

**Christy Tyndall**

Instructor, Honors College

**David Naff**

Doctoral Student

**Anita Crowder**

Doctoral Student

**Kathleen M. Cauley**

Assistant Professor

Virginia Commonwealth University

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competitive for professional school admissions. A student explained, “So I knew coming in I had to maintain a certain GPA, but at the same time...I didn’t want to just come in and worry about my grades. I also wanted to try to learn something.”

### *Advice to Incoming Students About Factors Contributing to Success*

Theme 3 focused on creating relationships as a way to cultivate a sense of belonging with peers at the university and within the local community. These relationships also provided support, motivation, and valuable learning experiences. Participants encouraged incoming students to “be active on campus” through clubs or student organizations. They emphasized the importance of connecting with peer groups with similar interests and reaching out to make friends on campus and in the local community.

Themes 4 and 5 concentrated on resources and strategies to promote high academic performance. Theme 4 stressed the importance of taking advantage of resources. Incoming students were encouraged to reach out to advisors and professors. Focus group participants also mentioned taking advantage of resources provided by the Campus Learning Center (i.e., supplemental instruction, tutoring) and other campus resources, like the Writing Center. Table 1 identifies the most frequently mentioned resources.

Table 1  
*Frequently Mentioned Resources by Students*

<b>Resource</b>	<b>Number of times mentioned</b>
Professors	30
Supplemental instruction	23
Pre-health advisors	18
Honors College	13
Tutoring	13
Major advisor/General advisor	13
Campus Learning Center	12

Theme 5 centered on the importance of *developing individual strategies for success*. Students urged incoming students to “find what works for you.” “Everyone studies differently, and people have come from different places” explained one participant. Group study, keeping up with lecture material, and learning to “...enjoy yourself as you’re doing it” with creative strategies, such as games and drawings were promoted. Additionally, a strong focus was placed on the importance of time management, including strategies such as using a planner or calendar.

Finally, Theme 6 indicated the need for students to understand their own motivation to pursue a health profession. Participants encouraged incoming students to “know your why” and “look toward the goals that you’re aiming for” as a source of motivation.

“ I knew coming in I had to maintain a certain GPA, but at the same time...I didn’t want to just come in and worry about my grades. I also wanted to try to learn something.”

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Participants encouraged maintaining consistency of vision and purpose. Key words and phrases of advice included “commitment,” “dedication,” and “think about why you’re doing it in the first place.”

## Discussion

We reflected on key points that may be useful specifically when serving pre-health students. First, recognizing the prevalence of the internal struggle pertaining to perceptions of success is important for understanding this group of students. We see this struggle manifest in our students daily, and not just in the confines of our study. Although a rigid commitment to “making the grade” may give students the illusion of academic success, for many of the students in our study, this definition was developed based on external expectations. Having a definition of success that is not unique to or developed by the student has the potential to cast a negative cloud over one’s educational experience with excessive focus on measuring up.

Finally, we found that most of these high-achieving pre-health students described times of difficulty or lack of enjoyment for specific courses. We must acknowledge that students may enroll in courses or be motivated to perform based on external expectations rather than intrinsic motivation. Preoccupation with performance may become a handicap when students are confronted with challenge or failure, especially if they have not developed individual strategies for success or are unable to harness their passion and commitment for long-term goals (Dweck, Walton, & Cohen, 2011). Our results indicate the need to go beyond contextual factors that support student success and recognize the motivational underpinnings and beliefs that these students carry with them as they navigate a challenging academic pathway.

While the study was small and limited in its scope, we were excited to apply principles of educational psychology from our results into our daily work with students. One researcher has woven findings into the curriculum for a class designed to promote flourishing among high-achieving first-semester college students. Students at the beginning of their college academic journey have responded enthusiastically to hearing advice from those nearing successful completion. Another researcher is using lessons learned to inform the development of new programming for pre-health students. Though the concept may be simple, we believe there is substantial value in helping students understand the locus of their motivation and how this may impact their effort and interest in coursework, especially when encountering academic challenges.

