Promoting Student Engagement

A landscape analysis of promising behaviorally informed strategies

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About ideas42

We're a non-profit looking for deep insights into human behavior—into why people do what they do—and using that knowledge in ways that help improve lives, build better systems, and drive social change. Working globally, we reinvent the practices of institutions, and create better products and policies that can be scaled for maximum impact.

We also teach others, ultimately striving to generate lasting social impact and create a future where the universal application of behavioral science powers a world with optimal health, equitable wealth, and environments and systems that are sustainable and just for all.

For more than a decade, we've been at the forefront of applying behavioral science in the real world. And as we've developed our expertise, we've helped to define an entire field. Our efforts have so far extended to 55 countries as we've partnered with governments, foundations, NGOs, private enterprises, and a wide array of public institutions—in short, anyone who wants to make a positive difference in peoples' lives.

We want to hear from you—contact us at education@ideas42.org with questions.
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Introduction

Over the past decade, there has been substantial innovation in the postsecondary sector to boost student access and success. These innovations increasingly leverage insights from behavioral science to support students in following through on their intentions for college success and in navigating a myriad of complex decisions.

In 2018, with generous funding from the Heckscher Foundation for Children, the Nudge[4] Solutions Lab and ideas42 documented 13 behaviorally informed and evidence-based student success interventions in a practical guide: Nudges, Norms, and New Solutions.

This paper seeks to pick up the conversation where Nudges, Norms, and New Solutions left off. Since that guide was published, the field of behaviorally informed student success interventions has continued to evolve—and much has been learned. Strategies that were once novel, such as text-based nudges, are now commonly employed. Interventions that initially saw promising results have failed to replicate when scaled. And of course, the COVID-19 pandemic led to a whole new set of student challenges and accelerated a period of rapid innovation.

We have learned that interventions tend to be most successful when they apply a combination of strategies to address multiple student barriers. A recent review from MDRC, for example, found consistent evidence across 30 large-scale experiments that the impact of interventions on student outcomes increased with the number of components (e.g., increased financial support, advising, tutoring, instructional reform, etc.).[1] And initiatives that are more hands-on and resource-intensive, both in terms of financial costs and human effort (such as student-faculty mentoring), tend to be more impactful.[2] Clearly, there is no easy shortcut to student success.

Examples of promising comprehensive student success programs

Bottom Line[3]

What is it?

Bottom Line offers comprehensive 1:1 advising to help students succeed. Campus-based advisors provide individualized support for six years following high school on topics such as course selection, adjusting to college social life, and managing financial aid.

Impact

Eight percentage point increase in the likelihood of earning a bachelor's degree six years after random assignment (55% for Bottom Line students vs. 47% for control)

Cost

Approximately $4,000 per student

Accelerated Study in Associate Programs[4]

What is it?

ASAP is a comprehensive program that provides college students financial support (including financial aid, transportation, and textbook assistance), academic structures (including full-time enrollment and block scheduled first-year courses), and direct support services (advising, tutoring, career services, and more).

Impact

11 percentage point increase in the graduation rate among CUNY students eight years after follow-up (55% for those offered ASAP vs. 44% for control); 15 percentage point increase in a six-year follow-up in Ohio (44% for those offered ASAP vs. 29% for control)

Cost

Approximately $8,000—$14,000 per student

Inside Track[5]

What is it?

Inside Track is a mentoring program for college students to prevent them from dropping out of school. Coaches help identify and address obstacles to course completion such as work schedules, family responsibilities, and financial obligations.

Impact

3.3 percentage point increase in the likelihood of college persistence two years after random assignment (27.5% for Inside Track students vs. 24.2% for control); four percentage point increase in the likelihood of graduating college four years after random assignment (35.2% for Inside Track students vs. 31.2% for control)

Cost

$1,121 per student per academic year

For any intervention design or component to be effective, though, student engagement is essential. Indeed, no program—no matter how well designed—can have the desired impact if students are not engaging with it. They must take advantage of what is being offered—whether that means signing up for a learning community, meeting with an advisor, or showing up in the classroom. Ultimately, engagement between students and their faculty, advisors, and peers is essential to a variety of student success outcomes.[6]

Increasingly, however, many students are not engaging.[7] While this "disengagement crisis" predated the pandemic, it was surely exacerbated by it. Faculty describe a range of challenges: students not showing up for class, doing the assigned reading, or participating in class discussion—and generally just seeming disconnected from the university community.[8]

And so, to truly promote student success, the field must assess both what types of interventions work (and for whom) and how to promote engagement with these opportunities. This paper investigates the engagement piece of this equation.

Our team set out to identify promising interventions that have been developed to spark student engagement. We reviewed over 70 academic papers and conducted in-depth interviews with 26 students as well as 18 college faculty, administrators, and academic experts. ***Through this research, we identified seven broad strategies that have been used to engage students in college.***

While there are important nuances that must be considered when implementing these student engagement strategies, some appear to be more promising than others. Specifically, ***enhancing belonging*** and ***employing active teaching methods*** are two strategies that we believe have the potential to significantly boost student engagement. Additionally, ***strengthening the student-faculty relationship, offering incentives, reducing hassles,*** and ***designing physical spaces effectively*** are all either potentially promising or have shown mixed efficacy. And finally, ***sending nudge communications*** appears to be a less effective strategy for fostering student engagement.

Above all, our research made clear that more work is needed to implement and test these engagement-focused strategies in a range of contexts and, importantly, to develop additional ideas for better engaging students. Without a suite of proven student-centered engagement strategies, even the best-designed success programs will fail to meet their full potential.

Designing for Engagement

In Fall 2023, ideas42 will convene behavioral scientists and postsecondary education practitioners for a series of design activities. Through these sessions, the group will seek to identify promising engagement-related interventions that could be implemented and rigorously tested quickly. To learn more about this work, email education@ideas42.org.

What is Student Engagement?

Engagement—though often discussed—lacks a single definition. In our interviews with students and experts, we found that there are many ways to define engagement, and many different dimensions to consider.

> **"Student engagement in college can look a number of ways. Students are more successful in school if they feel like they belong. And that's not just out of the classroom but also in the classroom. An engaged student knows where to go and maybe how to find support when they're struggling."** –Academic expert

Because ideas42 takes a behavioral approach to the work we do, we have chosen here to focus on the behavioral aspect of engagement. Ultimately, we seek to help students engage in behaviors in class and on campus that are 1) meaningful (tied to student success), 2) measurable (we can observe if it's happening), and 3) malleable (within the realm of school administrators and faculty to change).

Examples of engagement behaviors highlighted in this paper include:

Class engagement

- Attending class
- Participating in class
- Studying
- Attending office hours

Campus engagement

- Meeting with an academic advisor
- Using academic support services (e.g., writing center, tutoring)
- Using non-academic support services (e.g., career services, counseling)
- Connecting with peers

What's in this Paper?

This paper describes seven high-level strategies for promoting student engagement, presented in order of how promising we believe them to be, based off our research and the literature.

Engagement Strategy	Potential to Boost Student Engagement	Amount of Evidence to Date
1 Enhancing Belonging		
2 Employing Active Teaching Methods		
3 Strengthening the Student-Faculty Relationship		
4 Offering Incentives		
5 Reducing Hassles		
6 Designing Physical Spaces Effectively		
7 Sending Nudge Communications		

Assessment scales

Our research made clear that no single student engagement strategy is universally effective or ineffective. Employing a particular strategy in a particular way might work for students in a particular context, for a particular behavior, but we cannot assume the intervention will be effective for all behaviors in all contexts. Because of this, we use ***potential to boost student engagement*** as a rating metric in this paper to indicate the strategies where we believe further innovation would be most impactful. Our assessment of an engagement strategy's potential is informed by a combination of evidence from the literature as well as what we heard from students and experts in our interviews. Each strategy falls into one of three categories:

Promising potential: Our research suggests that this strategy is ripe for further innovation and the application of behavioral design to engage college students. Available evidence generally supports the relative effectiveness of this strategy to boost student engagement.

Moderate potential: Our research suggests that this strategy may only be effective in certain contexts or for certain student populations. Therefore, this strategy may warrant further innovation efforts, but only under some circumstances.

Low potential: Our research suggests that this strategy does not warrant further exploration, as evidence suggests that it has limited effectiveness to engage students.

We also provide an assessment of the ***amount of evidence to date*** for each engagement strategy. Each strategy falls into one of three categories:

Abundant evidence: Many experimental studies have been conducted that measure the impact of this strategy on student engagement.

Moderate evidence: There is evidence available on this engagement strategy, but some of the research may not be experimental studies or take place at broad-access institutions in the U.S. or Canada.

Limited evidence: There is limited evidence to date on the impact of this strategy on student engagement.

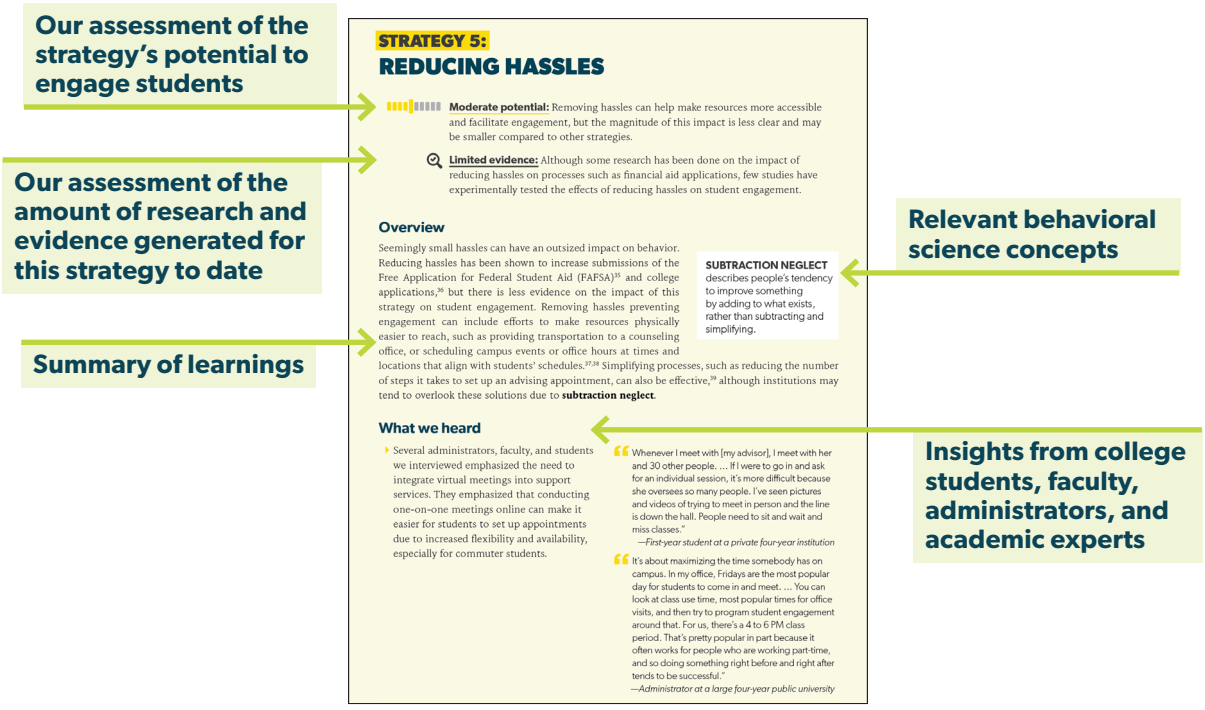
Case studies

For each engagement strategy, we highlight two to three detailed examples from our broader research to demonstrate how the strategy was implemented and tested. When possible, we selected case studies that evaluated effects on engagement through randomized controlled trials (RCTs), considered the gold standard in rigorous research, and focused on interventions' effects on students at broad-access institutions in the U.S. or Canada. However, when we were not able to adhere to these criteria, we pulled in relevant examples from global contexts, more selective institutions, or studies using quasi-experimental or non-experimental research designs.

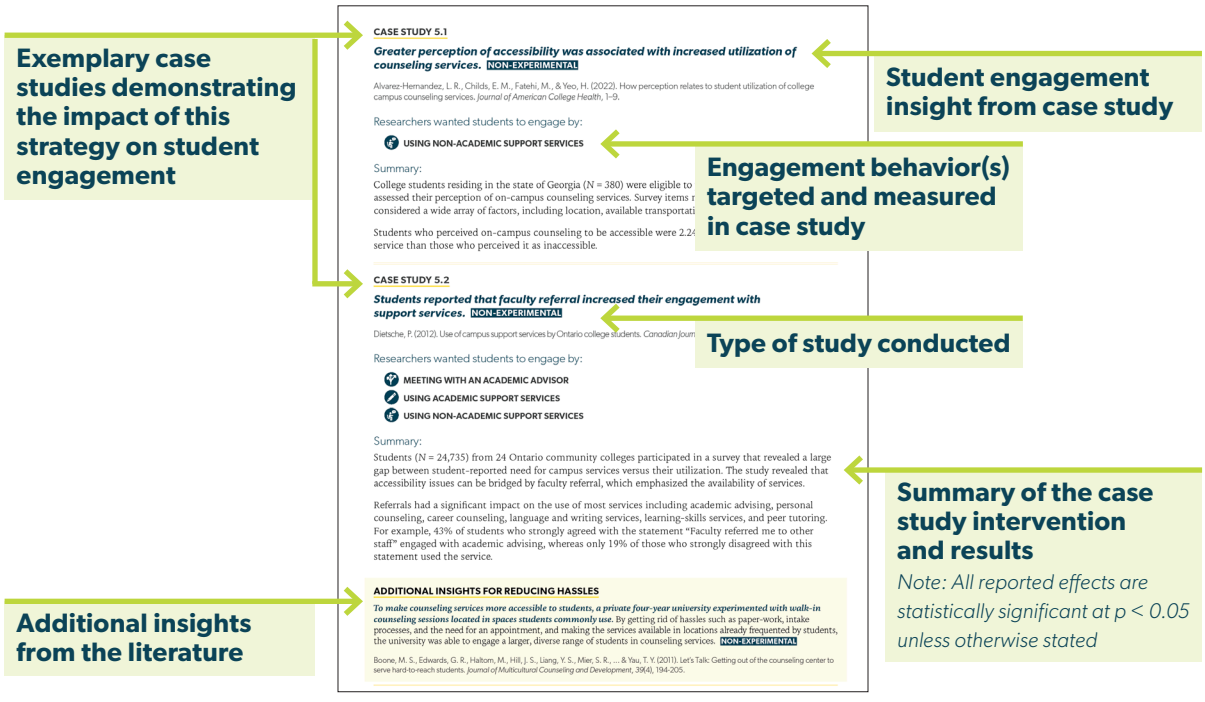
How each strategy is presented

Each engagement strategy is presented using a standard two- to three-page template.