Recent research on “wise interventions” demonstrates the positive impact of changing specific psychological processes that may hinder positive outcomes (Walton, 2014). We believe it may be useful to examine how these types of interventions may benefit pre-health students. It is our hope that student service professionals can use the findings from this study to further understand students’ perceptions of academic success and consider how context can influence those perceptions with the goal of helping students to persevere, succeed, and flourish throughout their academic careers. 

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## Contact

Erika Dumke  
[edumke@stevenson.edu](mailto:edumke@stevenson.edu)

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## Impact of Peer Connections on Medical Student Success

Peer connections can positively influence a student's transition and adjustment to college and professional school. Additionally, those peer connections can have an important effect on students' academic performance. During the first year of medical school, for example, students often encounter performance anxiety and find that they need to improve academically, often for the first time, if they are to succeed. Recognizing this academic adjustment phase, many medical schools use peer-assisted learning and report it to be successful in helping these students transition as they encounter new challenges. However, as noted by Santee and Garavalia (2006), what is missing from the discussion on peer-assisted learning is an adequate number of review studies to examine the nature of these interventions as well as the evidence concerning how these interventions actually contribute to the academic success of students. At the East Carolina University Brody School of Medicine, a successful peer-assisted learning program supported by evidence from participants' exam performance and evaluative survey responses has been developed.

Because access to tutors for students experiencing significant academic difficulty is limited, a group of first-year medical students proposed that peer-facilitated study groups could provide comparable academic support to the services available through the Peer Tutoring program. The Brody Peer Assisted Study Sessions (Brody P.A.S.S.) was piloted in spring 2014 with the goal of improving academic performance and persistence of first-year medical students by increasing supplemental learning assistance resources and providing students with collaborative learning opportunities to further enhance their knowledge base. The program is designed to support all students, regardless of previous academic performance, in understanding challenging material.

The pilot program proved to be successful, and the medical school faculty approved expansion to three courses in fall 2014: Gross Anatomy & Embryology, Biochemistry and Pharmacology. In total, there were nine gross anatomy small groups with 35 participants, six biochemistry groups with 30 participants, and five pharmacology groups with 22 participants.

Participation in Brody P.A.S.S. is voluntary, and students join as participants or facilitators. Participants may be referred to Brody P.A.S.S. by course directors or the learning specialist in the Office of Student Development and Academic Counseling, or they may self-refer to the program. Each P.A.S.S. participant completes an application to join the program, which includes a place for students to provide a description of current learning/study strategies, Myer Briggs type (Myers, McCaulley, Quenk, & Hammer, 1998) and learning preferences based on the Visual, Auditory, Reading, Kinesthetic (VARK, Fleming, 2008) and Index of Learning Styles (ILS, Soloman & Felder, 2005) assessments. Students are assigned to small heterogeneous groups (i.e., fewer than six students) based on learning preference, personality type, academic performance in the course, and gender. The small groups met approximately once every two weeks, allowing students to participate in small-group sessions for multiple courses.

**Kevin Harris**

M.D. Candidate, Class of 2017

**Terri Edwards**

Director, Office of Student Development and Academic Counseling

*The Brody School of Medicine at East Carolina University*

*Participants at a Brody P.A.S.S. biochemistry meeting. Photo courtesy of Sharon M. Topp*

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Small-group P.A.S.S. sessions are led by student facilitators who have been recommended by course directors or self-nominated and who possess the necessary medical knowledge and interpersonal skills to excel in leading the group discussions. While each candidate facilitator is examined on an individual basis, in general these students are ranked in the top of their class and have an A average (> 90%) in the course they wish to facilitate. Course directors may also consider factors such as professionalism and class attendance when recommending facilitators. The Curriculum Committee required the small-group sessions to begin after the first examination in each course, allowing group facilitators to be approved by faculty based on examination performance and interpersonal skills.