What we learned about the engagement strategy from reviewing the literature and interviewing students and experts:



A review of how this strategy has been implemented and tested in the literature:



STRATEGY 1:

ENHANCING BELONGING

Promising potential: Increasing students' feeling of belonging in college has consistently been shown to increase student engagement, especially for students from historically underrepresented groups, and is an opportune strategy for further innovation.

Moderate evidence: There is a growing body of evidence on the benefits of enhancing student belonging, but most studies have focused on self-reported engagement measures rather than actual behaviors or have been conducted at selective universities rather than broad-access institutions.

Overview

Students who feel a sense of belonging tend to engage more in the classroom and on campus. Boosting belonging has been shown to improve student success outcomes across a broad range of institutions.[9] These positive effects are often driven by an increase in behaviors such as hours spent studying and emailing professors,[10] attending class,[11] forming relationships with mentors,[12] and connecting with peers.[13] Research suggests that in order to engage and succeed, students must feel like they belong in college and also be provided with structured opportunities to build relationships with faculty and peers.[14] One way institutions can accomplish this is by providing direct, targeted support to student populations that may otherwise experience **identity threat** or **belonging uncertainty**.[15]

IDENTITY THREAT refers to the negative experience people have in which one or more of their social identities is threatened by the activation of negative group stereotypes.

BELONGING UNCERTAINTY is the self-doubt people feel about whether they are or will be fully accepted in a particular environment or group.

What we heard

> **"Sometimes I'm nervous to say something that doesn't help the discussion. I used to answer questions in high school, but coming to college it feels like I don't belong because everybody is so smart, and they talk about concepts I don't understand and people and famous thinkers that I don't know of, so when I do have something I think could be useful, I wonder how useful it could be."**
>
> —First-year student at a private four-year institution

> **"Students' sense of belonging and inclusion is a foundation for engagement. … If there isn't a baseline sense that they belong in the student or university community, it is a lot harder for them to take the steps they need to engage and succeed. One experience that left an impression on me … [is a program] which pairs faculty and an upper-class student as a peer mentor with a group of new transfer students or first-year students in a small group setting. And the students were drawn from vulnerable students like Pell recipients, etc."**
>
> —Faculty member at a state university

CASE STUDY 1.1

A belonging intervention increased students' attendance and grades in two large college science courses. RCT

Binning, K. R., Kaufmann, N., McGreevy, E. M., Fotuhi, O., Chen, S., Marshman, E., ... & Singh, C. (2020). Changing social contexts to foster equity in college science courses: An ecological-belonging intervention. *Psychological Science, 31*(9), 1059-1070.

Researchers wanted students to engage by:

ATTENDING CLASS

Summary:

At a large public research university in the U.S., half of the sections of introductory biology and physics courses over four consecutive semesters (N = 1,822) were randomly assigned to receive an intervention designed to increase belonging. At the beginning of each semester, students in these sections completed a reflective writing exercise, read student testimonials that emphasized the normalcy of adversity in college, and engaged in a structured discussion in small groups to help solidify these new norms. Students in the other sections completed standard icebreaker activities.

Students who received the belonging intervention had higher attendance, course grades (by .15 points on a four-point scale), and college persistence after one year than students in the other sections. The intervention was especially impactful among historically underrepresented students, as it improved grades for racial-ethnic minorities in the biology course (by .44 points) and for women in the physics course (by .37 points). Finally, attendance in the belonging intervention sections, which factored into course grades, predicted higher cumulative grade points averages (GPA) two to four years later.

CASE STUDY 1.2

Women in male-dominated engineering programs who completed a belonging intervention earned higher grades and made friends with more male classmates. RCT

Walton, G. M., Logel, C., Peach, J. M., Spencer, S. J., & Zanna, M. P. (2015). Two brief interventions to mitigate a "chilly climate" transform women's experience, relationships, and achievement in engineering. *Journal of Educational Psychology, 107*(2), 468-485.

Researchers wanted students to engage by:

CONNECTING WITH PEERS

Summary:

First-year students (N = 228) in a selective Canadian university engineering program were randomly assigned to receive one of two interventions, or be in a control group. Both interventions involved completing a reading, listening, and writing activity. The social-belonging intervention emphasized that it is normal for both men and women to worry about their social belonging in engineering at first, but that this improves with time. The affirmation-training intervention emphasized that incorporating valued aspects of one's identity into daily life can help both men and women cope with stress and find "balance" in engineering.

In engineering fields of study dominated by men, both interventions raised women's GPA over the academic year by 11.4 percentage points (on a scale from 0 to 100), eliminating gender differences in grades observed in the control group. The interventions did not impact grades in engineering fields of study that were more gender-balanced. Further, in comparison to the affirmation-training and

control groups, the social-belonging intervention increased women's friendships with men in the male-dominated fields of study. Notably, women's friend groups became more representative of their program's gender demographics; the proportion of male engineers in women's friend groups in the semester after the intervention (75%) came to more closely resemble the overall proportion of men in these fields of study (90%).

ADDITIONAL INSIGHTS FOR ENHANCING BELONGING

A 30-minute belonging intervention increased the rate at which incoming freshmen students completed their first year of college. Having first-year students read about how upper-year students initially faced and overcame challenges to belonging, and then prompting them to complete a written reflection activity, improved the rate of first-year college completion by one to two percentage points, but only for students whose identity groups had supportive social or academic environments with which they could engage. **RCT**

Walton, G. M., Murphy, M. C., Logel, C., Yeager, D. S., Goyer, J. P., Brady, S. T., ... & Krol, N. (2023). Where and with whom does a brief social-belonging intervention promote progress in college?. *Science, 380*(6644), 499-505.

Presenting a message from upper-year students that feelings of non-belonging are common and temporary proved to be particularly impactful for engaging minority students. Compared to the control group, Black students who received this message studied an average of one hour and 22 minutes longer each day and sent three times more email questions to professors. **RCT**

Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology, 92*, 82–96.

Seven to eleven years after an experiment designed to boost belonging, a follow-up study found that ***the one-hour intervention nearly doubled the proportion of Black adults who reported having an academic mentor during college*** (84% in treatment vs. 43% in control). Black adults who had received the one-hour belonging intervention in college also had improved outcomes such as career satisfaction, psychological well-being, and community involvement, when compared with those in the control group. **RCT**

Brady, S. T., Cohen, G. L., Jarvis, S. N., & Walton, G. M. (2020). A brief social-belonging intervention in college improves adult outcomes for black Americans. *Science Advances, 6*(18), eaay3689.

A two-hour workshop targeted at normalizing failure for students on academic probation increased students' first-year GPA by 16.4% and decreased their likelihood of dropping out at the end of the year by 8.6 percentage points. **QUASI-EXPERIMENTAL**

Canaan, S., Fischer, S., Mouganie, P., & Schnorr, G. (2022). Keep me in, coach: The short- and long-term effects of targeted academic coaching. (SSRN Scholarly Paper No. 4184759).

STRATEGY 2:

EMPLOYING ACTIVE TEACHING METHODS

Promising potential: Active teaching methods have consistently been shown to increase student engagement, though the effects of specific practices (such as flipped classrooms) vary by course subject and student characteristics.

Moderate evidence: Researchers have studied various forms of active teaching, but further experiments need to be conducted to better understand which specific teaching methods work best and under which circumstances.

Overview

While numerous pedagogical recommendations exist to improve teaching, active teaching—including class discussions, group problem solving, or other forms of experiential education—has consistently been shown to engage students in the classroom.[16,17,18,19] Research suggests that active teaching enhances class participation, which helps course materials remain **salient** for students and improves information recall.[20] Active teaching methods seek to move away from the traditional lecture approach and can be adapted flexibly depending on the subject and class size.[21] Indeed, this flexibility and adaptation may be crucial to avoid any unintended negative consequences. For example, the flipped classroom model has been shown to improve student engagement, but the effects vary by course subject and student characteristics.[22]

SALIENCE
refers to the prominence of a person, thing, or trait compared to other elements in the surrounding environment.

What we heard

- Faculty members seem to have more success engaging students when they provide identity-affirming, real-world connections to the content they're teaching.
- Students we spoke to expressed frustration with passive lecture styles and shared that going to class sometimes felt unnecessary. Many students reported wanting to get more out of class, for example through thought-provoking discussions.

> **"I can tell when a student is engaged when they have an emotional reaction to something. If you give an example of 'regressing to the mean,' you can talk about how you hate bell bottom pants, because it's like the one laughable fashion statement."**
>
> —Faculty member at a community college and four-year university

CASE STUDY 2.1

Utilizing active teaching principles improved student persistence within the same field. QUASI-EXPERIMENTAL

Park, E. S., & Xu, D. (2022). The effect of active learning professional development training on college students' academic outcomes. *Journal of Research on Educational Effectiveness, 0*(0), 1–22.

Researchers wanted students to engage by:

PARTICIPATING IN CLASS

Summary:

At a large public research institution in the U.S., faculty underwent Active Learning Professional Development (ALPD) training to revamp their instructional materials with elements such as posing questions and physically moving throughout the classroom. Instructors who incorporated interactive elements were given an ALPD certificate.

Compared to students in lecture-intensive classes, students (N = 54,130) enrolled in a course with an ALPD certified faculty member were more likely to persist to the next course within the same field by three percentage points. In addition, students who took a course with an ALPD certified faculty earned higher course grades (by .006 grade points; marginally significant at $p < .10$).

CASE STUDY 2.2

Incorporating active teaching elements into a large physics course improved attendance and test performance. RCT

Deslauriers, L., Schelew, E., & Wieman, C. (2011). Improved learning in a large-enrollment physics class. *Science, 332*(6031), 862–864.

Researchers wanted students to engage by:

ATTENDING CLASS

PARTICIPATING IN CLASS

Summary:

For three hours of instruction during week 12 of a first-year physics course at a Canadian public research university, students (N = 271) in one section of the course received an active teaching intervention, while students (N = 267) in another section received the same lecture-style instruction as preceding weeks. Active teaching was implemented by two instructors who had not taught the course before but had training in these methods. The instructors incorporated strategies such as pre-class reading assignments and quizzes, in-class clicker questions, student to student discussions, small group active learning tasks, and targeted in-class instructor feedback.

Attendance in the active learning section increased by 20%. In addition, students who received the active teaching intervention performed twice as well on their section test, in comparison to students in the other section.

CASE STUDY 2.3

A flipped classroom model improved test scores in an introductory math course, but not in an economics course. RCT

Setren, E., Greenberg, K., Moore, O., & Yankovich, M. (2021). Effects of flipped classroom instruction: Evidence from a randomized trial. *Education Finance and Policy, 16*(3), 363–387.

Researchers wanted students to engage by:

PARTICIPATING IN CLASS

Summary:

Students at a four-year military institution taking an introductory math or economics class (N = 1,328) were randomly assigned to course sections that either utilized a flipped or standard lecture classroom model. The flipped classroom model consisted of video lectures that students watched before class and interactive problem-solving sessions during class.

Students in the flipped math sections demonstrated improved test scores (by .3 standard deviations), in comparison to those in the standard lecture math sections. Positive effects of the flipped classroom model were driven by white, male, and higher achieving students. However, there was no effect of flipped classroom instruction in the economics class.

ADDITIONAL INSIGHTS FOR EMPLOYING ACTIVE TEACHING METHODS

Teaching using in-class activities led to higher overall course scores compared to teaching via lectures, demonstrations, or discussions. Notably, in-class activities incorporated group problem-solving sessions, which facilitate student engagement in the classroom. QUASI-EXPERIMENTAL

Hackathorn, J., Solomon, E. D., Blankmeyer, K. L., Tennial, R. E., & Garczynski, A. M. (2011). Learning by doing: An empirical study of active teaching techniques. *Journal of Effective Teaching, 11*(2), 40–54.

Common elements of active teaching—collaboration, cooperation, and problem-solving—can improve student learning outcomes. Several meta-analyses suggest that moderately frequent collaborative work enhances academic achievement, fosters positive attitudes toward learning materials, and promotes retention in academic programs. Results also indicate that problem-based learning can promote better attitudes and study habits by creating a more challenging classroom environment. QUASI-EXPERIMENTAL

Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education, 93*(3), 223–231.

At a historically Black college and university (HBCU), active teaching was positively correlated with course grades and motivation to learn, while course difficulty was negatively correlated with course grades. Additionally, active teaching moderated the negative relationship between course difficulty, grades, and motivation, suggesting that active teaching may mitigate the detrimental effects of difficult coursework. NON-EXPERIMENTAL

Andres, H. P. (2019). Active teaching to manage course difficulty and learning motivation. *Journal of Further and Higher Education, 43*(2), 220–235.

STRATEGY 3:

STRENGTHENING THE STUDENT-FACULTY RELATIONSHIP

Moderate potential: Cultivating strong student-faculty relationships can increase in-class engagement, but certain practices should be used with caution.