To evaluate the program in the first year, a comparison of grade averages for P.A.S.S. participants and the overall class average was conducted. After the first year of the program, the gap between Brody P.A.S.S. participants' average exam grade and the class's average narrowed. Before the Brody P.A.S.S. sessions began for the semester, the exam grade gap between P.A.S.S. participants and the class average was approximately 10 points across all courses. By the fourth exam, the grade gap between participants' average and the class average had decreased in all classes (Table 1). The Neuroscience group saw the greatest decrease with a fourth exam gap of only 1.36 points.

Table 1  
*First-Year Data: Grade Gap Between P.A.S.S. Participants' Average and the Class Average*

Course	First exam grade gap	Last exam grade gap	Change
Anatomy	8.92	4.46	4.46
Biochemistry	9.70	4.90	4.80
Microbiology	9.70	6.76	2.94
Neuroscience	9.60	1.36	8.24

Table 2 compares the final class average for P.A.S.S. participants and the overall class average over two years. The gap between the final average for participants and the class average ranged from 3.96 to 5.26 and was very similar to the findings after the first year. In both analyses for Table 1 and Table 2, facilitators were not included in the P.A.S.S. participants' average, but were included in the overall class average.

Table 2  
*Two-Year Data: Final Course Grades for P.A.S.S. Participants Compared to Non-Participants*

Course	Brody P.A.S.S. participants average	Class average	Grade gap between participants and class average
Gross Anatomy	79.56	83.52	3.96
Biochemistry	79.28	83.53	4.25
Neuroscience	81.00	85.00	4.00
Physiology	81.06	86.32	5.26

“ Students are assigned to small heterogeneous groups based on learning preference, personality type, academic performance in the course, and gender.”

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The program evaluation also includes end-of-semester survey responses from the participants and facilitators. Each semester, multiple comments echo Whitman's (1988) reflection on faculty being "unconsciously competent" and novice learners being "consciously competent" because they must think one step at a time as they explain new knowledge to one another. Students comment on the perceived benefits of participating in Brody P.A.S.S.

- "I am a very introverted person; being in a group setting forced me to open up a little, which provided a more enriching learning experience."
- "I found that I thought I understood something until I heard someone ask a question about it. Then I realized I didn't understand it as well as I thought."
- "Everyone has different study habits and picks up different aspects of lecture material, so it is interesting and beneficial to talk through concepts and how others have viewed them/ processed them"
- I LOVE PASS. Seriously I'm so grateful for it. The facilitator has completely changed how I study for the anatomy lab practical. My practical grade went up 20 points from the first test!!
- Spending time in lab identifying structures just really helps you feel more confident and comfortable. Especially when your facilitator tells you to point things out.

It is evident from these student comments that Brody P.A.S.S. is successful in achieving its goals to increase supplemental learning assistance resources and provide students with collaborative learning opportunities. Furthermore, the program decreases performance anxiety. Students gain confidence in their abilities by working with student facilitators.

Based on evaluations, revisions are made to the program each semester. For spring 2016 semester, a significant revision was implemented based on the evaluation survey and recommendations from fall 2015 facilitators. Students would continue to enroll in Brody P.A.S.S. through the Office of Student Development and Academic Counseling for the formation of diverse small groups. However, each small group would establish their own meeting schedule, format, and goals. As a result of this change, an increase in regular attendance at P.A.S.S sessions has been documented.

The Brody P.A.S.S. program can be replicated at the undergraduate or graduate level, as well as in other professional schools. Within the Brody School of Medicine, second-year students developed peer-run review sessions, modeled on Brody P.A.S.S., to prepare for their first licensing exam. The Dental School at East Carolina University is developing their own version of P.A.S.S. to enhance their students' academic successes in the classroom and on licensing examinations.

Brody P.A.S.S. is a young program, but its ongoing development through regular evaluations and responsiveness to student recommendations has greatly enhanced it. Students' active involvement in program development and continued input for refinement can be an empowering and also a tool for easing transition in the first year. 