Moderate evidence: Although researchers have studied different ways that faculty can use channels such as email to communicate with students to improve engagement, less research has been done on which practices and characteristics of the student-faculty relationship matter most for student engagement.

Overview

Research indicates that positive student-faculty relationships can increase effort and attention in class;[23] at the same time, however, such relationships have been shown to have no impact on behaviors such as students' use of office hours.[24,25] When professors demonstrate concern for students, it can trigger **reciprocity** and lead to greater engagement. However, professors should be cautious about how they communicate with students, as the impact of these relationships and interactions are nuanced. For example, while feeling cared for by a professor has positive correlations with effort-related activities such as class attendance and participation, the exact impact on any given behavior may depend on whether students perceive that the faculty member cares about their course success, or for them as an individual.[26] The impact of student-faculty relationships also differs based on student characteristics such as gender[27] and race.[28] For example, emphasizing concern for mastering course material might inadvertently activate **stereotype threat** for minority and first-generation college students,[29] negatively impacting their course performance.[30] Such findings further emphasize the need for faculty to express care for students beyond their academic performance, particularly for students who may traditionally feel marginalized in higher education.

RECIPROCITY
refers to when individuals feel inclined to respond to the actions of others with similar actions.

STEREOTYPE THREAT
refers to the risk of confirming a negative stereotype about one's social group.

What we heard

- Faculty and students we spoke to both agreed that the student-professor hierarchy can make it difficult for students to participate in class or seek help. Faculty members have tried to combat this dynamic through practices such as encouraging text messages for urgent questions, setting up lunch hours with students, and learning students' names and their individual goals.

> **"I will have students text me. It is unrealistic to think that between the office hours I post and when they're actually doing their homework, those questions are going to wait. … what it comes down to is that they realize I am truly available, and I am not going to judge."**
>
> —Faculty member at a community college and four-year university

CASE STUDY 3.1

Personalized feedback and support from the professor increased course performance, but not office hour attendance or time spent on homework. RCT

Carrell, S. E., & Kurlaender, M. (2020). My professor cares: Experimental evidence on the role of faculty engagement (No. w27312). National Bureau of Economic Research.

Researchers wanted students to engage by:

- **ATTENDING OFFICE HOURS**
- **STUDYING**

Summary:

Across 43 classrooms, students (N = 4,000) at a large, broad-access university in the U.S. received a series of personalized emails from their professor that provided feedback on their course performance, keys to success in the class, and reminders about office hours. Researchers randomly selected a subset of students to receive the intervention; other students (i.e., the control group) received nothing.

Receiving these messages increased positive perceptions of the professor and course by 17–28 percentage points. Effects were strongest for first-year students, particularly those who entered college the least academically prepared (as measured by their high school GPA). Specifically, first-year students and those least academically prepared who received the intervention outperformed the control group students by upwards of a third of a letter grade (.31 and .43, respectively). Additionally, first-year male students of color were less likely to drop the course (by six percentage points). However, there was no impact of the intervention on office hour attendance nor time spent on homework.

CASE STUDY 3.2

Framing office hours as a way to support students' broad goals had no impact on office hour attendance, but improved course grades for first-generation and minority students. RCT

Smith, E. N., Walton, G. M., Crum, A., & Dweck, C. S. (2020). Expansive care theory: Can messages of inspiring expectations and broad regard promote students' identity safety and academic success? Stanford University.

Researchers wanted students to engage by:

- **ATTENDING OFFICE HOURS**

Summary:

Undergraduate students (N = 481) at two private universities in the U.S. were randomly assigned to receive a series of one of three types of messages inviting them to a teaching assistant's (TA's) office hours. The first type presented office hours as a time to discuss and connect class material to students' broad goals and values outside of class; the second presented office hours as a time to focus on students' learning goals, such as mastering class material; the last didn't specify the purpose of office hours (i.e., the unspecified goals condition).

Overall, the broad goals condition and learning goals condition had no impact on students' course grades or office hour attendance. However, compared to students in the unspecified goals condition, first-generation and minority students who received the broad goals messaging earned higher grades (by 2.2

percentage points). In addition, broad goals messaging increased first-generation and minority students' reported comfort discussing a variety of topics with the teaching team.

ADDITIONAL INSIGHTS FOR STRENGTHENING THE STUDENT-FACULTY RELATIONSHIP

Among Black students at a predominantly white institution, ***a caring attitude and respectful interactions between students and faculty were positively correlated with better academic engagement (e.g., being a self-starter on their homework) and social engagement (e.g., making friends in class easily).*** This demonstrates the critical role that faculty can play in engaging underrepresented students and emphasizes the importance of creating an inclusive socio-cultural environment on campus. **NON-EXPERIMENTAL**

Beasley, S. T. (2021). Student–faculty interactions and psychosociocultural influences as predictors of engagement among Black college students. *Journal of Diversity in Higher Education, 14*, 240–251.

A survey of undergraduate students at an engineering school revealed that ***students' perception of faculty support may be more important for promoting engagement than merely having interactions with faculty.*** While faculty support (e.g., perceived willingness of faculty to spend time helping students outside of the classroom) was positively correlated with all engagement metrics, student-faculty interactions (e.g., discussing career plans or academic work) had more mixed and inconsistent correlations. **NON-EXPERIMENTAL**

Wilson, D., Summers, L., & Wright, J. (2020). Faculty support and student engagement in undergraduate engineering. *Journal of Research in Innovative Teaching & Learning*.

Feeling cared for by their professors may help students learn more and put more effort into their coursework. Among undergraduate students at a public university in the U.S., having the perception that faculty cared about student success was correlated with more frequent class attendance and higher grades. Having the perception that faculty cared about the student as an individual was correlated with greater effort, but not higher grades. **NON-EXPERIMENTAL**

Dickinson, A. R., & Kreitmair, U. W. (2021a). The importance of feeling cared for: Does a student's perception of how much a professor cares about student success relate to class performance? *Journal of Political Science Education, 17*(3), 356–370.

STRATEGY 4:

OFFERING INCENTIVES

Moderate potential: In some cases, incentives can increase student engagement, at least in the short term. In other cases, however, evidence suggests that incentives may backfire.

Moderate evidence: Researchers have studied the role of how financial incentives impact student engagement, but there is less evidence on the differential impact of incentives for certain populations (e.g., low-income students) and the impact of non-financial incentives (e.g., providing food or in-kind support).

Overview

Providing incentives that respond to students' wants and/or needs has been shown to boost student engagement by sustaining motivation towards a target behavior.[31,32] For example, some institutions have entered students who attend class into a raffle for free textbooks, while others have provided meals to students who attend advising meetings. Incentives can be an effective way to engage students because they can be scaled based on an institution's financial capacity, or the complexity or involvedness of the target behavior. Nonetheless, incentives should be used carefully as to not crowd out students' **intrinsic motivation**.[33,34]

INTRINSIC MOTIVATION is one's desire to engage in a behavior for its inherent satisfaction and fulfillment.

What we heard

- Administrators we spoke to reported high success with incentives when they fulfilled a material need and/or seemed of great value to students.
- Incentives don't need to be financial or material; many students we interviewed reported that the incentive to receive extra credit successfully motivated them to go to campus events, use support services, and meet with their professors.

> **"Offering a hot meal, and not just snacks … has been wildly successful. A lot of students are food insecure, more than we think they are."**
>
> —Administrator at a large four-year institution

CASE STUDY 4.1

Providing incentives helped female students achieve higher grades and increased take-up of support services. RCT

Angrist, J., Lang, D., & Oreopoulos, P. (2009). Incentives and services for college achievement: Evidence from a randomized trial. *American Economic Journal: Applied Economics, 1*(1), 136-163.

Researchers wanted students to engage by:

USING ACADEMIC SUPPORT SERVICES

Summary:

In one experiment, researchers randomly assigned first-year students (N = 1,656) at a broad-access Canadian university to one of three programs, or to a control group that received nothing. One program gave students access to support services in the form of peer advisors and facilitated student groups. Another program offered merit scholarship incentives to those who met a target GPA. The third program gave students access to both support services and scholarship incentives.

Compared to the control group, students who were offered scholarship incentives earned fall-semester grades that were 1.8 percentage points higher. Students offered both support services and scholarship incentives earned grades that were 2.7 points higher. Further, while 26% of students who were offered support services alone engaged in a study group or contacted their peer advisor, service use was around 43% for students who were offered both support services and scholarship incentives. The positive effects of scholarship incentives on grades and use of services were primarily driven by women.

CASE STUDY 4.2

Offering lottery incentives had no impact on students' use of tutoring or academic coaching and had a backfiring effect on the use of extra practice problems. RCT

Pugatch, T., & Wilson, N. (2022). Nudging demand for academic support services: Experimental and structural evidence from higher education. *Journal of Human Resources*.

Researchers wanted students to engage by:

STUDYING

Summary:

Students enrolled in an introductory economics course (N = 2,100) at a public U.S. university were randomly assigned to receive messages (either text or email) designed to boost uptake of academic support services (tutoring, coaching, or extra practice problems). The messages also varied in terms of providing a lottery incentive ($250 for campus dining and the bookstore) to access the support by a certain date.

Adding the lottery incentive to the messaging increased neither student awareness nor take-up of the support services offered. In fact, there was a nine percentage point decrease in the use of multiple practice problems when emails included an incentive.

ADDITIONAL INSIGHTS FOR OFFERING INCENTIVES

Providing students with grant aid increased the rate of bachelor's degree completion. Eligible students were selected via lottery to receive the Wisconsin Scholars Grant, amounting to $3,500 per year. To continue receiving the grant, students had to be Pell-eligible, enrolled full-time in-state, and maintain a C average. Among students not offered the grant, only 16% completed their bachelor's degree within four years, whereas 21% of students offered the grant successfully finished their degree within this timeframe. **RCT**

Goldrick-Rab, S., Kelchen, R., Harris, D. N., & Benson, J. (2016). Reducing income inequality in educational attainment: Experimental evidence on the impact of financial aid on college completion. *American Journal of Sociology, 121*(6), 1762-1817.

Financial incentives had no impact on exam pass rates or average time spent studying overall. A study conducted at a European four-year university classified first-year students as high- or low-ability, based on their high school math grades, and assigned individuals into large, small, or no financial reward groups. Effects varied by student ability; for example, while rewards did not impact study effort for high-ability students, low-ability students receiving large rewards actually spent less time studying compared to those receiving no financial reward. **RCT**

Leuven, E., Oosterbeek, H., & Van der Klaauw, B. (2010). The effect of financial rewards on students' achievement: Evidence from a randomized experiment. *Journal of the European Economic Association, 8*(6), 1243-1265.

STRATEGY 5:

REDUCING HASSLES

Moderate potential: Removing hassles can help make resources more accessible and facilitate engagement, but the magnitude of this impact is less clear and may be smaller compared to other strategies.

Limited evidence: Although some research has been done on the impact of reducing hassles on processes such as financial aid applications, few studies have experimentally tested the effects of reducing hassles on student engagement.

Overview

Seemingly small hassles can have an outsized impact on behavior. Reducing hassles has been shown to increase submissions of the Free Application for Federal Student Aid (FAFSA)[35] and college applications,[36] but there is less evidence on the impact of this strategy on student engagement. Removing hassles preventing engagement can include efforts to make resources physically easier to reach, such as providing transportation to a counseling office, or scheduling campus events or office hours at times and locations that align with students' schedules.[37,38] Simplifying processes, such as reducing the number of steps it takes to set up an advising appointment, can also be effective,[39] although institutions may tend to overlook these solutions due to **subtraction neglect**.

SUBTRACTION NEGLECT describes people's tendency to improve something by adding to what exists, rather than subtracting and simplifying.

What we heard

- Several administrators, faculty, and students we interviewed emphasized the need to integrate virtual meetings into support services. They emphasized that conducting one-on-one meetings online can make it easier for students to set up appointments due to increased flexibility and availability, especially for commuter students.

> **"Whenever I meet with [my advisor], I meet with her and 30 other people. … If I were to go in and ask for an individual session, it's more difficult because she oversees so many people. I've seen pictures and videos of trying to meet in person and the line is down the hall. People need to sit and wait and miss classes."**
>
> —First-year student at a private four-year institution

> **"You can look at class time, most popular times for office visits, and then try to program student engagement around that. For us, there's a 4 to 6 PM class period. That's pretty popular in part because it often works for people who are working part-time, and so doing something right before and right after tends to be successful."**
>
> —Administrator at a large four-year public university

CASE STUDY 5.1

Greater perception of accessibility was associated with increased utilization of counseling services. NON-EXPERIMENTAL

Alvarez-Hernandez, L. R., Childs, E. M., Fatehi, M., & Yeo, H. (2022). How perception relates to student utilization of college campus counseling services. *Journal of American College Health*, 1–9.

Researchers wanted students to engage by:

- **USING NON-ACADEMIC SUPPORT SERVICES**

Summary:

College students residing in the state of Georgia (N = 380) were eligible to participate in a survey that assessed their perception of on-campus counseling services. Survey items measuring accessibility of services considered a wide array of factors, including location, available transportation, and availability of services.

Students who perceived on-campus counseling to be accessible were 2.24 times more likely to utilize the service than those who perceived it as inaccessible.

CASE STUDY 5.2

Students reported that faculty referral increased their engagement with support services. NON-EXPERIMENTAL

Dietsche, P. (2012). Use of campus support services by Ontario college students. *Canadian Journal of Higher Education, 42*(3), 65–92.

Researchers wanted students to engage by:

- **MEETING WITH AN ACADEMIC ADVISOR**
- **USING ACADEMIC SUPPORT SERVICES**
- **USING NON-ACADEMIC SUPPORT SERVICES**

Summary:

Students (N = 24,735) from 24 Ontario community colleges participated in a survey that revealed a large gap between student-reported need for campus services versus their utilization. The study revealed that accessibility issues can be bridged by faculty referral, which emphasized the availability of services.