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## Contact

Kevin Harris  
[harrisk13@ecu.edu](mailto:harrisk13@ecu.edu)

Terri Edwards  
[edwardste14@ecu.edu](mailto:edwardste14@ecu.edu)

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## Integrated Leadership Programs Strengthen Engagement in the First Year

Cabrini University, a private, Catholic, liberal arts institution serving approximately 1,400 undergraduates, makes a promise to its students to support their academic success and persistence toward graduation. With an understanding that engagement results in retention, a holistic leadership program was created through a shared effort across departments and divisions. The program engages students in campus leadership opportunities throughout their first year, with a particular emphasis on the first eight weeks of the fall semester. The first year of college can set the framework for a student's entire collegiate experience, and this unique approach fulfills the institutional mission while helping ease the transition of new students who participate.

The Social Change Model of Leadership Development (Astin & Astin, 1996) serves as the framework for the leadership initiatives at Cabrini University because of its broad applicability and because it so closely mirrors the university's commitment to social justice and preparing students to become engaged citizens of the world. The Social Change Model enhances students' self-awareness, understanding of group dynamics, and responsibility to positively contribute to the various communities they serve.

### Leadership Initiatives

Over the past five years, four key leadership programs have launched at Cabrini (LEADStrong, a Leadership Studies minor, an academic Leadership Studies Certificate, and the IMPACT Living and Learning Community). Together, these programs are a collaborative effort between Academic Affairs and Student Life designed to create a seamless approach to curricular and cocurricular leadership opportunities.

#### *LEADStrong*

In Fall 2011, the Center for Student Engagement and Leadership, using the conceptual framework of the Social Change Model, created a self-paced, cocurricular leadership program, LEADStrong, for students at all levels of leadership development. Students create an individualized Leadership Development Plan (LDP) in which they identify areas of growth for themselves, choose a series of workshops and assessments to strengthen their skills in these areas, and establish completion benchmarks to help assess their growth and development. Students complete the LEADStrong program with a capstone presentation that showcases their development as a leader and highlights how the skills and abilities learned in the program contributed to their leadership roles on campus and their service in the community.

**Richie Gebauer**  
Director, First-Year Experience

**Anne Filippone**  
Director, Center for Student  
Engagement & Leadership

*Cabrini University*

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## *Leadership Studies Minor and Certificate*

As student participation in LEADStrong grew, Cabrini began offering both a leadership studies minor and an academic leadership certificate in the fall of 2012. Both programs are designed to complement any major; to build students' knowledge of leadership; and to assist students in seeking leadership roles, internships, and other opportunities that will allow them to apply what they are learning in the classroom. As a requirement of the leadership studies minor, students must complete a three-credit internship, which is directly connected to their academic major.

In an effort to create intentional links between academic coursework and cocurricular leadership opportunities, the University decided the completion of LEADStrong would serve as one of several gateway course options for leadership studies minors. Though students do not receive academic credit for completing LEADStrong, successful completion fulfills the gateway requirement for the minor and reduces the total number of credits from 18 to 15 credits. Students can also choose the six-credit certificate program, which requires completion of the LEADStrong program. This unique integration of LEADStrong into the minor and certificate program has created a unified effort between faculty, administration, and student life staff.

### *IMPACT LLC*

In Fall 2014, Cabrini launched a year-long leadership living and learning community (LLC) titled IMPACT. A team of three faculty members teach in the LLC, collectively review student applications, and select a cohort of 14 first-year students to comprise the IMPACT community. Students take three courses in the fall, which focus on the development of individual values, while two spring courses shift the focus to group values. The conceptual framework of the Social Change Model is the foundation across all five LLC courses, three of which are course requirements for the leadership studies minor. As part of their coursework and the larger LLC experience, students are also required to be active participants in LEADStrong. IMPACT challenges students to reflect upon their collegiate and LLC experiences while considering the leadership connections across LLC coursework. The faculty director and faculty fellows within this LLC come from both academic and student affairs backgrounds, which further strengthens our integrated approach to leadership development at Cabrini.