Referrals had a significant impact on the use of most services including academic advising, personal counseling, career counseling, language and writing services, learning-skills services, and peer tutoring. For example, 43% of students who strongly agreed with the statement "Faculty referred me to other staff" engaged with academic advising, whereas only 19% of those who strongly disagreed with this statement used the service.

ADDITIONAL INSIGHTS FOR REDUCING HASSLES

To make counseling services more accessible to students, a private four-year university experimented with walk-in counseling sessions located in spaces students commonly use. By getting rid of hassles such as paper-work, intake processes, and the need for an appointment, and making the services available in locations already frequented by students, the university was able to engage a larger, diverse range of students in counseling services. NON-EXPERIMENTAL

Boone, M. S., Edwards, G. R., Haltom, M., Hill, J. S., Liang, Y. S., Mier, S. R., ... & Yau, T. Y. (2011). Let's Talk: Getting out of the counseling center to serve hard-to-reach students. *Journal of Multicultural Counseling and Development, 39*(4), 194-205.

STRATEGY 6:

DESIGNING PHYSICAL SPACES EFFECTIVELY

Moderate potential: The physical design of campuses and classrooms shows potential for increasing student engagement in these spaces, though the magnitude and consistency of this strategy's impact on student engagement is not yet known. In addition, the potential investment required to make such physical changes is likely more significant than for other engagement strategies.

Limited evidence: Few studies have experimentally tested the impact of physical space design on behavioral (rather than self-reported) measures of engagement at broad-access institutions in the U.S.

Overview

Classroom and campus layout have the potential to impact students' behavior and their utilization of the space. The design of a space can either facilitate or impede students' desire and ability to actively engage there. Applying **choice architecture** that encourages collaboration in classrooms (e.g., arranging movable desks, chairs, and whiteboards in small groups) may foster participation, facilitate connections with peers and professors, and promote learning compared to traditional rows of seating.[40,41,42] Similarly, in study spaces such as libraries, the presence of quiet, clean, and spacious areas with comfortable and functional furniture is associated with use of the space.[43,44] Highly visible and easily accessible outdoor green spaces on campus may encourage students to linger and connect with their peers.[45]

CHOICE ARCHITECTURE is the way in which information/options are presented to decision-makers, as well as the impact this has on both the process and outcome of their decisions and behaviors.

What we heard

- A lack of designated spaces for "hanging out" on campus can make it challenging for some students (e.g., commuters) to establish connections with their peers.
- Physical spaces must be designed to meet students' needs. Important elements mentioned by students include ease of access, aesthetics, table and seating options, noise levels, and good lighting, particularly at night.

> **"I'm always at the Thrive Center [which houses most of the support services] … they help you with anything you need … like questions about financial aid or [my health] … there's couches … it's just a comfortable space to be at, even if you're anti-social."**
>
> —First-year student at a public university

CASE STUDY 6.1

Classroom layout was positively associated with class attendance, participation, and grades. NON-EXPERIMENTAL

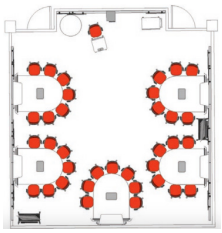
Scott-Webber, L., Strickland, A., Kapitula, L. R., Konyndyk, R., Magnusson, K., & Hiebert, B. (2014). How classroom design affects student engagement. *Planning for Higher Education (SCUP)*.

Researchers wanted students to engage by:

- **ATTENDING CLASS**
- **PARTICIPATING IN CLASS**

Summary:

After six to eight weeks of using an "active learning classroom" (e.g., moveable furniture arranged in groups), students (N = 389) and faculty (N = 41) at four public U.S universities rated student engagement across 12 measures. Students and faculty reported on engagement in the "active learning classroom," as well as in the "traditional classroom" set-up of row-by-row seating they had used previously.



Active learning classroom

Traditional classroom

Using the "active learning classroom" was associated with student- and faculty-reported measures of greater engagement. 84% of students and 98% of faculty reported an increase in student engagement. 72% of students and 88% of faculty reported an increase in students' motivation to attend class. 72% of students and 68% of faculty reported an increase in students' ability to achieve a higher grade.

CASE STUDY 6.2

The design of outdoor spaces on campus may affect student engagement with the space. NON-EXPERIMENTAL

Alnusairat, S., Ayyad, Y., & Al-Shatnawi, Z. (2021). Towards meaningful university space: Perceptions of the quality of open spaces for students. *Buildings, 11*(11), 556.

Researchers wanted students to engage by:

- **CONNECTING WITH PEERS**
- **STUDYING**

Summary:

Researchers used spatial analysis (i.e., Visual Graph Analysis and Axial Graph Analysis) and a questionnaire (*N* = 336) to understand how qualities of an outdoor space (e.g., connectivity, visibility, features like seating, etc.) impacted student behavior at a four-year university in Jordan.

The study found that 84% of students primarily used outdoor spaces to connect with peers and about 30% of them used outdoor spaces for studying. Spatial analysis revealed that outdoor spaces were most used when they were highly visible and easy to access from other parts of campus. When asked about the most important factors in their use of the space, 51% of students cited the quality and location of seating, and 41% of students cited protection from the elements.

ADDITIONAL INSIGHTS FOR DESIGNING PHYSICAL SPACES EFFECTIVELY

Arranging classroom furniture in small groups rather than in rows can improve peer-to-peer connections, sense of community, and student-faculty communication. In this study, students also reported that having readily available laptops and Wi-Fi access helped support student-faculty interaction and students' ability to learn. Faculty reported that a classroom design featuring grouped pods, laptops, and more whiteboard space made it easier to implement active teaching strategies. **QUASI-EXPERIMENTAL**

Weber-Bezich, H. (2014). *Classroom design and student engagement in post-secondary institutions: An evaluative case study* (Order No. 3621165) [Doctoral dissertation, Northern Arizona University].

In a survey conducted at a four-year university in Australia, ***students identified low noise levels, quick access to information, a pleasant ambience, and comfortable furniture as the features that would most impact their use of library space*** on campus. **NON-EXPERIMENTAL**

Abbasi, N., Tucker, R., Fisher, K., & Gerrity, R. (2014). Library spaces designed with students in mind: An evaluation study of University of Queensland libraries at St Lucia Campus. *Proceedings of the IATUL Conferences*.

STRATEGY 7:

SENDING NUDGE COMMUNICATIONS

Low potential: Although nudge communications have been shown to boost student engagement in some circumstances, recent evidence has shown that these impacts are small in magnitude, inconsistent across populations, and difficult to scale. Thus, while nudge communications can be a useful strategy in conjunction with other efforts, our research suggests that this strategy does not warrant further innovation.

Abundant evidence: There is a large body of research that has been conducted in recent years to test and replicate the impact of nudge communications on student engagement.

Overview

Many practitioners now use nudge communications, including email and text messages, to promote student engagement. Given initial promising results for these relatively light-touch and low-cost interventions—which may leverage behaviorally informed elements such as timely reminders, actionable instructions, and **social norm** messages—much research has been conducted to examine their efficacy. Nudging students via email and/or text can be effective for completing one-off actions, especially those that are serious, time-sensitive, or well-defined, such as renewing financial aid or resolving course registration holds. When successful, nudge messages can help students combat **limited attention** and **procrastination** of important actions.

SOCIAL NORMS
are people's perceptions of the rules or standards shared by a group that guide and/or constrain behavior.

LIMITED ATTENTION
describes the finite amount of attention we have available at any given time.

PROCRASTINATION
refers to the voluntary delay of a decision or action, despite knowing that one will probably be worse off for the delay.

Over the past few years, however, the limitations of nudge communications have become clearer to researchers and practitioners alike. Nudging recurring behaviors seems to be more challenging, as the benefits may be less clear or immediate, such as using support services or participating in class.[46,47,48,49] Even interventions once proven to be effective have recently shown little evidence of impact when scaled at the national and state level.[50] Studies have also shown that sending too many nudges can turn into "nags", which can nullify the potential benefits of reminder communications.[51,52] In order to address this challenge, institutions should consider employing a data-driven approach to nudge communications or harnessing recent advancements in artificial intelligence (AI) to provide more personalized and targeted outreach, although this approach also has its limits for improving engagement.[53] Pairing nudge communications with other behaviorally informed interventions, such as asking students to plan how they will address challenges that may arise and then sending reminders about this plan, could also be a more effective way to promote student engagement.[54]

What we heard

- Students we interviewed generally shared that mass communication gets overlooked, especially in emails. However, they noted that communication is most helpful when they are provided with targeted resources relevant to them, and when there is persistent contact leading up to an event.

> **"I think there has been trends to make nudges more visually appealing and fun … For instance, texting things like, 'Don't be la8.' But it's important to keep a professional but friendly tone. We got a lot of student pushback saying, 'You're my university, and you should use the full word.' There's a balance of wanting to use an approachable voice, but not losing the credibility you have as a message sender."**
>
> —Academic expert

CASE STUDY 7.1

An online coaching exercise paired with two-way text messaging improved engagement in study behaviors but did not increase help-seeking behaviors or academic outcomes. RCT

Oreopoulos, P., & Petronijevic, U. (2019). The remarkable unresponsiveness of college students to nudging and what we can learn from it (No. w26059). National Bureau of Economic Research.

Researchers wanted students to engage by:

- **STUDYING**
- **ATTENDING CLASS**
- **USING ACADEMIC SUPPORT SERVICES**
- **ATTENDING OFFICE HOURS**

Summary:

In a five-year study at a large four-year Canadian university (N = 25,000), students received an online coaching exercise that provided advice about how to perform well as a student. Some students were then randomly selected to receive follow-up one-way text message communication that provided information and encouragement. Other students were offered an individual upper-year student coach who would initiate two-way text message conversations at least once a week.

One-way text messages did not have an impact on students' grades, persistence, or study behaviors. On the other hand, those who received two-way text messages studied on average 1.3 hours more than those in the control group (who received no intervention) and were less likely to report cramming for exams and missing class. However, there was no impact on grades, persistence, or other behaviors such as visiting a tutor or attending office hours.

CASE STUDY 7.2

Outreach from a text-based chatbot with AI capability had a positive impact on students' course registration and resolution of academic holds, but not on their take-up of support services. RCT

Page, L. C., Meyer, K., Lee, J., & Gehlbach, H. (2022). Conditions under which college students can be responsive to nudging (EdWorkingPaper: 20-242). Retrieved from Annenberg Institute at Brown University.

Researchers wanted students to engage by:

- **MEETING WITH AN ACADEMIC ADVISOR**
- **USING ACADEMIC SUPPORT SERVICES**
- **USING NON-ACADEMIC SUPPORT SERVICES**

Summary:

Students (N = 25,217) enrolled in a two-year and four-year broad-access college in the state of Georgia were randomly assigned to receive text-based, personalized outreach from the university chatbot vs. business-as-usual communications over the course of a semester or academic year.

Students who received outreach from the chatbot were more likely to complete course registration for the next academic year (by two to five percentage points). In addition, messages that notified students about specific registration holds on their account increased the likelihood of students resolving these holds and meeting with their advisor (by six to eight percentage points). In contrast, there was only a small effect on whether students met with their advisor the week after receiving a reminder from the chatbot (by two percentage points), and no effect on whether students ever met with their advisor over the course of the semester or academic year. Finally, there was no (or very limited) impact on students' take-up of academic and career-related support services.

ADDITIONAL INSIGHTS FOR SENDING NUDGE COMMUNICATIONS

A 12-week nudge email campaign had no impact on academic engagement. Researchers sent emails containing social norm messages every two weeks to second-year undergraduate students at a UK university. After 12 weeks, there was no difference in class attendance or participation between the treatment and control group, and no evidence for increased student access of the virtual learning environment. RCT

Graham, A., Toon, I., Wynn-Williams, K., & Beatson, N. (2017). Using 'nudges' to encourage student engagement: An exploratory study from the UK and New Zealand. *The International Journal of Management Education, 15*(2), 36–46.

Sending email nudge communications to students in an introductory economics course increased the use of online extra practice problems but did not have any impact on students' uptake of peer tutoring or academic coaching. Researchers also found that text messages were not an effective medium, and that sending too many messages (three or more) may have negative effects on engagement with support services. RCT

Pugatch, T., & Wilson, N. (2022). Nudging demand for academic support services: Experimental and structural evidence from higher education. *Journal of Human Resources*.

Offering proactive, targeted texts through an AI chatbot had a positive impact on first-generation students' academic engagement but had no impact on using course support services. Sending two to three scheduled, customized text messages each week to students in a large-enrollment, online course increased first-generation students' likelihood of submitting exams on time by 13–15 percentage points and increased their time spent reading during the semester by 1.5 hours. However, there was no impact on students' use of course tutoring services. RCT

Meyer, K., Page, L., Smith, E., Walsh, T., Fifield, C. L., & Evans, M. C. (2022). Let's chat: Chatbot nudging for improved course performance. (EdWorkingPaper: 22-564). Brown University.

Conclusion

As more colleges, universities, and college access and success nonprofits develop programs to improve student outcomes, it has become increasingly clear that efforts must also be taken to boost student engagement with these programs. A tutoring program will have no impact if students do not show up for tutoring meetings. Faculty office hours cannot help students who do not attend. This paper sought to identify some of the engagement strategies implemented and tested to date across a range of channels and approaches, and to highlight those that have shown to be most promising.

But more importantly, this paper aimed to make the case that further research into promising student engagement strategies is needed. And so, while we encourage practitioners to implement and test the engagement strategies described here in a wider range of contexts, we also recognize the need to develop additional behaviorally informed engagement efforts in the months and years to come. To that end, ideas42 will spend late 2023 working with practitioners and behavioral scientists interested in innovation to identify promising new engagement-related interventions that could be rapidly implemented and tested.

We hope you will join us in these important efforts—get in touch at education@ideas42.org!

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