## **Assessment of the Leadership Initiatives**

Assessment for LEADStrong and the IMPACT LLC occurs through one-on-one mentoring meetings, a comprehensive LEADStrong assessment of graduates' work, a first-year student learning community assessment, and a final LLC presentation designed to encompass students' experiences with leadership in the first year.

“As a requirement of the leadership studies minor, students must complete a three-credit internship, which is directly connected to their academic major.”

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Graduates of the LEADStrong Program are assessed using a blind observer review of their complete LEADStrong folder, which contains the student's LDP, StrengthsQuest results, reflections on a leadership role and a service experience, results from the Student Leadership Practices Inventory (Kouzes & Posner, 2003), the overall score on their capstone presentation, and pre/post scores on an internal skills-based leadership assessment. The folders are scored by three facilitators **using a rubric**. Scores of Good or Excellent suggest the program has contributed to student leadership learning and growth and qualifies students for program graduation.

First-year students participating in the IMPACT LLC complete a student assessment that is administered to all first-year students at the end of each semester. This qualitative assessment includes questions designed to assess the students' overall experience, both in and outside of the classroom, and allows the faculty to gauge the impact of the LLC on the collegiate experience of their students compared to non-LLC students. Students also complete a final presentation in one of their spring LLC courses, which challenges them to connect the individual, group, and community values of the Social Change Model to their LLC coursework and cocurricular opportunities that spanned the fall and spring semesters.

## Impact of the Leadership Initiatives

Over the past two years, the growth of leadership initiatives in the first year has positively connected our students to the campus community. In both the LEADStrong capstone presentations and the IMPACT LLC final presentations, students demonstrate their ability to connect their academic experiences related to leadership to their cocurricular experiences. Students recognize how these experiences directly connect and complement their major, can articulate their individual development through their curricular and cocurricular experiences, and are motivated to seek out on-campus and off-campus internships.

Additionally, participation in LEADStrong has more than doubled from 55 participants in fall 2012 to 123 participants in fall 2015. At the same time, we have quadrupled the number of student inductees into the Cabrini University Circle of Omicron Delta Kappa (a national leadership honor society). The average retention of our first-year IMPACT LLC students is 96%. Each of these retained students opted into a second-year IMPACT LLC, continuing their leadership development through advanced participation in LEADStrong, on-campus internships, and a declaration of leadership studies as a minor. Based on these assessment results, we have concluded that these integrated initiatives have a significant impact on retention and academic and student success well beyond a student's four years at Cabrini.

## Implications

The growth of leadership opportunities at Cabrini has been aided by the collaboration between Academic Affairs and Student Life and our commitment to using the Social Change Model of Leadership Development as a foundational theory for all leadership initiatives. Funding from an alumnus generated the exploration of a leadership studies

“ ...these integrated initiatives have a significant impact on retention and academic and student success well beyond a student's four years at Cabrini.”

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minor and academic leadership certificate while a presidential charge for a comprehensive, cocurricular leadership program energized the creation of LEADStrong. As these efforts were in the early stages of development, faculty and staff, realizing they were working on complementary initiatives, came together to create a unified approach toward leadership development that resulted in the growth of these opportunities at Cabrini.

At Cabrini, the Social Change Model of Leadership Development worked best as the foundational theory for leadership initiatives due to its direct connection to the institution's mission. Other institutions may find that a different approach better meets the needs of their students. Strengthening ties and seeking out opportunities for collaboration between and across divisions on campus and ensuring readiness for the simultaneous development and growth of multiple programs is essential to such success. [↩](#)

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## Contact

Richie Gebauer  
[rdg723@cabrini.edu](mailto:rdg723@cabrini.edu)

Anne Filippone  
[af727@cabrini.edu](mailto:af727@cabrini.edu)

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